FERC Holds Technical Conference to Explore Resource Adequacy Challenges

By **Stephen Hug**, **Emily Mallen**, **Ben Reiter** and **Sharmila Das**

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Panel 1: The Resource Adequacy Challenge in RTOs

Panelists

Manu Asthana, PJM, President and CEO | **Todd Ramey**, MISO, Senior Vice President of Markets and Digital Strategy | **Gordon van Welie**, ISO NE, President and CEO | **Richard J. Dewey**, NYISO, President and CEO | **Lanny Nickell**, SPP, President and CEO | **Elliot Mainzer**, CAISO, President and CEO | **Jim Robb**, NERC, President and CEO

Panelists began the conference with a general discussion of the resource adequacy challenges faced by RTOs around the country. Jim Robb, President and CEO of the North American Electric Reliability Corporation (NERC), highlighted the scale of the challenge. He explained that there is an expected nationwide peak demand increase of 130 MW in the next decade, which is "like adding a whole other MISO or three Californias to the grid." The representatives of SPP and MISO also both noted that maintaining reliability margins has been a challenge over the past several years given sharp increases in demand.

The panelists identified various issues that they believe are contributing to resource adequacy challenges, including the shift towards renewable energy generation (as opposed to traditional dispatchable generation resources), the complexity of managing divergent state energy policies within a multi-state RTO planning process, the length and inefficiency of the interconnection process as an obstacle to bringing new generation online, and the challenges that exponential load growth from data centers are causing within the existing capacity market framework.

While the shift towards renewable energy sources is beneficial for environmental goals, panelists generally agreed that it is complicating resource adequacy planning. The challenges of a changing resource mix are compounded by the disorderly retirement of existing generation resources—largely driven by state and federal policy goals—and the fact that the pace of new generation entry is not keeping up with retirements. Collectively, these factors are introducing new reliability risks and planning challenges.

For instance, Todd Ramey from MISO explained that planning to respond to a loss of load event is a more straightforward task when the grid consists primarily of dispatchable resources. However, with the increasing reliance on intermittent renewable sources like wind and solar, these assumptions no longer hold and the accreditation of resources has become more complex. Richard Dewey of the New York Independent System Operator, Inc. (NYISO) noted that retirements of dispatchable resources also are an issue in New York, particularly combined with the fact that new additions to the grid are primarily low-capacity factor resources. But despite these challenges, Dewey emphasized the need for a balanced approach and expressed support for capacity markets, stating that NYISO's markets deliver billions of dollars in value on an annual basis and that NYISO is not planning to move away from its organized market framework.

The Commissioners and panelists generally agreed that the current capacity markets and resource adequacy planning frameworks that RTOs rely upon are under strain due to the rapid changes in the energy sector, including significant large load growth. Commissioners Christie and Rosner emphasized the need for adaptation and suggested that the construct of capacity markets may need to be reevaluated in the coming years. Gordon van Welie of ISO New England Inc. (ISO-NE) expressed support for a more dynamic approach to resource adequacy and proposed a shift towards seasonal capacity auctions and marginal capacity accreditation. He also urged a more consistent approach for accrediting capacity for its broad reliability contributions, which could then be used by FERC and market operators to design appropriate compensation mechanisms.

Panelists also emphasized the need for innovative solutions and automation to address existing interconnection backlogs. Manu Astana of PJM explained that PJM recently reformed its interconnection process, highlighting that the changes have already had a tangible impact on how quickly interconnection requests have been processed through the queue. However, he acknowledged that even factoring in these reforms, the process remains lengthy and developers often face delays due to changes in project scope and cost allocation issues. Mr. Ramey provided further context on the scale of the challenge, noting that MISO's current interconnection queue backlog is over 300,000 MW. He emphasized the need for automation and technological innovation in streamlining the interconnection queue process, explaining that MISO has projected that incorporating automation will eventually be able to reduce queue waiting times to 12 months. However, he noted that implementing these technologies and using them efficiently will take several years.

During the panel, Chairman Christie asked whether FERC should require RTOs to adopt a requirement that each load-serving entity be required to procure a minimum amount of capacity. Gordan Van Weile noted the challenges of such an approach in a deregulated market, as the companies providing service to retail customers are not subject to FERC jurisdiction. He emphasized the need to come up with a construct that provides needed resources with "missing money" and assigning reserve margins would not address this issue. Lanny Nickell noted that SPP already assigns resource adequacy obligations to load serving entities, but that existing planning models do not capture the full range of reliability challenges that arise during operational conditions. Similarly, Mr. Ramey noted that MISO assigns minimum reserve obligations on load-serving entities, but that part of the current market design with a sloping demand curve is that you may have situations where the amount of capacity cleared is lower than total reliability requirements. Mr. Asthana took the position that it would be premature to mandate minimum reserve requirements but noted that load-serving entities—particularly in states with retail competition—are relying on the capacity markets to meet reliability needs. Mr. Asthana expressed a desire to see greater forward contracting within the PJM market.

