UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Grid Reliability and Resilience Pricing	)	Docket No. RM18-1-000

COMMENTS OF ADVANCED ENERGY MANAGEMENT ALLIANCE

REGARDING A NOTICE OF PROPOSED RULEMAKING ON GRID RELIABILITY AND RESILIENCE PRICING

Pursuant to 18 C.F.R. § 375.315(b)(2), Advanced Energy Management Alliance ("AEMA")[1] submits these comments regarding the Federal Energy Regulatory Commission ("Commission" or "FERC") Docket No. RM18-1-000, Grid Reliability and Resilience Pricing, Notice Inviting Comments.

AEMA is a trade association under Section 501(c)(6) of the Federal tax code whose members include national distributed energy resource companies and advanced energy management service and technology providers, including demand response ("DR") providers, as well as some of the nation's largest demand response and distributed energy resources. AEMA members support the beneficial incorporation of distributed energy resources ("DER" or "DERs"), including advanced energy management solutions into wholesale markets to achieve electricity cost savings for consumers, contribute to system reliability, and ensure balanced price formation. This filing represents the collective consensus of AEMA as an organization, although

[1] Advanced Energy Management Alliance website: http://aem-alliance.org.

it does not necessarily represent the individual positions of the full diversity of AEMA member companies.

I. Introduction

AEMA thanks the Commission for providing the well-organized and comprehensive list of questions on October 4, 2017. In recognizing the high volume of material the Commission will receive, rather than answer every question, AEMA has provided a brief summary of our position. The summary encompasses several questions asked by the Commission, and we have answered a handful of questions that warrant additional detail.

II. Executive Summary

In these summary comments, AEMA highlights the following four points:

1. **AEMA Opposes The Rule In The Notice Of Proposed Rulemaking ("NOPR")**. *AEMA opposes the proposal from the Department of Energy ("DOE") to provide cost-of-service treatment to coal and nuclear facilities located in ISOs/RTOs that have energy and capacity markets.* We do not believe the DOE has properly articulated the problem that must be solved, nor do we think cost of service treatment is the appropriate solution to any problem, however articulated. However, if FERC takes the DOE proposal as the beginning of a longer conversation on developing competitive market changes to accommodate various objectives given the changing nature of the portfolio of resources and their economic realities, then AEMA wishes to provide constructive solutions to FERC on a path forward.
2. **Recommended Next Steps**. The extreme nature of the action taken by the DOE and the serious economic and reliability implications of potential actions in response to the subject NOPR, justify addressing them with due diligence and stakeholder input, consistent with accepted FERC practice. *AEMA believes a new docket(s) should be opened to better define the problem at hand. FERC should develop a record of the*

drivers, potential solutions, and metrics for cost-benefit analysis. Finally, FERC should allow for and encourage regional variation and distinct solution development processes.

3. **Define The Problem That Needs Solving.** FERC must take the concerns articulated by the DOE and better identify the root of the problem to be solved. The DOE has framed the problem as increasing resilience, however resilience is a goal not an attribute. Others define the problem as the need to better value and compensate in the energy and ancillary service markets for certain physical attributes provided by resources. FERC should set the matters for discussions and resolution by the RTOs with their stakeholders, exploring proper problem definition before there can be resolutions. It will then be incumbent to procure any new products competitively and in fuel-neutral, technology-neutral manners, not through cost-of-service for pre-determined technologies. *The physical attributes needed for resilience will vary depending on circumstances and geography. The Commission must first build a record of this and what the resiliency goals of each system are in order to develop definitions, characteristics, products and compensation mechanisms that solve for those problems*.
4. **Demand Response ("DR") And Distributed Energy Resources ("DER") Are Highly Resilient Resources and Should be Eligible to Deliver Solutions**. Regardless of the next steps taken by FERC in this NOPR, AEMA believes it important for the record to reflect that *DR and DER have repeatedly proven their ability to strengthen grid resilience, including during recent hurricanes.* DR and DER should be eligible to deliver any future resilience or reliability product.

Importantly, *FERC should not view potential retirements from uneconomic coal and nuclear units as the problem to solve*. If the grid truly needs an attribute that the market is not valuing or pricing, and coal and nuclear resources can provide those attributes on a more competitive basis than other resources, market forces will improve the economics of those plants.

Given that FERC's mission is to "Assist consumers in obtaining reliable, efficient and sustainable energy services at a reasonable cost through appropriate regulatory and market

means,"[2] AEMA supports FERC seeking solutions that achieve that mission.

III. AEMA Opposes The Department Of Energy Proposal

The DOE proposal, if implemented as proposed, would undermine competitive wholesale markets that have delivered reliability and billions of dollars in benefits to customers.

