BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion, to request comments on MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.'s implementation of Federal Energy Regulatory Commission Order No. 841 regarding energy storage resources.	)	Case No. U-21032

Introduction

The Michigan Energy Innovation Business Council (Michigan EIBC), Advanced Energy Economy (AEE), and Advanced Energy Management Alliance[1] (AEMA) appreciate the opportunity to provide comments in Docket No. U-21032 regarding the implementation of Federal Energy Regulatory Commission (FERC) Order No. 841. Michigan EIBC and AEE appreciate the Commission's leadership in exploring the benefits of energy storage resources and what will be needed to realize the full value these resources can offer to customers in Michigan. This inquiry is especially valuable now as Regional Transmission Organizations (RTOs) pursue compliance with FERC's Orders 841 and 2222, and states like Michigan prepare for the implementation of these new opportunities for distributed energy resources and energy storage. We provide below initial responses to the questions posed by the Commission in its April 8, 2021 *Order and Notice of Opportunity to Comment* (Order) in the above-referenced docket.

We support allowing dual participation of ESRs in both retail and wholesale markets, but recommend that the Commission also provide options other than dual participation to compensate energy storage resources (ESR)s for all of the value they provide to customers and

[1] Advanced Energy Management Alliance ("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 ("DERs") into wholesale markets for purposes of achieving electricity cost savings for consumers, contributing to system reliability, and ensuring balanced price formation. This filing represents the collective consensus of AEMA as an organization, although it does not necessarily represent the individual positions of the full diversity of AEMA member companies.

the grid. While some ESRs may find that direct participation in wholesale markets alongside participation in retail programs works well for them, others may prefer to participate solely in well-designed retail level programs that capture all of their value. This may frequently be the case in areas within MISO, where resource adequacy is primarily provided through vertically-integrated utilities, resulting in lower prices for capacity offered in the residual market. In these cases, a retail program that pays for capacity and other services at the utility's avoided cost may provide better value than offering the capacity into MISO directly. Dual participation may also incur higher administrative costs for integrating into RTO markets. Providing options for retail participation or well-designed retail level programs will allow each ESR to make a decision based on changing market dynamics and project specific conditions and will ultimately provide more opportunities for storage to be economically viable.