Panel 2: PJM's Resource Adequacy Challenge

Panelists

Adam Keech, PJM, Vice President of Market Design and Economics | **Joseph Bowring**, Monitoring Analytics, President and Independent Market Monitor | **Wendy Stark**, PPL Corporation, Executive Vice President of Utilities & Chief Legal Officer | **Brian Tierney**, FirstEnergy, Chairman, President, and CEO | **Glen Thomas**, PJM Power Providers Group, President | **Marji Philips**, LS Power, Senior Vice President of Wholesale Market Policy | **Scott Hallam**, Boardwalk Pipelines, President and CEO (representing the Interstate Natural Gas Association of America)

The conversation during this panel focused on the balance between dispatchable and renewable energy resources, the limitations of current demand response programs, the implications of state versus market-led resource planning, and the functionality and future of PJM's capacity market.

Commissioner Chang opened by asking participants to comment on the resource mix within PJM, stating that she regularly hears that the system needs more dispatchable resources, particularly gas resources. She asked whether

there is something unique to PJM that makes the system more reliant on dispatchable and gas generation than in other regions. Panelists explained that the primary challenge for PJM is balancing the retirements of traditional dispatchable generation resources (which have been occurring at a rapid pace that is expected to continue) with projected load, given that PJM also has seen an explosion in data center-related load growth.

Adam Keech, PJM's Vice President of Market Design and Economics, explained that given the number of retirements of dispatchable generation that have occurred and are forthcoming, PJM must retain the resources it still has or replace retirements in kind. Renewable generation is not capable of replacing this capacity on a one-for-one basis and dispatchable generation (mainly natural gas) will remain necessary for the foreseeable future. However, Mr. Keech expressed concern that gas generators are not entering into long-term contracts for the transportation of natural gas due to market and regulatory uncertainty and disincentives. Panelists also noted challenges with nomination cycles, cost recovery for pipeline infrastructure and the reliability of "firm" gas delivery during critical periods, which has limited the availability of gas resources. These barriers need to be removed or mitigated to ensure that PJM has the long-term resources and capacity that it requires.

Panelists also discussed the practicality of integrating renewable energy resources and improving their reliability. They noted that, while renewables are valued for low-cost and clean energy, they may not be capable of maintaining reliability without significant dispatchable backup capacity. Barriers to integration include siting and permitting that delay the development of projects, and low Effective Load Carrying Capability (ELCC) compared to traditional dispatchable generation. For instance, Dr. Joseph Bowring noted that renewables offer a lot of value in terms of low-cost energy, but that dispatchable generation is needed during peak periods and emergency conditions to meet reliability needs.

Panelists all agreed that data centers are a significant driver of demand growth within PJM and pose unique challenges to the capacity market's stability. Some, such as Brian Tierney of First Energy, urged participants and Commissioners to consider whether it makes sense for ratepayers to face higher costs because of this demand. Panelists also suggested that one solution might be to displace some of the costs by requiring data centers to make long-term financial commitments, regardless of whether they use the capacity. This approach would mitigate the financial burden on consumers and provide certainty for grid operators to make upgrades or investments in ensuring reliability. However, this is not within the jurisdiction of the Commission and would be a state-level policy decision.

Finally, panelists discussed possible changes to the PJM capacity market. Generally, they agreed that the capacity market's design is flawed and does not meet the needs of today's power generation landscape in light of the long lead times for projects to come online and the significant capital requirements for new plants. For example, one panelist noted that the three-year look-ahead built into the capacity market was appropriate when it took three years to build a plant but has become an obstacle to functionality because it now takes five to seven years to bring a plant online. Scott Hallam of Boardwalk Pipelines suggested that any redesign or modification of the capacity market should focus on aligning the costs to build, finance and operate a generating unit with the rates that customers pay for it, which is not currently the case. Multiple panelists expressed the concern that the capacity market does not do enough to incentivize new generation, so although customers are paying more, they are not getting new generation that is needed.

