THE ESSENTIAL ROLE OF STATE ENGAGEMENT IN DEMAND RESPONSE

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INTRODUCTION

In writing the majority opinion for the United States Supreme Court in *Federal Energy Regulatory Commission v. Electric Power Supply Ass'n* ("*EPSA*"),[1] Justice Elena Kagan reaffirmed "cooperative federalism" as an essential mechanism for competitive electricity markets in the 21st century.[2] With technological advancements providing opportunities for cleaner and less costly electricity production and use, there is no bright line preventing state utility commissions and the Federal Energy Regulatory Commission ("FERC") from working in concert to advance a more efficient electricity system.

As Justice Kagan explained, "The [Federal Power] Act makes federal and state powers 'complementary' and 'comprehensive,'" so that "there [will] be no 'gaps' for private interests to subvert the public welfare."[3] However, she also recognized that the statutory divisions of power between FERC and states generate "a steady flow of jurisdictional disputes because—in point of fact if not of law—the wholesale and retail markets in electricity are inextricably linked."[4]

The *EPSA* decision is a defining moment in evolution of competitive electric markets. It reinforces FERC's authority to ensure that any reliance on markets as a substitute for traditional cost-of-service regulation should employ market designs that promote greater participation in the wholesale marketplace, regardless of whether the participation takes the form of electricity production or alternatively, a practice like demand response ("DR"). As the decision illustrates, DR is a product that can provide value in both capacity and energy markets, and at both the wholesale and retail levels. It can bolster reliability and lower costs for consumers. While FERC Order 745 specifically

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[1] 136 S. Ct. 760 (2016).

[2] *Id.* at 780.

[3] *Id.* (citing Fed. Power Comm'n. v. La. Power & Light Co., 406 U.S. 621, 631).

[4] *Id.* at 766.

addressed the role and compensation of DR in wholesale energy markets,[5] it had significant implications for capacity markets.[6] To understand the impact of the *EPSA* decision, one must consider DR's origin and the role it has played in serving consumers.

I. WHY IS DEMAND RESPONSE SO SIGNIFICANT?

Understanding the physical characteristics of electricity helps to explain DR's origin in the electric industry. Electricity is unlike any other commodity; electrical energy travels at rates approaching the speed of light and its production must closely match consumer demand, which is constantly changing from moment to moment. As a result, the interconnected system of high-voltage power lines requires near instantaneous balancing of supply and demand, or else the voltage of the system can collapse and not only cause blackouts, but also do damage to generators and to consumers' energy-using equipment. DR resources are "dispatchable" and controllable resources, whereby consumers agree to reduce their demand when needed in exchange for compensation. Given the potentially dire consequences of a supply shortage during periods of high demand, it is easy to understand the strategic value of decreasing demand deliberately in order to maintain reliability.[7]

In ISO New England, DR came into existence in an effort to provide short term solutions to serious reliability problems in the southwest Connecticut region, where load was high, generation was inadequate, and transmission solutions remained years away.[8] In December 2003, ISO New England conducted a competitive solicitation to find solutions, and the most cost-effective and reliable solutions were DR resources. The performance of the DR resources, coupled with ISO New England's growing confidence in using DR for addressing reliability challenges, marked the birth of large-scale DR in New England.

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[5] *See generally* Demand Response Compensation in Organized Wholesale Energy Markets, Order No. 745, 134 FERC ¶ 61,187 (Mar. 15, 2011).

[6] *See* Amended Complaint of FirstEnergy Service at 9–10, FirstEnergy Serv. Co. v. PJM Interconnection, LLC (FERC 2011) (No. EL14-55-000).

[7] *See* Order Conditionally Accepting Changes to NEPOOL Market Rule 1, 106 FERC ¶ 61,190 (Feb. 27, 2004); Letter from David T. Doot, Counsel, New England Power Pool to Magalie Roman Salas, Secretary, FERC (Dec. 23, 2003), https://perma.cc/CNM7-P6FP.