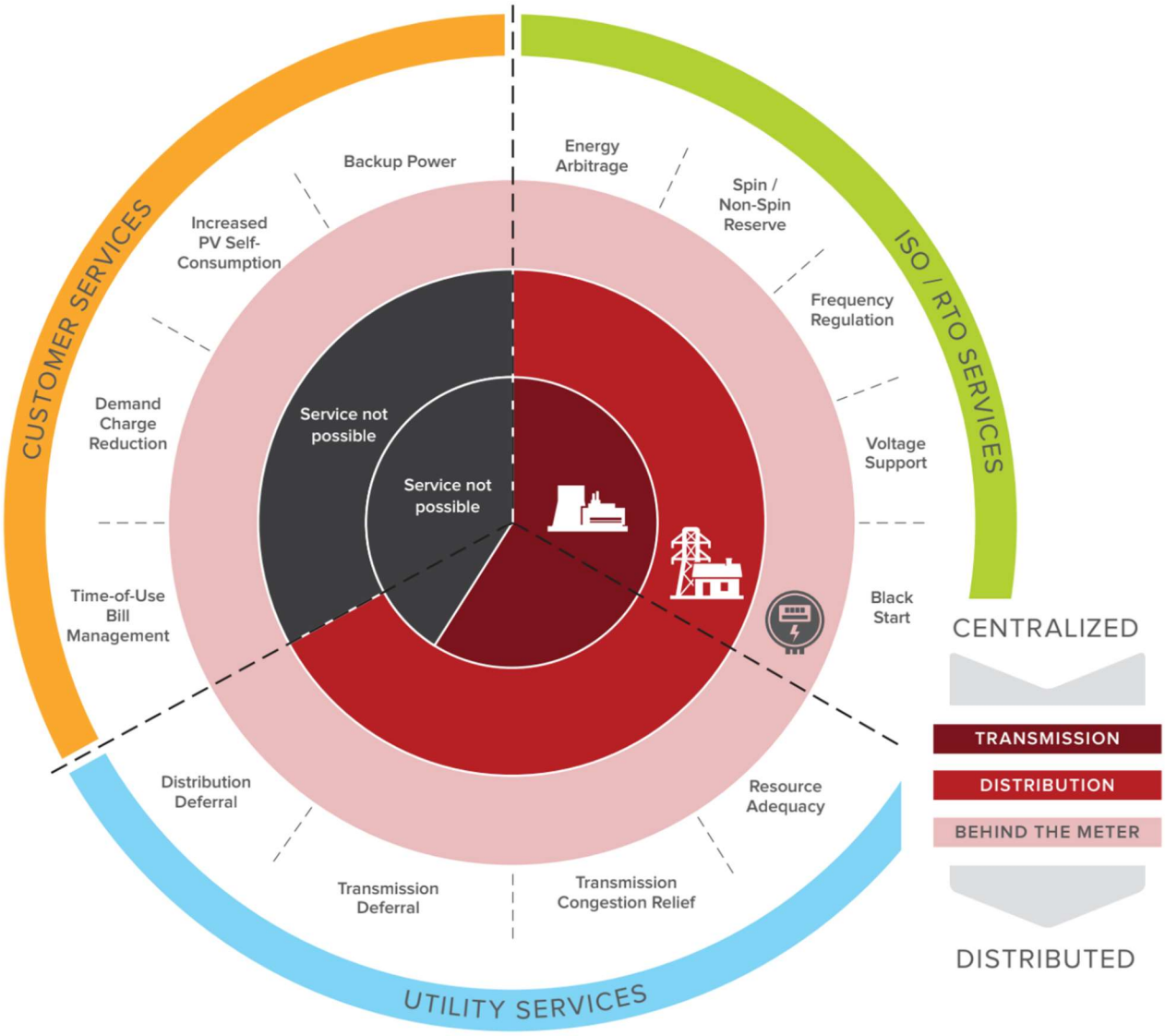
Comments

1. **Please describe the benefits that may accrue to the broader customer base from the addition of ESRs to Michigan's electric supply portfolio and any proposed methodologies to calculate those benefits.**

Energy storage is unique in the number of services and benefits it can provide across all aspects of the electricity grid (generation, transmission, distribution, and customers) and to all user channels (customers, utilities, and regional transmission operators). Storage is also unique in that it can serve as both a generator and a load, leading to its value as a load balancing/load management resource. These characteristics also enable storage to support the integration of greater amounts of variable renewable resources into the grid, which will be essential to meeting Governor Whitmer's greenhouse gas reduction goals and individual utility emission reduction goals.

The following graphic produced by the Rocky Mountain Institute (RMI) captures the scope of benefits and beneficiaries of battery storage technology.[2]

[2] Rocky Mountain Institute, The Economics of Battery Energy Storage, How Multi-Use, Customer-Sited Batteries Delivery the Most Services and Value to Customers and the Grid, pg. 5.



Notably, storage can provide additional benefits that are not captured in this graphic. Examples include peak shaving and demand response services that lower overall costs to procure energy; support for electric vehicle (EV) charging to enable managed charging; increasing distribution grid hosting capacity to support increased integration of distributed energy resources; capacity enhancements for renewable energy by smoothing variability; and a number of additional services, such as power factor correction, when coupled with a smart inverter.

Although this RMI report focuses on batteries, which are currently the most commonly used storage technology, the broad suite of services that may be offered by energy storage applies to

multiple technologies. Depending on the use case, needed service, and duration of storage required, one specific storage technology may be preferred over another. Further, as the inquiry in this docket acknowledges, a single storage resource is capable of providing multiple services across different elements of the electricity system value chain.