Despite Commissioner Christie's invitation to panelists to consider whether capacity markets should be abandoned, the panelists largely expressed support for modifying the existing market design to provide more stable and predictable price signals to encourage investment in new dispatchable generation resources. Panelists noted that even states with integrated resource planning may face thin reserve margins during peak periods, such as during Winter Storm Elliot. Wendy Stark from PPL Corporation expressed support for an "all-of-the-above approach" that allows utilities to utilize the capacity markets but also build their own generation when the markets are not delivering. Although this would require changes in state law, she noted that this has worked well

in Kentucky. Despite his criticism of PJM's existing capacity market construct, Dr. Bowring emphasized that the industry transitioned away from regulated, cost-of-service markets because they are inefficient. The idea that a regulated generator is a more efficient option is doubtful and the markets have demonstrated the opposite for quite some time.

Panel 3: PJM States' Perspectives

Panelists

Chairman Emile C. Thompson, Public Service Commission of the District of Columbia, President of Organization of PJM States, Inc. | **Jacob Finkel**, Office of the Governor of Pennsylvania, Deputy Secretary of Policy | **President Christine Guhl-Sadovy**, New Jersey Board of Public Utilities | **Judge Kelsey Bagot**, Virginia State Corporation Commission | **Commissioner Michael Richard,** Maryland Public Service Commission | **Commissioner David Veleta**, Indiana Utility Regulatory Commission | **Commissioner Dennis Deters**, Public Utilities Commission of Ohio

In this panel, state regulators explained their perspectives on the PJM planning process and generally expressed desire for an expanded role within it. Chairman Emile Thompson emphasized the Organization of PJM States, Inc.'s (OPSI) commitment to productively engage with PJM to find solutions to its resource adequacy challenges. He stated that an opportunity to be heard at the beginning of the planning process would be helpful and ultimately would require less FERC involvement. He suggested looking to SPP as a model for engagement at the state level.

The other panelists agreed. Several participants expressed their opinion that the PJM state coordination process is cumbersome, opaque and makes it difficult for state regulators to participate in a substantive manner. For example, President Christine Guhl-Sadovy of the New Jersey Board of Public Utilities stated that states' ability to have a meaningful impact on resource adequacy planning within PJM has been "stifled." Panelists emphasized that state regulators need a meaningful role in the process because they are ultimately responsible for resource adequacy within their states and must ensure that affordable power is available to ratepayers.

Judge Kelsey Bagot of Virginia agreed that states should have a bigger role in PJM resource adequacy planning but acknowledged that state regulators also bear some responsibility in being boxed out because they do not always operate as a united entity that can be a partner to PJM. She emphasized that it is important for regulators to demonstrate that 14 states with very different regulatory structures, goals and policies can be collaborative and make collective decisions if they are included in the PJM planning process. She also suggested that states work in collaboration with PJM to run modeling on which states are meeting minimum capacity needs for the capacity market and identify deltas between individual states' projected load and capacity. This would provide information for state regulators to conduct a "gut check" and pursue policy or legislative changes to promote the right resource mix in their states. Jacob Finkel from the Office of the Governor of Pennsylvania reminded the panel that PJM is not a regional integrated resource planner and it is up to the states to coordinate with each other.

Panelists discussed the rapid increase in data center demand that requires further evaluation. The mismatch between the capacity market's rules and the new load growth projections has led to concerns about reliability and increased power costs for consumers. Several state representatives indicated that they are considering taking action to make sure that data centers pay their fair share, that they are not coming online before the grid is prepared to accommodate them, and that data centers can be served with the level of reliability they require without preferencing them over other customers. Panelists also agreed that transparency about data center load and information-sharing between states would be useful in making decisions about cost allocation and whether to provide economic incentives to data centers. Commissioner Dennis Dieters of Ohio expressed concern that some

of the solutions that certain states have floated, such as requiring data centers to bring their own generation, may hinder supply to the RTO. He explained that data center customers, which tend to be large tech companies with few price sensitivities, are likely to secure long-term contracts with generation resources.

Commissioner Christie noted that PJM has lost 5.6 gigawatts of accredited capacity in the past 10 years and asked the panel whether this is the result of flaws in the capacity market or other factors. Panelists had a wide array of responses, but generally did not attribute it to the capacity market. Chairman Thompson of OPSI responded that he believes the market is generally working (although it requires some "tweaks") and explained that the current capacity reflects what was perceived to be the need when system planners were making load forecasts, noting that it was not forecasted even five years ago that there would be tremendous data center demand. He also pointed out that some resources have postponed or reversed planned retirements to respond to the potential shortfall. Other panelists attributed the loss to the backlogs in PJM's interconnection queue, comparing PJM unfavorably to CAISO, which has built significantly more generation capacity this past year alone. Jacob Finkel brought up regulatory barriers to the siting and permitting of new projects, stating that these issues cause significant delays to generation developers. He stated that executive and legislative efforts to reduce such obstacles in Pennsylvania have been very successful and urged other states to consider similar measures.