[8] *See* Order Conditionally Accepting Changes to NEPOOL Market Rule 1, 106 FERC ¶ 61,190 (Feb. 27, 2004); Letter from David T. Doot, Counsel, New England Power Pool to Magalie Roman Salas, Secetary, FERC (Dec. 23, 2003), https://perma.cc/CNM7-P6FP.

Today, DR competes for market share as a capacity resource in ISO New England's Forward Capacity Market and in PJM's Reliability Pricing Model capacity market. Both capacity markets procure resources three years in advance of deployment. DR resources receive capacity market payments during a designated capacity year because they are available to be reduced and can be used as a control room resource. If they are called to perform, the DR resources must reduce demand commensurate with the amounts cleared in the market. As a capacity resource, the number of hours a year that DR resources are activated has been few, but their operational value is significant. DR allows system operators to quickly replenish reserves to maintain system reliability and avoid North American Electric Reliability Corporation ("NERC") violations, and in direr situations, can assist in preventing blackouts. DR has proven to be an effective resource in maintaining system reliability.

II. ACTION AT THE STATES

The Supreme Court's affirmation of DR in wholesale markets highlights the importance of effective and nimble regulation at both the state and federal levels. State commissions set retail rates, adjudicate consumer complaints, and hold distribution utilities accountable if the lights go out and remain out for too long. DR is a critical tool in our regulatory toolbox to protect the public interest. The D.C. Circuit's ruling[9] vacating FERC Order 745 threatened to disable this tool, with serious implications for consumers as well as DR suppliers. While PJM and the PJM Market Monitor proposed alternative "demand-side" options that may have allowed a continued role for DR in the wholesale markets, it would have required additional action by states and load-serving entities and there was no certainty that this approach would work as effectively as maintaining DR on the supply side.[10]

In the post-*EPSA* world, there is no longer any lingering uncertainty about the dual rights of FERC and the states to continue to develop policies that encourage DR. At the retail level, many states are pursuing policies that leverage wholesale markets to optimize the societal value of DR. For instance, in Maryland, the Public Service Commission ("MDPSC") approved utility DR offerings as part of its EmPOWER program, seeking to achieve a fifteen

[9] EPSA v. FERC, 753 F.3d 216 (D.C. Cir. 2014).

[10] Order Rejecting Tariff Revisions 150 FERC ¶ 61,251 para. 32 (2015) ("Moreover, we are concerned that PJM's proposal introduces uncertainties that may exceed those it seeks to avoid, particularly with respect to potential unanticipated spillover effects on state programs and private sector arrangements. We find that, on balance, PJM's filing is premature and therefore reject it.").

percent reduction in demand between 2008 and 2015.[11] Since 2009, Maryland utilities collectively achieved 1,743 MW of demand reduction through EmPOWER programs, serving to offset critical summer and winter peak loads.[12]

Maryland authorizes its state-regulated utilities to sell aggregated DR commitments into FERC-regulated wholesale markets and use the proceeds to help finance incentives for participating customers. Had the D.C. Circuit decision stood, a considerable amount of DR resources would have been at risk, reducing the revenues earned from the PJM capacity market.[13] Those revenues annually defray up to $66.5 million in costs, covering twenty-eight percent of the program costs.[14] The *EPSA* decision enables Maryland to continue to maximize the positive economic and societal effects of its DR programs by participating in the wholesale markets.

Maryland utilities have used their EmPOWER DR programs to improve reliability during peak use times, with DR playing a critical role in the PJM market during the "Polar Vortex" of 2014. On January 21, 2014, BGE and Pepco service territories lost 1,783 MW of generation capacity.[15] On the next day, PJM called and received ninety-eight percent of the expected DR resources in those service territories.[16] Through this cooperative funding and regulatory mechanism, Maryland, PJM, and FERC protected and advanced the public interest.

Rhode Island is harnessing DR to complement local efforts aimed at deferring distribution upgrades and eliminating local constraints. The Rhode Island Commission approved National Grid's 2015–2017 Energy Efficiency and System Reliability Procurement Plan, under which National Grid will further incorporate "non-wires alternatives" including DR in its transmission and distribution planning process. A pilot is testing whether DR can help

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[11] PUB. SERV. COMM'NS OF MD., THE EMPOWER MARYLAND ENERGY EFFICIENCY ACT STANDARD REPORT OF 2014, 1 (2014) (noting the EmPOWER Maryland Act's declared a state goal of achieving a 15% reduction of both per capita energy consumption and per capita peak demand by 2015).