Cost-of-service treatment is incompatible with competitive markets, as no merchant resource, whether DR or gas, could compete against coal and nuclear plants that are guaranteed cost recovery. Non-nuclear and non-coal energy companies would stop investing in developing new projects and maintaining existing resources. The exodus of such resources would threaten reliability and increase costs. The proposal would stymie the innovative spirit that makes America great; why would a coal or nuclear plant owner try to innovate and be more efficient with their operations if they know they can recover all their costs? Why would other resource types be motivated to develop new technologies if there is no competitive market for monetizing those resources? Moreover, as we detail in the next section, giving cost-of-service to coal and nuclear facilities would not achieve the objective of a more resilient grid.

Despite our opposition to the DOE proposal, we are eager to collaborate with the Commission on addressing concerns and developing common-sense solutions.

IV. Recommended Next Steps

AEMA recognizes that the Commission has an important decision in front of it. The extremity of the action taken by the DOE, and the infrequency of the exercise of this power, signify the gravity of the circumstances and the concerns of those who sought it. When coupled with the magnitude of economic and reliability implications of potential actions in response to the subject NOPR, this justifies continuing to address the matter. However, as previously stated, AEMA does not believe that the DOE properly defined a problem that must be solved. This crucial step must not be dismissed, and must be the first next step in any of the procedural options available to the Commission.

[2] FERC Mission: https://www.ferc.gov/about/strat-docs/strat-plan.asp

In defining the problem to be solved the Commission must allow a record to be developed on the definition of resiliency on a regional level. One option is for resiliency to be defined in terms of probability of a defined contingency and the probability of recovery from the contingency within a given amount of time. Contingencies may vary across regions. The time line for recovery may also vary relative to the cost and benefits associated with recovery identified in that region.

As stated above, resiliency is a goal, not an attribute, and the best means of accomplishing the optimal level of resiliency can best be identified on a regional level. The grid services and resource attributes that make the greatest contribution to improving resiliency in the electric grid will vary greatly from region to region. Moreover, the kinds of resources and attributes available and therefore necessary to maintain a resilient system in certain physical circumstances will vary greatly from system to system, geography to geography.

In these regional considerations, it is important for thorough records to be developed on important details such as co-location with load and the ability to serve load when transmission and/or distribution service is not available. Additional items would include, but not be limited to, islanding and the ability to serve additional load when some portion of transmission or distribution service is not available, and the need and importance of fuel sources requiring no transportation.

Finally, once the matter of problem definition is properly established, the Commission must approve competitive RTO/ISO revenue streams that incentivize these and other important grid services and resource attributes that contribute to reliability and resiliency.

V. Defining the Problem that Needs to be Solved

AEMA recognizes the Commission has been presented with multiple perspectives on the resiliency problem to be solved. AEMA believes the problem is that ISOs/RTOs have not historically procured for resilience, and the grid may have limited capability to withstand and bounce back from extraordinary circumstances, such as a hurricane or a terrorist attack. Markets may not be sending appropriate price signals to resource owners to invest in the ability to

continue operations during such extraordinary circumstances, given the value of electricity during these times.

If FERC agrees that resilience is the problem to solve, then it should collaborate with stakeholders to define and design a resilience product. AEMA's suggested starting point to define a resilience product is a resource that can provide energy or ancillary services during an extraordinary circumstance that disables critical grid infrastructure, such as a hurricane, a terrorist attack, or a historic heat wave or cold snap. FERC could work with NERC to determine an appropriate trigger for when the resilience product would be delivered.

Since any resource that qualifies to participate in wholesale markets is capable of providing energy or ancillary services, the product should be open to all resources on a fuel-neutral, technology-neutral basis. *Having a 90-day fuel supply should not be a pre-requisite for delivering the product*, as the supply is useless if coal piles freeze as they did during the Polar Vortex, flood as they did during Hurricane Harvey, or if nuclear plants have to shut down due to flooding as they did during Hurricane Sandy. Neither coal nor nuclear generation would be deliverable to a mission-critical facility if transmission lines were down. While coal and nuclear may be able to help the grid bounce back from an extraordinary event, another resource whether it be wind, DR, or gas could be just as if not more useful, depending on the circumstance.

We live in an unpredictable world, and there is no way of knowing exactly what resources will be able to solve an unforeseen grid disturbance. However, having a diverse set of resources whose performance may not correlate is far more prudent than assuming that only coal and nuclear units would be available to perform. Therefore, providing cost-of-service to coal and nuclear units is not the solution to the resilience problem.

FERC will undoubtedly hear that there are different problems to solve from other stakeholders. AEMA is aware that other stakeholders may pose the problem as properly valuing and compensating resource attributes that are critical to reliability that markets are not currently pricing. While this might be a valid problem to solve and may in fact have some relationship to the problem at hand, the topic of resiliency is much broader and requires thorough review. . A

unit with desirable everyday reliability attributes, such as ramping flexibility, may not be able to perform during an extraordinary circumstance. If FERC agrees with stakeholders that this is a problem, FERC should pursue a fuel-neutral, technology-neutral approach through competitive market constructs--not cost-of-service. Once again, cost-of-service treatment for certain technologies will not solve this problem.

