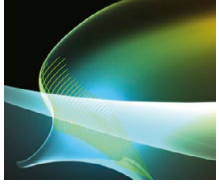
MRS Energy & Sustainability: A Review Journal
page 1 of 4
© Materials Research Society, 2019
doi:10.1557/mre.2019.9



PERSPECTIVE

Storage: Jurisdictional conflicts and state options

Nancy Lange, Chair of the Minnesota Public Utilities Commission, Minneapolis, Minnesota, USA

Ted Thomas, Chair of the Arkansas Public Service Commission, Little Rock, Arkansas, USA

Address all correspondence to Ted Thomas at tthomas@psc.state.ar.us

(Received 10 August 2018; accepted 2 May 2019)

ABSTRACT

State policymakers and regulators should consider how to respond to the emergence of new storage technologies while observing the regulatory and legal proceedings that will draw the line between state and federal jurisdiction over matters related to storage.

The emergence of new energy storage is challenging traditional jurisdictional lines and giving state policy makers new things to consider. This article discusses conflicts in jurisdiction and offers options for policy makers to consider with regard to storage technologies.

Keywords: storage; sustainability; environmentally protective

DISCUSSION POINTS

- Should states be allowed to decide whether electric storage resources in their state are permitted to participate in the Regional Transmission Organization (RTO)/Independent System Operator (ISO) markets through the electric storage resource participation model?
- Having clear information about the distribution system capabilities and deficiencies will enable identification of strategic use of a storage system.
- States that expect benefits from the Federal Energy Regulatory Commission (FERC) storage order should participate in the Midcontinent Independent System Operator (MISO) process so that functionality that assists storage deployment can be prioritized.
- Public Utilities Commissions are urged to begin updating their interconnection standards so that as penetration levels of distributed energy resources (DERs) grow, there are no unnecessary roadblocks created by outdated technical and policy requirements.

Jurisdiction

New technologies challenge the traditional state/federal jurisdictional divide, and storage is no exception. The Federal Power Act applies "to the transmission of electric energy in interstate commerce and to the sale of electric energy at wholesale in interstate commerce...."[1] A wholesale sale is a sale for resale. The Federal Energy Regulatory Commission (FERC) found that "the sale of electric energy from the grid that is used to charge electric storage resources for later resale into the energy or ancillary service markets constitutes a sale for resale."[2]

With exception to Hawaii, Alaska, and the ERCOT portion of Texas, the United States Supreme Court states that all sales of electricity are included in interstate commerce because "electricity that enters the grid immediately becomes part of a vast pool of energy that is constantly moving in interstate commerce."[3] This law was initially stated by the court in *Federal Power Comm. v. Florida Power & Light Co.*, 404 U.S. 453 (1972), in which the court upheld an FPC finding regarding the flow of electrons as part of interstate commerce, noting that the FPC (now FERC) finding depended on engineering and scientific considerations.

An alternative legal position and an alternative technical critique of FERC's view of its jurisdiction merit consideration. A legal challenge to FERC's view is presented in NARUC's request for rehearing of the FERC storage order. NARUC, citing the FERC storage order at P 35, seeks clarification because the storage order specifies that states will not be allowed to decide whether electric storage resources in their state that are located behind a retail meter or on the distribution system are permitted to participate in the RTO/ISO markets through the electric storage resource participation model. NARUC states, "This statement should be deleted from the Final Rule." NARUC urges to focus on how electric storage resources can participate in the wholesale markets and recognize that states have authority to

https://doi.org/10.1557/mre.2019.9 Published online by Cambridge University Press

determine whether electric storage resources participate in the RTO/ISO markets.