The key to unlocking the full value of energy storage is allowing a resource to be accurately compensated for all of the services it provides. Although identifying specific monetary benefits associated with each service in Michigan might currently be difficult, especially for third-parties lacking access to utility data, it is well-known that these monetary benefits are significant and quantifiable as storage assets provide a service not otherwise available (e.g., lower electricity costs via time-of-use rates) or provide an available service more efficiently (e.g., frequency regulation). Although not the topic of this docket, it is important to note that currently, only utilities have access to data to be able to quantify some of these specific benefits and determine whether, for a given use case, energy storage would be a more cost-effective solution than traditional "poles and wires" upgrades.

2. While the Commission may include conditions in retail tariffs that prohibit ESRs from simultaneously participating in the retail and wholesale markets (see, Order 841-A, ¶ 41; NARUC at 144), what other options are available to ensure ESRs are able to stack their full value?

a. What are the pros/cons of the following:

i. Prohibiting dual participation through retail tariff changes.

The downside of prohibiting dual participation is the potential limitation of benefits storage resources can provide to customers via both retail and wholesale market services. Direct participation in wholesale markets, for those participants who have the scale and capability to participate, may provide the best avenue for integrating the operation of storage and realizing wholesale value.[3] Preventing participation would constrain the economic opportunities for these

[3] Note that only a portion of MISO's system requirements are accessible in its Planning Resource Auction since Resource Adequacy is primarily provided through utility-owned assets. Therefore, the residual market is unlikely to fully value capacity contributions from storage, resulting in limited compensation.

ESRs, potentially inhibiting their ability to stack revenues from providing multiple benefits and holding back the development of this growing part of the industry. It is also likely that prohibiting dual participation would strongly advantage utility-built and/or utility-owned storage projects as those are the most likely to have access to the retail market and access to information necessary to develop these projects. Thus, the prohibition would likely decrease the economic value of storage given that customers benefit from each service that storage provides more efficiently or at a lower cost. Although it might appear simpler from the perspective of tariffs and interconnection rules to prohibit dual participation, doing so would force ESRs to choose between retail programs and wholesale revenues, reducing the economic opportunity for storage and resulting in resources that are underutilized.

An option that could be provided alongside and as an alternative to dual participation would be to offer utility tariffs that provide retail value (such as distribution deferral or reliability-related services) and pass through wholesale value in the form of the utility's avoided wholesale costs or aggregated market revenues.[4] This may help address several issues with the options discussed above. First, smaller projects could avoid the upfront integration costs of direct participation in PJM/MISO and their systems. Second, where some wholesale values are monetized through residual markets, such as MISO's Planning Resource Auction, avoided utility costs might provide a more complete valuation of the services that storage provides. And last, it would avoid a scenario where a resource participates exclusively in the wholesale market, and therefore forgoes an opportunity for storage to integrate with and support the distribution system.

An example of this type of option is Indiana Michigan Power Company's (I&M) demand response (DR) aggregation program for the PJM market. I&M works with third-party DR aggregators who solicit participating customers and structure a resource that I&M can bid into the PJM capacity market. At least some of the DR aggregators participating in this structure with I&M might not participate in the wholesale market directly. It is important to note that energy storage generally earns more revenue by providing capacity than by selling energy and ancillary

[4] In this case, since wholesale values are monetized within the distribution tariff, direct participation in the wholesale market could be prohibited to prevent "double dipping."

services. The lack of a robust capacity market in MISO would not support a structure like this as most capacity is procured outside of the market by utilities, so a utility avoided cost methodology would provide a more accurate valuation.

Ultimately, we believe that providing a choice of dual participation, participation in wholesale markets, or participation in retail tariffs that pass-through wholesale values, will reflect the diversity in scale and business models of Michigan's growing market for energy storage resources.

ii. **Allowing dual participation under current RTO rules**.