Panel 4: Additional Perspectives on PJM's Path Forward and the Future of Resource Adequacy in PJM

Panelists

Brian O. Lipman, Consumer Advocates of the PJM States, President | **Brian George**, Google, US Energy Markets, Senior Lead | **Casey Roberts**, Natural Resources Defense Council, Director of RTO Advocacy | **Michelle Bloodworth**, America's Power, President and CEO | **Denise Foster Cronin**, East Kentucky Power Cooperative, Vice President of Federal and RTO Regulatory Affairs | **Susan E. Bruce**, Industrial Energy Consumers of America, PJM Industrial Customer Coalition, Coalition of MISO Transmission Customers, and American Forest & Paper Association, Counsel

This panel brought together representatives from consumer advocacy organizations, industry groups, environmental groups, utilities and tech companies to discuss PJM's load forecasting, market design, and factors affecting reliability and affordability for ratepayers. A primary focus was on how to improve accuracy and transparency in load forecasting given the exponential growth in demand from large loads, and how those forecasts influence market outcomes and investment signals. Panelists also discussed the balance between ensuring sufficient capacity and preventing cost burdens on consumers, while highlighting the growing urgency for coordination between federal, state and market actors.

Panelists stressed the importance of improving PJM's forecasting methods to reflect actual, financially committed load, particularly from data centers. They generally agreed that more accurate near-term (3-6 years) load forecasts are needed for effective transmission planning and capacity market functioning. While some panelists viewed existing PJM practices (e.g., procedures established in the PJM business practice manuals) as sufficient, others suggested refining these procedures to ensure greater standardization and consistency in how load-serving entities report forecast inputs. Participants also recommended broader solutions, such as the use of financial guardrails for large load interconnections (e.g., minimum demand guarantees), which have been approved in Indiana and West Virginia. Other suggestions for improving load forecasting included increased use of scenario-based forecasts, seeking more input from outside consultants, and improving transparency in assumptions and methodologies. There was significant related discussion about the need to balance the dual risks of underbuilding (which jeopardizes reliability) and overbuilding (causing excessive costs, which are passed on to ratepayers). Consumer advocates expressed particular concern about these risks, noting that this balance is particularly important because escalating capacity market prices are outpacing customers' ability to pay. Several

panelists emphasized that PJM and state regulators should enable maximum use of existing resources (e.g., by importing power across regions) rather than simply incentivizing new buildout.

Panelists also discussed changing the PJM capacity market structure, suggesting that this could promote market efficiency and reliability. Chairman Christie asked Denise Cronin to explain how the system worked before the implementation of the capacity market. He also asked whether she would recommend reimposing a capacity deficiency charge or imposing a minimum self-supply commitment percentage to incentivize load-serving entities to actively serve their load. She explained that, when PJM evolved from a shared power pool to an RTO, it required any potential market buyer to sign a reliability assurance agreement, which obligated them to meet the reliability requirement that PJM calculated on its behalf. If they failed to meet the reliability requirement, they were required to pay a deficiency charge. There was a "fundamental change in the model" when PJM removed the deficiency charge and established the capacity market instead. Ms. Cronin argued that imposing a minimum procurement obligation—rather than imposing a penalty (in the form of higher capacity prices)—was a more effective structure when the market is short. Several panelists argued that high capacity prices alone are insufficient or potentially harmful without resolving structural market barriers like interconnection delays or restrictive permitting. They urged reconsidering retirement decisions to ensure the retention of resources needed to meet reliability needs.

There was also significant discussion around whether large new loads (e.g., data centers) should be required or incentivized to bring their own backup generation to support the grid during peak times and reliability events. Brian George of Google noted that, while backup generation is necessary, it does not provide the reliability that grid-connected generation does. Industry representatives highlighted that regulatory impediments, such as permitting restrictions, are preventing the generation needed to serve data centers from coming online. For example, Michelle Bloodworth, the President of America's Power, noted that her organization has several members who are actively searching for opportunities to serve data center demand but are inhibited from doing so by consent decrees across PJM states and elsewhere. She recommended that the Commission explore taking action under Section 206 of the Federal Power Act to address these consent decrees because they are having a significant impact on "where and how . . . generation gets to market."