A technical challenge to the view that all electrons flowing on an interconnected system are in interstate commerce is presented in state jurisdiction over distributed generators. Lindh and Bone opine that sales of electricity are not in interstate commerce "to the extent such sales and deliveries occur on distribution circuits for local consumption."[4] The Supreme Court in *Federal Power Comm. v. Florida Power & Light Co.*, 404 U.S. 453 (1972) states that "If sensitive enough instruments were available and were to be placed throughout Florida's system, the increase in generation by every generator on Florida [Power & Light] could be precisely measured."[5] Lindh and Bone suggest making this measurement to demonstrate that DER generated electricity does not move in interstate commerce.[6]

FERC's view pushes federal jurisdiction into the distribution system when a sale for resale is made, thereby calling into question the traditional transmission/distribution jurisdictional divide. The ultimate question is whether the "bright line" separating federal and state jurisdiction referenced in *Fed. Power Comm'n v. S. Cal. Edison Co.*, 376 U.S. 205, 216 (1964) is a line between distribution and transmission, or is it a line between retail and wholesale? The resolution of this issue will determine whether FERC can mandate that distribution connected storage could participate in wholesale markets.

NARUC's position is that the courts will decide that the bright line is between distribution and transmission rather than wholesale and retail. In a request for posttechnical conference comments, FERC sought comment[7] on a limited opt-out of DER aggregation rules that would permit wholesale participation of DER assets without state consent but require state consent when a DER asset would receive revenue from both a retail tariff and wholesale market participation. NARUC rejected this possible middle ground on state/federal jurisdiction. The risk of this position was demonstrated a few weeks later when FERC rejected PJM's attempt to incorporate state policy mandates into wholesale markets on a 3–2 vote.[8] Weighing in on one side of jurisdictional questions that divide the FERC (such as limited opt-out) might be a superior strategy for NARUC than taking positions rejected by FERC 5–0, as NARUC is doing in seeking rehearing of the FERC storage order.

Unless FERC grants rehearing or is reversed in the courts or some enterprising engineers are able to prove that electrons actually stay on the distribution system, federal jurisdiction over distribution-connected storage facilities is a fact of life.

A final complication regarding jurisdiction relates to net-metering. FERC's assertion of jurisdiction with respect to distribution-level storage stands in contrast to FERC's hands-off approach to net-metering. In *Sun Edison, LLC*, 129 FERC ¶ 61,146, 9–11 (2009), FERC asserted the same rationale with respect to net-metering sales for resale, and FERC has yet to require a wholesale tariff for each net-metering customer. FERC asserting its jurisdiction into the distribution system by the storage order while maintaining a hands-off approach with respect to net-metering could prove to be a tricky balancing act.

Options for state regulators

Storage projects across the United States are being commissioned by utilities, energy customers, and aggregators to provide a source of peak capacity to meet state resource adequacy requirements, aid in integrating variable renewable energy resources, respond to the markets for frequency regulation in RTO/ISO markets, reduce grid congestion and defer transmission and distribution investment, increase reliability and resiliency, and assist customers in managing retail electric bills by shaping energy and demand consumption.

Despite the growth trajectory of advanced storage technologies and the multiple applications of these technologies, the Interstate Renewable Energy Council notes that "its deployment remains hampered by the current features of regional, state and federal regulatory frameworks, traditional utility planning and decision-making paradigms, electricity markets, and aspects of the technology itself."[9]

As of 2017, about 800 MW of advanced storage technologies have been deployed. While pumped hydropower storage projects account for the vast majority of installed energy storage in the United States, lithium-ion batteries have been the main storage technology built in the last several years.

State actions

As noted by IREC, the role of state policies crafted by state legislatures and/or Public Utility Commissions are a central driver to the deployment of advanced storage. This next section explores some ways in which states can support deployment of storage when it meets the needs of energy consumers and/or provides system-wide benefits for the electric grid.

State procurement targets

The most predominant state policy driver has been storage procurement goals. A handful of states, either through commission action or legislative directive, have set benchmarks for deployment, which are a direct stimulus for connecting storage to the grid. These first deployment goals also serve an important purpose beyond these states' borders. All states are learning how storage technologies perform as part of the electric grid, including the capital and operation costs of storage and the wholesale market participation.