Though some work has been done in recent years in RTOs to consider appropriate value streams for storage, FERC Order 841 was issued with the acknowledgement that the current rules do not fully allow the storage industry to thrive in wholesale markets. Thus, a benefit of dual participation would be that it would allow RTOs, utilities, developers, and customers to explore more widely the interactions among the participants (e.g., data sharing, use of technology in metering), further informing development of new rules under Order 841. Third parties may also find value streams that have not been explored to date if both wholesale and retail participation is available.

However, given that the current rules are restrictive, actual dual participation may be practically impossible. As a result, it would likely be unreasonable and inaccurate to judge the success and measure the benefits of dual participation based solely on the current paradigm. For instance, in MISO, a unit may participate as a demand response, generation, or transmission resource, but not more than one regardless of the asset's capabilities. Storage projects proposed as generation resources are studied in the interconnection queue, but if those same resources are being proposed as a transmission asset, they have to go through the transmission planning process, which is on a different timeline with different evaluation criteria. This belies the fact that a resource may be capable of providing demand response, generation, and transmission benefits depending on the state of the grid, market, and resource.

Similarly, in PJM a storage resource either has to connect as a transmission asset or as a generation asset, but not both. A difference between PJM and MISO is that PJM has a more robust, forward capacity market that is the primary means of ensuring resource adequacy and can more transparently indicate the capacity value of storage (though with its own set of limitations). However, like MISO, PJM is still working on how to handle distribution-connected energy storage.

iii. Other options to better enable dual participation.

One of the key steps to enable dual participation is the need for more transparency in both the wholesale and retail markets and operations. Storage can offer services currently provided by traditional generation, transmission and distribution assets in more cost-effective ways, but third-party storage developers often lack data and access into utility distribution system planning and grid conditions in a manner that allows them to present alternatives for consideration. Along with the need for making data available in a timely fashion and in a useful format, utilities should be open to outside ideas to address identified system needs. Competitive bidding or an RFP process that allows third parties to inject new ideas is key to realizing the cost and efficiency benefits of storage.

b. Please describe how allowing/prohibiting dual participation in retail and wholesale markets impacts the ability to realize the full value stack of ESRs. How would allowing/ prohibiting dual participation benefit Michigan customers?

Michigan EIBC, AEE, and AEMA support a regulatory structure at the state and RTO level that takes full advantage of energy storage for the benefit of customers. While not every energy storage project will find dual participation beneficial, allowing dual participation for those that do will open up more opportunities for storage to provide value and cost-savings. In some cases, dual participation may make the economics of storage more attractive because it would open multiple lines of compensation and better recognize the suite of values storage can provide. Direct participation in retail and wholesale programs (as opposed to wholesale value passed through a retail tariff) may sometimes provide better compensation for storage as a result of bidding services directly into markets. And through participation in wholesale and retail markets,

storage can directly respond to dispatch signals, increasing operational value to both distribution and bulk systems. Without that dual participation, operational benefits may be limited to only one system. Finally, increased insight and telemetry provided by wholesale market integration will allow for more transparency than is currently available under utility distribution valuation and optimization, enabling increased beneficial evolution of retail markets and associated retail-level services.

There are a number of processes and rules that will need to be established to enable dual participation. For example, bidding parameters need to be established in the wholesale market and operating requirements are needed for retail services, to ensure that system operators can confidently call on a resource for a particular use. In addition, requirements will need to be established to ensure that an energy storage resource cannot receive compensation for the same service in both the retail and wholesale markets.

3. **Do other states currently allow or are other states currently considering dual participation?**

There are several states that have undertaken the development of processes to allow dual participation as described below.

California

The California Public Utilities Commission issued an order in 2018 on Multiple-Use Applications (MUA) for storage in rulemaking 15-03-011.[5] MUAs are defined as storage applications that provide multiple services to different entities or jurisdictions to allow stacking of more than one service. The CPUC identified three categories of multiple-use applications:

1. **Time differentiated**: the resource has an obligation to provide reliability service during different, non-overlapping time periods.
2. **Capacity differentiated**: the resource provides reliability services using separate designated capacity of the same resource.

[5] CPUC Order in 15-03-011. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M206/K462/206462341.pdf.