Tech representatives on the panel were asked what their industry can do voluntarily to help regulators and PJM manage the pressure that data center load demand is placing on the grid. Brian George explained that Google has initiated regular confidential discussions with PJM about growth to provide as much transparency as possible, and he understands that its competitors are doing the same. He also noted that Google is actively working to achieve maximum power efficiency and claimed that many of its facilities, including one in Loudoun County, Virginia, are fairly efficient already according to the standard industry metric of power usage effectiveness. He also urged the Commission and state regulators to maintain consistency with respect to accreditation and provide as much transparency as possible about potential changes. He explained that, as a large buyer, Google bilaterally contracts with diversified generation resources to manage its needs and risk. Changes in accreditation therefore create significant risk and uncertainty with respect to these contracts and can cause operational challenges that increase pressure on the grid.

Panel 5: MISO's Resource Adequacy Challenge

Panelists

Todd Ramey, MISO, Senior Vice President of Markets and Digital Strategy | **David Patton**, Potomac Economics, President and MISO Independent Market Monitor | **Laura Beauchamp**, Entergy Louisiana, LLC, Vice President of Business Operations and Strategy | **Andrew Meyer**, Ameren Missouri, Sr. Director of Energy Management & Trading | **Steven Lieberman**, American Municipal Power Inc., Vice President of Transmission & Regulatory Affairs

| **Todd Snitchler**, Electric Power Supply Association, President and CEO | **Kelli Joseph**, World Resources Institute, Senior Fellow

Chairman Christie began the panel by acknowledging that panelists disagree as to whether MISO is facing an imminent reliability shortfall. He asked them to explain their perspectives. Todd Ramey and Dr. David Patton told the Commission that MISO is resource-adequate and has cleared enough capacity to meet its requirements for all four seasons of the current planning year. From their perspective, the primary resource adequacy concern is to stop the decline of accredited capacity, which began around 2016 and has brought MISO down to minimum reserve requirements. Todd Ramey noted that the pace of decline has stabilized since 2022 and MISO is taking a number of steps, including initiating a planning process specific to data center growth, to ensure that it will have enough capacity going forward. Dr. Patton also noted that MISO historically has been able to rely on imports from neighbors during extreme weather events. He explained that MISO structures its planning models and calculates its reserve margin to account for imports. He defended this practice as prudent because MISO is an enormous geographic region and the likelihood of all of its neighboring systems experiencing an issue at the same time is negligible.

Andrew Meyer of Ameren pushed back on MISO's arguments, stating that Ameren is concerned about whether there are adequate incentives to build generation where it is needed. He explained that Ameren operates in both Missouri and Illinois. Missouri has a strong state-level approach to replacement generation, while Illinois does not, and this creates obvious differences in the availability of generation. Other panelists argued that, even if MISO's approach has worked so far, it is fundamentally problematic to rely on imports from neighbors to maintain reliability. One panelist noted that PJM's reserve margin has also been shrinking and that there is no guarantee that it will be able to share resources in a future emergency weather event. Several parties also highlighted that NERC has identified MISO as a high-risk region.

The panelists extensively discussed marginal accreditation, including planned changes to MISO's accreditation rules. Dr. Patton laid out the issues with the initial accreditation methods used by MISO, stating that it had run a capacity expansion model structured to only build intermittent renewables because MISO believed that was what the states wanted to build. He noted that this approach led to an overreliance on solar, which has a decreasing reliability value as more of it is added to the grid. The introduction of marginal accreditation, which is currently pending before the Commission, aims to correct this by providing a more accurate and dynamic assessment of resource reliability.

Participants also urged closer cooperation between MISO and states to resolve reliability challenges. Kelli Joseph suggested that MISO provide more information, including long-term planning assessments, to states to integrate into their own planning processes. Several panelists agreed, emphasizing the importance of integration and coordination of state-level integrated resource plans with RTO planning processes. Laura Beauchamp of Entergy explained that this provides two-way benefits: integrated resource planning that occurs at the state level can also inform and improve MISO's load forecasting by providing insight into the future scenarios it will need to serve.