[12] In the Matter of Potomac Edison Co., 323 P.U.R.4th 239 (2015).

[13] Brief for Guarini Center on Environmental, Energy and Land Use Law at New York University School of Law as Amicus Curiae Supporting Petitioners, FERC v. EPSA, 136 S.Ct. 760 (2015) (Nos. 14-840, 14-841) (citing Letter from Martin O'Malley, Governor of Maryland, to Jon Wellinghoff, Chairman, FERC Docket No. RM10-17-000 (May 12, 2010)).

[14] Protest of Md. Pub. Serv. Comm'n at 4, FERC Docket No. ER15-852-000 (Feb. 13, 2015).

[15] PJM INTERCONNECTION, ANALYSIS OF OPERATION EVENTS AND MARKET IMPACTS DURING THE JANUARY 2014 COLD WEATHER EVENTS 35 (2014).

[16] *Id.* at 38 (Figure 25).

manage local distribution capacity requirements during peak periods.[17] DR can increase the cost-effectiveness of those programs, while reducing long term peak demand.

Post-*EPSA*, states have a range of options to further DR's growth. Where deployed, smart meters can enable customers to monitor their time of electricity use and change their usage patterns, particularly in response to real-time price signals. Maryland authorized smart meter deployments for four utilities beginning in 2010.[18] FERC noted in its December 2015 Demand Response & Advanced Metering Staff Report that "8.7 million advanced meters were installed and operational between 2012 and 2013, resulting in advanced meters representing almost 38 percent of all meters in the United States."[19] With growing access to data about electricity usage, data analytics offer the potential to spur more DR at both the retail and wholesale levels.

Except for the largest customers, however, barriers to robust DR participation still exist. Where smart meters have been deployed, there is often resistance to employing dynamic pricing at the retail level. Wholesale prices emanating from energy markets that fluctuate day-to-day and hour-by-hour are not usually synchronous with the rates set by state regulators, which for many customers are fixed for long intervals (typically six months) in order to promote rate stability. Dampened price signals make it harder to promote load reductions that could be monetized at either the retail or the wholesale level. However, these barriers would have stood higher had the Supreme Court ruled against the ability for DR to be sold as a resource into wholesale markets.

III. CONTINUING DR CHALLENGES CALL FOR COOPERATIVE ACTION

Notwithstanding the *EPSA* decision, DR is facing headwinds at the wholesale level due to capacity market rule changes that were approved by FERC in 2015.[20] The New England region suffered tremendous price volatility during the winters of 2013–14 when natural gas pipeline capacity into the

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[17] FERC ASSESSMENT OF DEMAND RESPONSE & ADVANCED METERING STAFF REPORT 27 (2015) (citing
Rhode Island Public Utility Commission, In Re: The Narragansett Electric Company d/b/a National Grid's 2015-2017 Energy Efficiency and System Reliability Procurement Plan, Order No. 21781, Docket No. 4522 (Dec 19, 2014)).

[18] In the Matter of Baltimore Gas and Electric Company For Authorization To Deploy A Smart Grid Initiative And To Establish A Surcharge For The Recovery Of Cost, 283 P.U.R.4th 165 (2010).

[19] *See* FERC ASSESSMENT, *supra* note 17, at 1.

[20] PJM Interconnection, LLC et. al, Order on Proposed Tariff Revisions, 151 FERC ¶ 61,208 para. 22 (Jun. 9, 2015).

region was constrained[21] and gas-fired generators could not perform during peak demand periods, despite some resources presumably having received capacity payments in exchange for the obligation to perform when needed.[22] Electric energy costs increased approximately $3.8 billion across the region over the two-year period from 2012 to 2014.[23] This experience supported changes in the capacity market design called "Pay-for-Performance" in New England.[24] Similarly, the Polar Vortex gave rise to a PJM proposal called "Capacity Performance" ("CP") that adjusts the compensation of resources to reflect their overall availability throughout all hours of the year, rather than just their seasonal capability.[25]