3. **Simultaneous**: the resource has an obligation to provide overlapping or simultaneous services.

The CPUC adopted a set of rules for MUAs to inform how storage resources can provide multiple services with a single resource grouped by service domains (from page 10 of the order). This grouping is intended to allow participants to choose the best use cases and regulators to have a framework of rules and be able to pinpoint potential barriers.[6]

Table 1. Domains: Reliability Services and Non-Reliability Services

Domain	Reliability Services	Non-Reliability Services
Customer	None	TOU bill management; Demand charge management; Increased self-consumption of on-site generation; Back-up power; Supporting customer participation in DR programs
Distribution[7]	Distribution capacity deferral; Reliability (back-tie) services; Voltage support; Resiliency/microgrid/islanding	None
Transmission	Transmission deferral; Inertia*; Primary frequency response*; Voltage support*; Black start	None
Wholesale Market	Frequency regulation; Spinning reserves; Non-spinning reserves; Flexible ramping product	Energy
Resource Adequacy	Local capacity; Flexible capacity; System capacity	None
*Voltage support, inertia, and primary frequency response have traditionally been obtained as inherent characteristics of conventional generators, and are not today procured as distinct services. We include them here as placeholders for services that could be defined and procured in the future by the CAISO.		

Rules 1 - 4 (services by domain)

Rule 1. Resources interconnected in the customer domain may provide services in any domain.

Rule 2. Resources interconnected in the distribution domain may provide services in all domains except the customer domain, with the possible exception of community storage resources, per Ordering Paragraph 11 of D.17-04-039.

Rule 3. Resources interconnected in the transmission domain may provide services in all domains except the customer or distribution domains.

[6] CPUC Order in 15-03-011. Pages 14-19. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M206/K462/206462341.pdf.

Rule 4. Resources interconnected in any grid domain may provide resource adequacy, transmission and wholesale market services.

Rules 5 - 8 (reliability services)

Rule 5. If one of the services provided by a storage resource is a reliability service, then that service must have priority.

Rule 6. Priority means that a single storage resource must not enter into two or more reliability service obligation(s) such that the performance of one obligation renders the resource from being unable to perform the other obligation(s). New agreements for such obligations, including contracts and tariffs, must specify terms to ensure resource availability, which may include, but should not be limited to, financial penalties.

Rule 7. The exception to Rule 6 is for resource adequacy services. A single storage resource may contract for resource adequacy capacity and provide wholesale market reliability services using the same capacity, and over the same time interval. For example, if a storage resource is providing local resource adequacy capacity, it may meet its resource adequacy must offer obligation by providing a service in the wholesale service domain using its resource adequacy capacity.

Rule 8. If using different portions of capacity to perform services, storage providers must clearly demonstrate, when contracting for services, the total capacity of the resources, with a guarantee that a certain, distinct capacity be dedicated and available to the capacity-differentiated reliability services.

Rules 9 - 11 (managing multiple services)

Rule 9. In response to a utility request for offer, the storage provider is required to list any additional services it currently provides outside of the solicitation. In the event that a storage resource is enlisted to provide additional services at a later date, the storage provider is required to provide an updated list of all services provided by that resource to the entities that receive service from that resource. The intent of this Rule is to provide transparency in the energy storage market.

Rule 10. For all services, the storage resource must comply with availability and performance requirements specified in its contract with the relevant authority.

Rule 11. In paying for performance of services, compensation and credit may only be permitted for those services which are incremental or distinct. Services provided must be measurable, and the same service only counted and compensated once to avoid double compensation.

Though an early adopter of efforts to realize the stacked benefits of energy storage, the regulators and stakeholders in California continue to refine the approach to integration of energy storage based on lessons learned.