VI. Demand Response and Distributed Energy Resources Are Capable and Should Qualify to Provide any Reliability or Resilience Product

The Department of Energy Notice of Proposed Rulemaking highlights several extreme weather events to illustrate the importance of a resilient grid and the value of coal and nuclear. However, the memo fails to capture the role that DR and DER played in helping the grid withstand and function during these periods.

AEMA provides the following three examples to demonstrate that DR/DER should qualify for any reliability or resilience product:

- PJM credited DR with helping the grid withstand the Polar Vortex, stating: "Although demand response is usually only needed by grid operators in the summer, operators also successfully deployed it during the power emergencies occasioned by the bitter cold 'Polar Vortex' weather in January 2014. As PJM set multiple winter peak records early that month, it called on demand response, and received more megawatts as load reductions than it could obtain as generation from all but the very largest generating stations. . . . In the midst of those challenging conditions, demand response—responding to PJM's dispatch as a wholesale market resource—helped maintain the reliability of the system."[3]

- After Hurricane Irma, DR helped maintain balance between supply and demand to stabilize the Florida electric grid. As thousands of customers were rapidly having their power restored, demand threatened to outpace supply due to generation outages from the storm. If nothing was done, and demand was higher than supply, a blackout

[3] (Petition For Rehearing En Banc Of PJM Interconnection, L.L.C., Electric Power Supply Ass'n v. FERC at 10-11, No. 11-1486 (D.C. Cir. July 7, 2014).

may have been caused when people had already been without power for an extensive period due to the Hurricane. Fortunately, Tampa Electric Company (TECO) had the foresight to contract for a diverse set of resources, and dispatched DR. In this case, DR provided grid resilience, allowing the grid to bounce back from a major disturbance.

- In another recent example, Hurricane Harvey unleashed 33 trillion gallons of rainwater along the Gulf of Mexico and caused a range of energy impacts, including coal-to-gas switching as coal piles were too wet for conveyer systems to handle. However, the Texas Medical Center - the largest medical center in the world – was able to sustain its air conditioning, refrigeration, heating, sterilization, laundry, and hot water needs throughout the storm thanks to a combined heat and power (CHP) installation operated by Thermal Energy Corp (TECO). The 48MW CHP system operated without interruption during the storm.

- ISOs recognize that DERs can enhance system resilience. The NYISO, in their 2017 DER Roadmap, states: "DER can help grid operators by *improving system resilience* [emphasis added], energy security, and fuel diversity. DER can lower consumer prices, improve market efficiency, and allow consumers to take greater control of their electricity use and costs through a variety of new technologies."[4]

In addition to periods of extreme weather, DER and DR can provide grid services that can fill in for plants that are set for closure, as AEMA testified to in the Indian Point case in New York, concluding that "reliability, efficiency, consumer engagement, shorter timeline, and emission profile of DERs can provide cost-effective replacements while growing jobs and stimulating the economy." [5]

VI. Responses to FERC Questions

[4] Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets, A Report by the New York Independent System Operator, January 2017, Page 4. http://www.nyiso.com/public/webdocs/markets_operations/market_data/demand_response/Distributed_Energy_Resources/Distributed_Energy_Resources_Roadmap.pdf

[5] Testimony submitted February 28, 2017, page 8. http://aem-alliance.org/download/120935/

In response to "Need for Reform, Question #1", first, AEMA supports the NERC definition of resilience: "Infrastructure resilience is the ability to reduce the magnitude and/or duration of disruptive events. The effectiveness of a resilient infrastructure or enterprise depends upon its ability to anticipate, absorb, adapt to, and/or rapidly recover from a potentially disruptive event." Wholesale markets procure for reliability (one day in 10 years Loss of Load Probability), but not resiliency. There is neither a standard for resiliency nor an incremental value associated with resiliency in wholesale markets. Any resource that currently participates in wholesale markets could be capable of providing reliability and resiliency, but depending on the event that creates the need for resiliency, certain resources may be unavailable. Because of the unpredictability of grid disturbances, FERC should seek a variety of attributes to be met by different resources in order to ensure resiliency, including resources being located close to load, not relying on pipelines to provide electricity, etc. AEMA is not opposed to competitive market solutions to strengthen resiliency, but this should be done in a fuel-neutral, region-specific manner. Each region is vulnerable to different potential disturbances, and so a one-size-fits-all approach is imprudent.