Under the New England market rule changes, which take effect in 2018, all market participants will need to monitor system conditions and make every effort to perform by providing energy or reserves whenever scarcity conditions arise. Otherwise, their capacity market compensation will be clawed back and reallocated to those resources that performed when needed.[26] Similarly, PJM's CP mechanism defines capacity as an annual concept and penalties can be assessed for nonperformance during any hour of the year.[27] Since a significant portion of DR relies on controlling cooling load, those types of loads cannot perform well outside of the summer. By 2020 when CP is fully implemented, this could have serious implications for the quantity of DR offered into the capacity markets.

The market rules allow seasonal resources to form an aggregated offer so as to provide year-round capability but it is not yet clear how useful the aggrega-

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[21] *See generally* Press Release, ISO New England, 2013 Wholesale Electricity Prices in New England Rose on Higher Natural Gas Price (Mar. 18, 2014), https://perma.cc/TH9G-H27X.

[22] In filing for its proposed Pay-for-Performance changes to the FCM, ISO-NE presented expert testimony documenting $647 million in Capacity Payments paid between June 2010 to November 2013 to a group of resources representing fifteen percent of the Net Installed Capacity requirement for the 2013/2014 commitment period. The resources provided, on average, only seventeen percent of their Capacity Supply Obligation during scarcity conditions during the period. The problem could have been mitigated, but unlikely eliminated, by the 2013/2014 Winter Reliability Program. *See* Testimony of Matthew White on Behalf of ISO New England, Inc. at 23–24, Order on Tariff Filing and Instituting Section 206 Proceeding, FERC Docket No. ER14-1050-000 (Jan. 17, 2014), https://perma.cc/E6ZK-9JVU.

[23] ISO NEW ENGLAND, 2016 REGIONAL ELECTRICITY OUTLOOK 22 (2016), https://perma.cc/B8FP-JLAS.

[24] *See* Letter from Maria Gulluni, Deputy General Counsel, ISO New England, Inc., & Eric K. Runge, New England Power Pool Participants Committee, to Kimberly D. Bose, Secretary, FERC (Feb. 29, 2016), https://perma.cc/B7CU-J34N.

[25] PJM INTERCONNECTION, PJM CAPACITY PERFORMANCE PROPOSAL 8–10 (2014).

[26] Letter from Jennifer Wolfson, Regulatory Counsel, ISO New England, Inc., to Kimberly D. Bose, Secretary, FERC (Nov. 3, 2014), https://perma.cc/W2HT-DTAY.

[27] PJM INTERCONNECTION, PJM CAPACITY PERFORMANCE PROPOSAl 26 (2014).

tion option will be. For example, the excess winter capability of an energy efficiency program consisting of lighting measures can combine with the summer capability of a DR program consisting of air conditioning control to provide an amount of capacity year-round. In New England's most recent Forward Capacity Market auction, a total of 2,746 MW of demand resources cleared as capacity resources. Of that amount, 371 MW were new resources.[28] Most of the existing and new resources comprise energy efficiency and other "passive demand resources," which can meet the assigned capacity obligation during all hours of the year.[29]

In approving PJM's CP proposal to phase out existing limited and extended summer DR programs and accept only annual commitments from DR providers, FERC noted that "the vast majority of Demand Resources are available to PJM during the summer peak season only, with Limited Demand Response available for 10 days and for a maximum of 6 hours a day."[30] The statement reflects the quandary that RTOs face with respect to market design. A capacity resource is needed whenever there is a shortage or scarcity condition, which can occur at different times of the day and year. Given the same economic availability, a year-round resource is more useful and valuable to the system than a limited resource because it has greater technical availability. However, we know from our experience with the Polar Vortex that DR with limited availability can be highly valuable as well.

Indeed, it was primarily the non-performance of traditional capacity resources during cold and warm weather operations—generators that were expected to be available year-round—that exposed the need for capacity market changes in New England and PJM.[31] Moreover, the U.S. Department of Energy reports multiple shutdowns, curtailments, and requests for special

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[28] *See generally* Press Release, ISO New England, Finalized Capacity Auction Results Confirm 10th FCA Procured Sufficient Resources, at a Lower Price, for 2019–2020 (Feb. 29, 2016), https://perma.cc/3DLD-EBRX.