Finally, panelists discussed MISO's shift to seasonal capacity markets and lessons learned from that shift. Dr. Patton argued that seasonal markets are more flexible and responsive to current energy needs than annual capacity markets, noting that ISO-NE has also made this shift and that all capacity markets will eventually have to shift to seasonal capacity. He explained that the usefulness of generation resources can be "incredibly differentiated" by season (for example, batteries are valuable in the summer, but not in the winter). Therefore, as the resource mix in a market shifts to a greater percentage of renewable resources, seasonal differentiation is critical to ensure that the right resources are built and maintained to meet peak demand periods and extended cold spells. Stephen Lieberman agreed that more granular resource planning is important, but suggested that a monthly frequency, rather than seasonal, is preferable. This approach would help operators better manage the

variability in resource availability and demand, reducing the likelihood of reliability issues. Panelists generally agreed that the move to seasonal markets is a critical step in maintaining and improving resource adequacy.

Panel 6: MISO's Path Forward and the Future of Resource Adequacy in MISO

Panelists

Commissioner Marcus Hawkins, Wisconsin Public Service Commission, Chair of the Organization of MISO States Resource Adequacy Committee | **Chairman Doug Scott**, Illinois Commerce Commission | **James Huston**, Indiana Utility Regulatory Commission | **Commissioner Eric Skrmetta**, Louisiana Public Service Commission | **Carrie Zalewski**, American Clean Power Association, Vice President of Transmission and Electricity Markets | **Jennifer C. Easler**, Iowa Department of Justice Office of Consumer Advocate, Attorney

This session gathered state utility commissioners, consumer advocates and industry representatives to examine MISO's resource adequacy framework. The panel explored how various states are adapting to evolving load forecasts, the challenges of data centers, accreditation reforms and the need for better coordination among stakeholders.

Commissioner Chang opened the panel by asking about the role of state planning in achieving resource adequacy. A key theme that emerged was that resource planning among the MISO states varies widely. Certain states, like Indiana and Louisiana, use integrated resource plans to ensure reliability and resource adequacy. Others, like Illinois, do not have integrated resource plans, but actively pursue legislative and regulatory incentives for clean energy and long-term reliability. Commissioner Marcus Hawkins stated that many state regulators are still operating under outdated planning guidelines given recent changes to MISO's accreditation rules, noting that Wisconsin is currently in the process of updating its guidance to utilities.

Panelists discussed MISO's adoption of marginal accreditation methods and generally acknowledged that this method better reflects real system conditions. However, some participants raised concerns over low accreditation values for solar and wind because it could inhibit further renewable resource development. Some panelists also urged MISO to invest in better modeling for hybrid resources and long-duration storage to ensure that they are properly valued. They also emphasized the flexibility and dispatchability of storage resources and their potential to improve reliability and affordability, particularly during events like Winter Storm Elliott.

Panelists also discussed the challenges of large load growth within the MISO footprint. Most agreed that data centers and industrial load growth present significant load forecasting challenges, particularly with respect to long-term planning. One panelist pointed out that the fact that almost all data center growth is developed under non-disclosure agreements makes it extremely difficult for regulators to obtain information required to plan for such growth. Speculative load forecasts also pose the risk of either overbuilding or underbuilding infrastructure. To mitigate such problems, some panelists advocated requiring financial commitments or a demonstration of site control to validate forecasted demand. Panelists held varying opinions about the value and risk of forecasting uniformity. Commissioner Hawkins expressed concerns about uniform forecasts being misused by NERC and RTOs to drive resource adequacy requirements upward, noting that their jobs get easier when there are more resources on the grid.

Overall, panelists broadly agreed that MISO's resource adequacy framework is evolving in the right direction, but many states still face significant implementation challenges. These include integrating new accreditation methods, managing and planning for uncertain large load growth, and improving coordination with RTOs.

Panel 7: The Resource Adequacy Challenge in the Northeast RTOs

Panelists

Emilie Nelson, NYISO, Executive Vice President and Chief Operating Officer | **Stephen George**, ISO-NE, Vice President of System Operations and Market Administration | **Adam Evans**, New York State Department of Public Service, Chief of Wholesale and Clean Energy Markets | **Chairman Philip L. Bartlett II**, Maine Public Utilities Commission | **Commissioner Katie S. Dykes**, Connecticut Department of Energy and Environmental Protection | Michelle Gardner, NextEra Energy Resources, Executive Director Northeast Region | **Sarah Bresolin Silver**, New England Power Pool, Chair | **Pallas LeeVanSchaick**, Potomac Economics, Vice President; ISO-NE External Market Monitor; NYISO Market Monitoring Unit

In this panel, panelists discussed the resource adequacy and reliability challenges anticipated in ISO-NE and NYISO. The panelists predicted increasing supply constraints over the next decade and agreed that close coordination between regulators and RTOs will be an important tool to address this issue. They generally agreed that while the capacity markets are a critical tool to support reliability, markets need to be supplemented by state initiatives and procurement. The panelists also emphasized that other solutions, such as building out transmission and storage, will be required to address resource adequacy.