In response to "Need for Reform, Question #2", AEMA does not see the Polar Vortex as evidence for the proposed DOE reform. It did not require "resilience" in the sense of restoring the grid to an operating state. Nor could the Polar Vortex be characterized as a disruptive event; there were not widespread outages, nor would there have been more than limited, rotating blackouts consistent with FERC's one day in ten years LOLE. It was, instead, a potential reliability event. It was extreme, but it was also not unexpected in the sense that it was anticipated by load forecasts and weather probabilities. There were, however two elements that were not anticipated. One was the degree to which electricity and heating demand stretched gas delivery capability. This element was aggravated by a mismatch of electric industry and gas industry scheduling practices – practices that both industries have taken significant steps to resolve.

The second element was the high rate of forced outages for fossil fired generation related to the effect of cold temperatures on station equipment. In PJM and other regions significant steps have been taken to address both of these issues in overall market design. In PJM, a number

of winter readiness criteria were established and generator owners were encouraged to voluntarily meet them. The success of this low cost effort was evidenced in the winter of 2014-15 when conditions similar to the Polar Vortex arose without mishap and without the extensive generator outages evident in the prior year. PJM took an additional, significant step to improve generator performance. During the Polar Vortex, despite massive outage rates, generators were subject to performance penalties of less than $100,000 – for the entire fleet of generators. This suggests that the performance requirements for generators were not adequate. PJM undertook further steps via a substantial redesign of its markets for which a key change was more focused penalty provisions for performance failures. An additional change to market structure opened the door much higher market prices with the potential to provide added revenue to pay for increased availability of resources.

It is worth noting that coal plants were also subject to increased forced outages related to cold during the Polar Vortex. According to PJM, nearly 20% of coal plants were on Forced Outage during a peak load hour on January 7, 2014. This suggests that on site fuel storage is not a panacea for very cold weather.

In response to "Eligibility, General Eligibility Question # 3", AEMA believes that a key consideration of the proposed rule is the presumed contribution to reliability. In the proposed rule, it is presumed that on-site fuel capability offers a contribution to reliability that is worth substantial consumer support for a broad subset of generation. The measure of improvement is not demonstrated or claimed in spite of the fact that reliability metrics are well established. The NOPR refers to a characteristic called resilience, which can be viewed as related to reliability concerns that consider elements beyond the standards of weather, load forecasts, and resources.

The Polar Vortex, for example, created a focus on the impact of weather on resources rather than the classis consideration of load. RTOs have responded to the concerns brought forth by the Polar Vortex. In a very real sense, the Polar Vortex would not have led to a severe system impact had resources not been available to meet demand. If supply had fallen short, some loads would have been involuntarily disconnected for an hour or two at a time via rotating blackouts – overall, no worse than a severe summer storm.

If the ability to have the equivalent of on-site fuel were the criterion, then sites with sufficient oil or gas storage would also meet the requirement. Demand Response would also

meet the requirement. In theory, some Distributed Energy Resources might also be able to store the equivalent fuel on-site. Some renewables, including wind and solar might be considered to have "on-site" fuel. Many DERs have other value including the ability to operate as a microgrid without reliance on the transmission grid.

To the extent that resilience incorporates the ability to resist or recover from one-off events such as hurricanes, wildfires, cyber attacks, terrorists, and earthquakes, to name a few, such distributed resources are less vulnerable to cyber or terrorist attacks can assist in restoration of systems due to their local nature.

In response to the question of "Other, Question #3", it appears that the key goal of the proposed rule is "to issue a final rule requiring its organized markets to develop and implement market rules that accurately price generation resources necessary to maintain the reliability and resilience of our Nation's bulk power system."[6] While there are well-understood measurements and standards for reliability, there are neither measurements nor standards for resilience. As a result, AEMA recommends starting with a definition of resiliency.

As stated, the DOE NOPR relies extensively on the Polar Vortex, which was primarily a reliability event. The DOE proposed rule would not have prevented the event because there was no disruption. It is not apparent that extensive on-site fuel storage would have prevented large-scale disruptions even if conditions had been more severe. Moreover, the DOE NOPR fails to note the extensive enhancements that various RTOs have made to their reliability markets in response to that event. These changes are intended to accurately price resources necessary for reliability.

VII. Conclusion

In conclusion, AEMA reiterates that, while we remain opposed to the premise of the NOPR, we want to provide constructive feedback and resources for the record, ensuring that DER and DR are properly valued as participants in any scenario where a goal of resilience is

[6] DOE NOPR, Page 11, https://www.federalregister.gov/documents/2017/10/10/2017-21396/grid-resilience-pricing-rule

added to a competitive markets construct. We appreciate FERC consideration of these comments and we remain ready to engage in these conversations in whichever direction the Commission takes them. Please reach out should the Commission have any questions or comments regarding this filing.

Respectfully Submitted,

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