[29] *See generally* Letter from Kevin Flynn, Senior Regulatory Counsel, ISO New England, Inc., to Kimberly D. Bose, Secretary, FERC (Feb. 29, 2016), https://perma.cc/MBS3-268E; Mariah Winkler, Supervisor, Technical Studies, ISO New England, Inc., Presentation at NEPOOL Reliability Committee Meeting: Forward Capacity Auction #10 (FCA #10) – 2019/2020 Capacity Commitment Period Results Summary & Trends 6 (Mar. 23, 2016), https://perma.cc/TXH8-RKLS.

[30] PJM Interconnection, LLC et. al, Order on Proposed Tariff Revisions, 151 FERC ¶ 61,208 para. 43 (Jun. 9, 2015).

[31] For example, ISO New England Whitepaper explains three concerns motivating the creation of forward capacity markets pay-for performance incentives. The second concern enumerated is the increasing reliance on natural gas-fired generation and the "just in time" nature of natural gas delivery, which can lead to operating day inadequacies. ISO NEW ENGLAND, FCM PERFORMANCE INCENTIVES 2 (2012), https://perma.cc/9ECB-X6QL.

operations due to over-warm cooling water temperatures, and notes such events could have an increased impact resulting from global climate change.[32] The recognized economic value of a capacity resource to the system does not account for environmental or societal costs and benefits that may align with other state and federal policies. The challenge facing the RTOs/ISOs and federal and state regulators is how to value DR accurately so it remains a market resource.

While FERC initially rejected arguments from states and consumer organizations about the importance of retaining DR as a capacity resource,[33] PJM is now supporting a "problem statement" which could lead to the establishment of two capacity products—a summer product and a winter product, which would allow summer load to get some value from winter load control as a capacity resource.[34] Environmental organizations and DR providers are urging FERC to reconsider its approval of the CP tariff and to facilitate a solution that will keep DR as an effective tool for improving reliability during summer and winter peak periods.[35]

While the *EPSA* decision confirms that DR can be compensated in the wholesale electric markets, there is still work to be done: DR providers can strive to become more available by improving their technical and economic capabilities and aggregating resources; and FERC, states, RTOs/ISOs and stakeholders can continue to refine the market design so that both active and passive demand resources receive compensation that fully reflects their value to the system.

CONCLUSION

Some may read Justice Kagan's opinion as an expansion of federal jurisdiction at the expense of state power, but we see it otherwise. As National Association of Regulatory Utility Commissioners President Travis Kavulla noted after the Court's decision, "the coordination of federal and state initiatives offers the best way to assure the full benefits of demand response are

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[32] *See* U.S. DEP'T OF ENERGY, U.S. ENERGY SECTOR VULNERABILITIES TO CLIMATE CHANGE AND EXTREME WEATHER 2 (2013), https://perma.cc/N3FR-FF9Q.

[33] PJM Interconnection, LLC v. PJM, LLC, Order on Proposed Tariff Revisions 151 FERC ¶ 61,208 para. 62 (June 9, 2015) ("Joint Consumers and Rockland argue that there are cost savings associated with these summer peaking resources and that a mix of resource types, including Limited Demand Response, Extended Summer Demand Response, and peaking generation resources, is appropriate to meet PJM's expected peak load service obligations.").

[34] PJM INTERCONNECTION, PJM CAPACITY PERFORMANCE PROPOSAL 8–15 (2014).

[35] Supplement to Rehearing Request of Public Interest Organizations at 2, FERC Docket No. ER15-623-000 (July 9, 2015).

delivered to customers."[36] Through cooperative regulation and policy, DR can continue to play a critical role in supporting the provision of affordable and reliable electricity through our evolving energy markets.

[36] Press Release, Nat'l Ass'n of Regulatory Util. Comm'rs, NARUC President Kavulla Reacts to High Court's Ruling in Landmark Demand-Response Case (Jan. 25, 2016).