The Commissioners asked Emilie Nelson of NYISO and Adam Evans from the New York State Department of Public Service (NYDPS) to explain the state of resource adequacy in New York. Emilie Nelson noted that NYISO is in the process of addressing a number of reliability issues, including narrowing reliability margins, supply constraints and the shift of the NYISO system from a summer-peaking to a winter-peaking system. Mr. Evans noted the role that state clean energy procurements have played in supporting new supply resources in New York and that NYISO has multiple initiatives ongoing to get ahead of future reliability challenges. Commissioner Lindsay See asked whether certain New York policy decisions, such as the Climate Leadership & Community Protection Act, are difficult to reconcile with market reliability goals. Emilie Nelson responded that state climate laws have spurred significant investment in new infrastructure, including new transmission and state clean energy attributes that are not fully valued in the markets.

Representatives of ISO-NE and New England states were also asked to describe the resource adequacy issues they are facing and steps that they are taking to address the issue. The panelists identified winter reliability as a key ongoing challenge, although a recent analysis indicated that severe reliability issues are unlikely to begin until the late 2020s or early 2030s. Panelists emphasized the need for RTO leadership to address winter reliability challenges, but explained that collaboration among states will be important because investments in new resources, transmission, and natural gas transportation will be needed. Panelists observed that it is virtually impossible to build additional pipeline infrastructure in the Northeast. Other options, such as meeting demand through renewable generation like solar and offshore wind, are limited because they do not provide sufficient supply during the winter. Chairman Bartlett of Maine added that the delays in offshore wind projects and other economic uncertainties present additional complications to the transition to renewables.

Sarah Bresolin Silver, Chair of the New England Power Pool, emphasized that a multi-pronged approach that includes long-term transmission planning, new requests for proposals for transmission, and adding storage to fossil units will be required to meet winter demand. Pallas LeeVanSchaick of Potomac Economics expressed confidence that ISO-NE has the infrastructure needed to maintain resource adequacy through 2030, but stated that market design refinements are needed to motivate resource owners to take advantage of opportunities to obtain fuel. He added that the process to develop prompt seasonal marginal capacity accreditation will be important in creating the right incentives.

The panelists also discussed the benefits and challenges of moving to a prompt seasonal capacity market. Stephen George of ISO-NE stated that ISO-NE is in the process of making reforms to capacity accreditation and plans to establish a prompt and seasonal market consistent with the approach in New York. He emphasized that a prompt and seasonal market combined with a marginal accreditation program is a critical component to achieving resource adequacy over the long term. He also indicated that ISO-NE is considering longer-term bilateral financial

hedging as another way to manage risk. Overall, he expressed optimism about the resource adequacy outlook over the next five years, noting that demand growth in the region primarily comes from heating, transportation, and electrification initiatives rather than data centers. Commissioner Katie Dykes expressed support for the ISO-NE capacity accreditation reforms, stating that they provide a more fair and equitable valuation of resources' ability to serve load.

Panelists repeatedly highlighted the need for a cooperative and complementary relationship between state policies and market reforms to ensure reliability and energy security. Chairman Philip Bartlett of the Maine Public Utilities Commission praised recent improvements in dialogue and collaboration between states and ISO-NE, stating that the increased collaboration has helped both state regulators and ISO-NE better understand and plan for winter risk. Multiple regulators also emphasized the importance of state involvement in and alongside the capacity markets to achieve the balanced mix of resources that is necessary in the region. Commissioner Dykes explained states have a role to play in mitigating the primary weakness of the capacity markets with respect to resource adequacy, which is that they are not designed to procure high capital-intensive resources (such as nuclear plants). Until stakeholders can produce a market design that will incentivize such high-capital resources, state procurement of such resources is the most promising route. Stephen George of ISO-NE and Adam Smith of the NYDPS agreed with this perspective. Chairman Bartlett also noted that in some instances, external factors (including state policy) may impact resource entry into the markets, a theme that was discussed extensively in prior panels.