New York

New York's Value of Distributed Energy Resources (VDER)[7] is a technology-neutral tariff that is applied to net hourly exports associated with an eligible DER (including stand-alone storage and storage paired with renewable generation). Generation consumed on-site remains valued at the customer's avoided retail rate. Exported energy is credited based on a variety of distribution and wholesale system values. The distribution values include:

1) Demand Reduction Value - a time-based value for demand reductions on distribution networks
2) Locational System Relief Value- - a time and locational value for demand reductions on constrained networks
3) Environmental Value - The higher of either the average wholesale REC price or the Social Cost of Carbon.

The wholesale values depend on whether the DER is taking compensation via the utility or direct participation with the NYISO. Most take compensation passed through from the utility as an avoided wholesale market cost. These values include:

1) Energy - Valued at the day ahead hourly locational marginal price (LMP)
2) Capacity market avoided costs - Provided either in a kWh value during certain hours for non-dispatchable technologies or as the Installed Capacity Market (ICAP) value, which is determined by the amount of generation exported during the NYISO's peak load hour.

DERs can also forgo compensation via utility tariffs for wholesale values and participate directly in NYISO markets. This requires them to formally interconnect,[8] establish necessary

[7] New York Public Service Commission, Order Regarding Value Stack Compensation, Case 15-E-0751, Issued April 18, 2019.

[8] Details of interconnection process are described here: https://www.renewableenergyworld.com/storage/three-steps-to-take-for-a-vder-to-participate-in-nyisos-capacity-and-ancillary-services-market/.

communication links, and provide telemetry. This adds costs and administrative burden to projects but enables projects to bid their services into capacity and ancillary service markets. This is different from receiving a utility's avoided wholesale energy and capacity costs through the VDER tariff because it comes with a must-offer obligation along with higher payments.

New York utilities also offer several programs under the Dynamic Load Management (DLM) umbrella[9] that recognize and compensate retail level values while allowing dual participation in the wholesale market. The Commercial System Relief Program (CSRP) and Distribution Load Relief Program (DLRP) are procured annually via open enrollment of customers directly with the utility or through an approved third-party aggregator. The Term-DLM and Auto-DLM programs are procured via RFP for terms of 3-5 years in length. The CSRP and Term-DLM are designed to help enrolled resources to lower the distribution utility's peak demand on a system-wide basis, while DLRP and Auto-DLM are designed to help address local-system contingencies for reliability.

All of the DLM programs allow for dual participation in NYISO's market, either in the Special Case Resources (SCR) program for customers reducing load and/or utilizing dispatchable DERs (including energy storage) to reduce metered load behind the meter, or through the Energy Storage Resource (ESR) model if the site is interconnected to the distribution system and allowed to export and as long as they abide by NYISO's Dual Participation rules and reflect their activity in retail-level activities in their NYISO schedules.

DLM program participants can also opt to participate in the VDER tariff model described above, so long as they opt out of the Demand Reduction Value and Locational System Relief Value components of the tariff. For the tariff-based CSRP and DLRP, this election is a one-time opt out

[9] *See* New York Public Service Commission Case No. 14-E-0423, Proceeding on Motion of the Commission to Develop Dynamic Load Management Programs, available at http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=14-E-0423: and Case No. 18-E-0130, Order Establishing Term-Dynamic Load Management and Auto-Dynamic Load Management Program Procurements and Associated Cost-Recovery (September 17, 2020), available at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={BB230CF6-F7CC-476D-ADF3-A91DEA1357C8}.

from those VDER value stack streams, while the opt-out under the contract-based Term-DLM and Auto-DLM programs is only for the duration of the contract term.

Massachusetts

Massachusetts has been successful in incentivizing the siting and building of hundreds of megawatts of community solar and storage within the ISO New England (ISO-NE) footprint through its Solar Massachusetts Renewable Target (SMART) program and is now leading the nation in community solar and storage deployment. While imperfect, the SMART program does allow dual participation by these solar-plus-storage resources, enabling them to earn revenue by providing both retail and wholesale services.