California established a 2020 storage goal of 1.3 GW of storage and 500 MW of behind the meter storage, and recent integrated resource plans indicate an additional 2000 MW may be needed. New York recently announced a goal of 1.5 GW by 2025, while Massachusetts set a goal of 200 MW h by 2020. Oregon's legislature set a 5 MWh per utility mandate by 2020 and a 1% of 2014 peak load target by 2020. The Nevada Legislature directed the Nevada PUC to investigate a storage target. Arizona has proposed a 3 GW target.

https://doi.org/10.1557/mre.2019.9 Published online by Cambridge University Press

Integrated resource plans and pilot/demonstration projects

While not part of a procurement directive, many other states are requiring, funding, or considering storage proposals from utilities. Some of these projects are brought forward through integrated resource plans and pilot projects. For example, the Washington PUC recently directed that future IRPs consider storage as one resource option for meeting customer and system needs. Commissions in Oregon, Hawaii, and Missouri have also required further study of storage in IRPs, taking into account multiple value streams.

The challenge for Commissions in evaluating any storage resource addition is how to evaluate the cost effectiveness of a technology that can serve many different functions. There is not yet a well-defined and accepted methodology for valuing storage's transmission and distribution and customer level benefits. As such, the National DOE laboratories, EPRI, consulting firms, and utilities are testing different ways to assess the value of storage.[10] In 2016, Xcel Energy brought forward a pilot project that paired solar and battery technologies to reduce load on feeders and transformers and defer a substation upgrade. The Commission did not approve the proposal at the time although it indicated in its order that the concept had merit, noting that "while battery storage could be part of a modernized grid, the company has not established that the Belle Plaine project (i) is necessary to modernize the grid and (ii) will bring one or more of the benefits listed in the statute."[11] Despite a lack of a well-defined methodology, some states and utilities are conducting analyses that can provide an economic justification for storage deployment, tailored to metrics and conditions particular to their own states. Falling prices for battery technologies can also give Commissions pause to approve an investment that could be significantly less expensive in the coming year.

Distribution system planning

As states explore grid modernization and its implications for the distribution system, some Commissions are requiring an evolving planning framework for utilities. Very broadly, these new distribution planning requirements direct utilities to illuminate the investments that are made to modernize the grid and the capabilities of those investments, the forecasted growth of DERs, including storage, how growth in DERs will be integrated at the distribution level, and whether these DERs may help to defer or avoid traditional grid investments. Following a grid modernization stakeholder proceeding, Minnesota is moving ahead to require the electric IOUs to file distribution plans that address the above elements. In the case of Xcel Energy, the Commission is also requiring hosting capacity analyses, what locations on the distribution system are accessible to interconnected DERs. While storage may be deployed as a transmission level asset, many applications for storage will be at the distribution level, offering services at customer sites and integrated distributed renewables. Having clear information about the distribution system capabilities and deficiencies will enable identification of strategic use of a storage system.

Interconnection standards

Several states are updating their interconnection standards so that DERs, including storage, can interconnect to the transmission and distribution grid in a fair and efficient manner. Updating these standards are a foundational element to supporting adoption of DERs. As such, Public Utilities Commissions would be well-served to begin these efforts so that as penetration levels of DERs grow, there are no unnecessary roadblocks created by outdated technical and policy requirements.

Connecting to RTO markets

Connecting DERs like storage to an RTO market would provide visibility to the system operator and regulators while providing a potential source of revenue to owners of DERs. Providing this visibility has been a focus of the Organization of MISO States DER initiative.

This kind of connection requires a uniform standard for solar and storage inverter communication capability as is contained in the new version IEEE 1547 standard, a distribution management system probably operated by the utility, possible aggregation of distributed resources to maximize the ability to manage market participation and a rate structure that permits the capture of value at both wholesale and retail level. Each of the steps is a significant undertaking, but the benefits of market-based integration of new distributed technologies into the power system would be significant.