Panel 8: RTOs without Capacity Markets

Panelists

Casey Cathey, SPP, Vice President of Engineering | **Neil Millar**, CAISO, Vice President of Transmission Planning and Infrastructure Development | **Chair Patrick O'Connell**, New Mexico Public Regulation Commission | **Molly Sterkel**, California Public Utilities Commission, Director of Electric Supply, Planning and Costs in the Energy Division | **Stacey Burbure**, American Electric Power, Senior Vice President of Transmission Business Development and Joint Ventures | **Gillian Clegg**, Pacific Gas and Electric Company, Vice President of Energy Policy and Procurement | **Travis Kavulla**, NRG, Vice President of Regulatory Affairs

The final panel of the conference featured stakeholders from CAISO and SPP, the two FERC-jurisdictional RTOs without centralized capacity markets. Panelists included utility representatives, state regulators and industry experts, who discussed how these regions approach resource adequacy, accreditation methods, demand response, interconnection reform and long-term procurement.

Commissioner Chang opened the panel by asking how reliability metrics work outside of a central capacity market construct. Panelists described regional customization of such metrics due to the resource mix within a system, varying weather patterns across SPP and CAISO, and differences in system needs and procedures. SPP's representative explained that establishing a uniform accreditation model is impractical because the system is so geographically large, resources in the same category may operate with different load profiles and shapes in different areas.

CAISO's representative explained that CAISO places significant weight on the integrated resource planning process led by the California Public Utilities Commission (CPUC) in planning for new capital investment, so the purpose of the reliability metric is different in CAISO than elsewhere. He also noted that while marginal ELCC is becoming standard in other RTOs, CAISO has shifted to an hourly "slice-of-day" model using exceedance methods, which makes sense because it has experienced large increases in wind and solar resources. Panelists agreed that it would be difficult to reach agreement on the choice and use of metrics across states, explaining that these decisions can be difficult enough at an individual RTO level.

Panelists also discussed various models of resource adequacy that exclude capacity markets. For example, California mandates long-term contracting by all load-serving entities. Molly Sterkel of the CPUC stated that this policy has enabled substantial buildout (e.g., 25 GW of new resources since 2020) without a capacity market and that most load-serving entities have complied with the rules. SPP's construct relies upon the maintenance of a set planning reserve margin (15% as of 2024) and bilateral trading without a formal capacity auction. These requirements are enforced by deficiency penalties, which are assessed if load-serving entities fail to commit sufficient capacity to meet applicable requirements.

Panelists generally agreed that demand response is not being leveraged to its full potential. SPP's representative informed the Commission that it aims to file an updated accreditation methodology for demand response later this year and is currently working with stakeholders on a modernization plan. Travis Kavulla stated that demand response has been more successful in California, noting that CAISO and CPUC have numerous retail-level demand response and behind-the-meter initiatives. However, integration into the wholesale markets and the California resource adequacy program is difficult because of accreditation and performance uncertainty. Panelists highlighted the need for increased visibility and promotion of demand response programs, noting California's efforts to link demand response with storage and virtual power plants and the success of NRG's smart thermostat demand response program within the Electric Reliability Council of Texas, Inc. market.

The panelists briefly discussed interconnection queue issues, which were identified as a significant obstacle to resource adequacy in other RTO markets. Commissioner See asked SPP to elaborate on its nascent consolidated planning process reform, which would combine the interconnection process, transmission planning, and resource adequacy program. SPP's representative explained that the initiative was developed due to SPP's analysis of interconnection backlogs. Specifically, SPP found that generation developers often did not have the capital to fund the transmission upgrades necessary to build out the system. It concluded that an efficient way to mitigate this issue was by addressing it through a consolidated planning process. Under the current proposal, the cost of future transmission needs (based on a 20-year projection) is calculated and charged to developers as a pro-rated upfront entry fee with no further studies or waiting. SPP stated that this will make the queue more efficient while also ensuring that customers pay their fair share for upgrades.

Finally, panelists discussed the role of data centers and large load growth in the SPP and CAISO markets, debating whether it is possible to accommodate large load growth in a way that benefits other customers. Panelists viewed this as both an opportunity and a risk. Pacific Gas and Electric Company's representative, who noted that its service area includes Silicon Valley, agreed that data centers bring additional revenue and can lower rates by increasing fixed cost-sharing. But American Electric Power's representative was more cautions, noting that data centers also pose unique risk that must be balanced against utilities' responsibility to protect retail customers. Panelists indicated that they intend to develop special tariff provisions applicable to data center and large load customers to better manage risk.

If you have questions, please contact any Akin lawyer or advisor below:

Stephen Hug
shug@akingump.com
+1 202.887.4084

Emily Mallen
emallen@akingump.com
+1 202.887.4019

Ben Reiter
breiter@akingump.com
+1 202.887.4113

Sharmila Das
sdas@akingump.com
+1 212.872.8195