The SMART program is a declining block incentive program that went into effect in 2018. Initially capped at 1,600 MW of solar, the program was expanded in April 2020, to 3,200 MW of solar, split among the investor-owned electric distribution companies in the state.[10] The program offers various "compensation rate adders," including one for projects that include energy storage.[11]

In addition to the incentives received via the SMART program, these systems can also participate in the ISO-NE energy markets, and some also offer and sell services into other ISO-NE markets, including reserves, regulation, and capacity. However, energy market participation is rarely aligned with bulk power system needs, and there are barriers that prevent many systems from selling other services. Further alignment between the design of the SMART program and ISO-NE market rules could unlock additional opportunities for resources to monetize market services and ultimately reduce consumer costs. For example, changes are needed to ISO-NE's dispatch software to enable certain configurations of co-located resources to be able to offer and be compensated for reserves. In addition, the fact that many solar-plus-storage systems participating in SMART do not physically separate out and meter their station service creates difficulty in assigning rates, resulting in storage being charged retail rates for charging and being assigned most transmission charges that would otherwise be waived. Interconnection challenges

[10] See https://www.solarreviews.com/blog/massachusetts-smart-program-replaces-srecs.
[11] See https://www.mass.gov/doc/smart-launch-and-program-overview/download?_ga=2.264790863.1181886720.1541775161-483334923.1493903549.

have also caused some projects to forego the benefits of dual participation altogether and leave potential wholesale market revenues on the table.

Despite these challenges, Sunrun was able to successfully bid and clear 20 MW of distributed solar-plus-storage systems from Massachusetts and across New England into the ISO-NE Forward Capacity Market. Sunrun worked in partnership with National Grid to inform its bid and ensure compliance with the requirements to participate in the forward capacity auction. This success story demonstrates how both the grid operator and the DER asset developer can find additional benefits through wholesale market participation for distributed solar-plus-storage systems that likely would have been deployed anyway, due to incentives provided through state-level policies. For DER developers and customers, dual participation unlocks new revenue streams, resulting in lower costs. For all customers, participation by these assets lowers overall costs by preventing the need to buy costlier capacity from another source. For the grid operator, participation by these resources increases visibility and assists with planning.[12]

While challenges remain, the SMART program has been enormously popular, and it has unlocked some dual participation of resources. The SMART program also offers key lessons about the importance of designing retail programs with dual participation in mind to align requirements and optimize performance across both retail and wholesale services; doing so upfront could have avoided some of the barriers developers are currently facing.

a. How do other states' ESRs separate the retail and wholesale transactions as required by Order 841? Direct, separate metering systems? Or another arrangement?

In most instances for the storage resource, separate metering is not required as the need to monitor storage charging and discharging can be accomplished with advanced metering or with a single meter that has the capability of measuring the draw from the grid when charging and injection to the grid when discharging. However, additional software or metering may be needed to exchange data with MISO or PJM, particularly to dispatch multiple storage assets in tandem.

[12] See https://www.aee.net/aee-reports/putting-distributed-energy-resources-to-work-in-wholesale-electricity-markets.

While not required, some storage resource owners/operators may want to separately meter (or "submeter") individual storage devices behind a retail delivery point to manage the provisions of services to the customer and to the wholesale market. This can allow aggregators and energy managers to provide new and innovative services to both individual customers and the retail and wholesale markets. For this reason, allowing sub-metering should be considered.

b. **Provide examples of retail tariffs that illustrate how these transactions are separated**.

New York utilities' DLM programs contain provisions that dictate when there is a simultaneous dispatch between a wholesale and retail program, the utility will not pay resources engaged in dual participation the "Performance" payment for the kWh delivered, leaving that compensation for the energy delivered to NYISO.[13]

To avoid double counting of services for resources participating with behind-the-meter load reduction or DERs, NYISO's Market Administration and Services Tariff, along with the Load Forecasting Manual, dictate that load reductions from Installed Capacity Supplier resources (ex. SCRs) be added back to reconstitute the load for use in calculating the capacity supply purchase obligations of each Load Serving Entity if a NYISO or utility DLM program dispatch coincides with the NYISO's coincident system-wide peak hour.[14]