Ancillary services

Ancillary services are functions that help grid operators maintain a reliable electricity system other than the primary services of capacity and energy. Ancillary services maintain the proper flow and direction of electricity, address temporary supply and demand imbalances, and help the system recover after a system outage. Regulation, spinning and non-spinning reserves, and black start regulation are examples of ancillary services. Some ancillary services can be procured through markets and others by contracts outside of market mechanisms.

For distributed energy recourses including storage to provide ancillary services, they have to connect to RTO markets as described above. It may be possible to capture the value of ancillary services for connected DERs from the RTO market while compensation for capacity and energy value by retail tariffs.

Distribution cost tariff

In its storage order, FERC recognized that storage connected to the distribution system but participating only in the wholesale markets would be contributing to load on the distribution system but not contributing to the distribution system revenue requirement. FERC found that "it may be appropriate, on a case-by-case basis, to assess a charge on electric storage resources similar to those assessed on the market participant."[12] FERC imposed no such charge but indicated it may be appropriate to do so. As stated above in the jurisdiction section, FERC would probably view an excessive charge as a "practice… affecting" wholesale rates.

https://doi.org/10.1557/mre.2019.9 Published online by Cambridge University Press

Engagement in MISO market system enhancement

MISO is in the process of updating and enhancing its market system. In comments regarding the FERC storage order, MISO raised questions regarding whether it would be able to upgrade the market system in the time permitted by FERC and ensure that the necessary upgrades meet minimum size requirements for participation in the RTO/ISO markets that does not exceed 100 kW. Stakeholders will have input regarding the new market system and the order in which new functions will be made available. States that expect benefits from the FERC storage order should participate in the MISO process so that functionality that assists storage deployment can be prioritized.

Doing nothing

Doing nothing can be a plan or even a strategy. Like other plans and strategies, doing nothing has risks. Tony Clark who has served on both the North Dakota Commission and on FERC describes that risk as follows: "DERs sit at the intersection of state and federal jurisdictional lines, and that line gets fuzzier as DERs have more of an impact on wholesale markets. Sooner or later, DERs issues will probably be heading to FERC, and the states would be well-served by having thought about how they want to frame these issues in ways that make sense for consumers, and the integrity of both retail and wholesale markets. Doing nothing risks FERC stepping in and filling the void without robust state input" (T. Clark, e-mail message, March 23, 2018).

REFERENCES:

1. Federal Power Act Section 201(b)(1).
2. Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, 162 FERC ¶ 61,127 at 143.
3. New York v. FERC, 535 U.S. 1, 7 (2002).
4. Lindh F. and Bone T.: State jurisdiction over distributed generators. *Energy Law J.* 34, 2 (2013).
5. Federal Power Comm. v. Florida Power & Light Co., 404 U.S. 453 (1972).
6. For a thorough discussion of this issue as well as other questions of jurisdiction, see The Double Struggle: Federal vs. State, Monopoly vs. Competition, seminar materials prepared by Scott Hempling (2016). Mr. Hempling's piece does not signal agreement or disagreement with Lindh; it is cited here for background.
7. FERC Docket No. RM18-9-000, Notice Inviting Post-Technical Conference Comments (April 27, 2018), Panel 2, question 6.
8. Calpine Corporation, et al. v. PJM Interconnection, LLC, 163 FERC ¶ 61,236 (2018).
9. Interstate Renewable Energy Council: *Charging Ahead: An Energy Storage Guide for Policymakers* (April, 2017).
10. Interstate Renewable Energy Council: *Charging Ahead: An Energy Storage Guide for Policymakers* (April, 2017); p. 13.
11. Minnesota Public Utilities Commission. Order in Docket M-15-962. June 28, 2016.
12. PJM Interconnection L.L.C., 149 FERC ¶ 61,185 at p. 12.

https://doi.org/10.1557/mre.2019.9 Published online by Cambridge University Press