4. **What metering or software improvements would be needed to meet the ESR dual participation requirements of Order 841 and Midcontinent Independent System Operator, Inc.'s (MISO's) and PJM Interconnection L.L.C.'s (PJM's) respective compliance filings? a. Order 841 requires direct metering of ESRs but allows each RTO to propose other metering requirements that could be used in lieu of direct**

[13] See Niagara Mohawk Power Corporation d/b/a National Grid Electric Tariff, Section 62.8.1 at Leaf 263.23, available at: https://ets.dps.ny.gov/ets_web/search/showPDF.cfm?M%3AIS%20%3B%2A%29LOUNWD%5CJ%5E8%2B%22%2B5%2F0MD%2F0%29%22%21F%2BQLOVU2R%2AK%3AR%5CA%5B%2A2H%22N%5EAISF%20XNY%0A%27N7JEJK%5F%2CB%40%20%20%0A.

[14] See NYISO Load Forecasting Manual, Section 2.2.5, available at: https://www.nyiso.com/documents/20142/2924447/load_fcst_mnl.pdf/a694b1c4-7d1b-9382-d171-ff2fbd7ccd0c.

metering. For example, MISO allows other arrangements to be used in lieu of direct metering, but ESRs must be able to account for non-wholesale transactions when reporting their wholesale transactions to MISO.

As described above, metering is not complicated on its face; it must capture how much electricity is being used to charge the battery and when, and how much electricity is being injected and when. This task is done most efficiently by capturing more granular information in more frequent intervals with AMI. Where AMI is not present or where its full capabilities are not being utilized, third-party metering may be necessary to fill the gaps.

5. Which parties should bear the cost of such improvements?

a. Would such metering or software improvements solely benefit ESRs and their market participants participating in both retail and wholesale markets or would benefits accrue to the broader customer base?

Although, as referenced above, we do not believe that there would be a need for significant metering improvements (beyond AMI), we do believe that any such necessary improvements would benefit all customers. Any such modern software controls will help the grid respond more efficiently and effectively to fluctuations in demand and supply, regardless of who builds or owns the resource. These should be recovered in a similar manner to other distribution grid upgrade expenses. Additionally, as described above, the full accrual of the potential benefits of energy storage can only be achieved if the value streams provided by energy storage are accurately accounted for and valued.

i. What is the anticipated cost and benefit to become a MISO or PJM market participant?

The main benefit of becoming a member of an RTO is access to wholesale markets and/or pursuing transmission alternatives and a process and structure to do so in a relatively fair manner. Access to these markets can provide market participants developing storage resources and other technologies more options to monetize those assets, allowing them to lower costs to end-use customers and innovate. Further, membership gives companies input in the development

of policies and rules at the RTO. The costs to the storage project include the fees for joining the RTO, higher administrative burden, and the implementation and ongoing costs necessary to comply with RTO tariffs, rules, and information systems.

6. **How can lessons about, and challenges with, dual participation of ESRs be applied to DERs under FERC Orders 2222 and be 2222-A? What lessons have already been learned about demand response aggregation for choice customers in Michigan that could be instructive for developing policies related to storage aggregation?**

The lessons learned in Michigan with respect to dual participation of energy storage will likely be directly applicable to the participation of DERs under FERC Orders 2222 and 2222-A. For example, storage has some unique characteristics relative to other DERs, including the need to either charge from the grid or a close-coupled generation source (like wind or solar power) and its ability to dispatch quickly. Such unique characteristics of different DERs will need to be considered in the process of implementing Order 2222. The inquiries made by the Commission in this Docket highlight the importance of state engagement in the RTO compliance process of Order 841 as well as Orders 2222 and 2222-A to ensure customers, the grid, utilities, and third parties are able to achieve full value from storage and DERs.

Conclusion

Michigan EIBC, AEE and AEMA commend the Commission for its foresight and leadership in exploring this topic and look forward to the opportunity for continued discussion about policies that can unlock the full benefits energy storage can provide to customers and the electric grid at large.