STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

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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

At the August 11, 2021 meeting of the Michigan Public Service Commission in Lansing, Michigan.

PRESENT: Hon. Daniel C. Scripps, Chair
Hon. Tremaine L. Phillips, Commissioner
Hon. Katherine L. Peretick, Commissioner

ORDER

Background

On February 15, 2018, the Federal Energy Regulatory Commission (FERC) issued Order No. 841,[1] which amended its regulations under the Federal Power Act (FPA), 16 USC 791a *et seq*., to "remove barriers to the participation of electric storage resources [ESRs] in the capacity, energy, and ancillary service markets operated by Regional Transmission Organizations (RTO) and Independent System Operators (ISO) (RTO/ISO markets)." Order 841, p. i. Order 841 defines an ESR as "a resource capable of receiving electric energy from the grid and storing it for later injection of electric energy back to the grid." Order 841, p. 231. Order 841 requires each

[1] *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 162 FERC ¶ 61,127 (February 15, 2018) (Order 841).

RTO and ISO to revise its tariff to establish a participation model consisting of market rules that facilitate the participation of ESRs in the RTO/ISO markets. FERC did not include a state opt-out provision in Order 841, which would have permitted states to broadly prohibit ESRs that are located behind the meter or on the local distribution system from participating in wholesale markets.

On May 16, 2019, FERC issued *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 167 FERC ¶ 61,154 (May 16, 2019) (Order 841-A) wherein it denied rehearing regarding the lack of a state opt-out provision for local ESRs in Order 841. The National Association of Regulatory Utility Commissioners and the American Public Power Association, National Rural Electric Cooperative Association, Edison Electric Institute, and American Municipal Power, Inc. (collectively, Local Utility Petitioners) filed petitions for review of Order 841 with the United States Court of Appeals, District of Columbia Circuit, arguing that FERC exceeded its jurisdiction in Order 841. On July 10, 2020, the D.C. Circuit Court of Appeals upheld Order 841, finding that it does not unlawfully regulate matters left to the states.[2]

On April 8, 2021, the Commission issued an order in this case (April 8 order) requesting comments from interested persons concerning the effect of the final rule in Order 841 and Order 841-A. Specifically, the Commission asked commenters to address the following topics:

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.

2. While the Commission may include conditions in retail tariffs that prohibit ESRs from simultaneously participating in the retail and wholesale markets

[2] *See National Association of Regulatory Utility Commissioners v Federal Energy Regulatory Commission*, 488 US App DC 133 (2020) (*NARUC*).

(*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.
ii. Allowing dual participation under current RTO rules.
iii. Other options to better enable dual participation.

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?

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

a. How do other states' ESRs separate the retail and wholesale transactions as required by Order 841? Direct, separate metering systems? Or another arrangement?
b. Provide examples of retail tariffs that illustrate how these transactions are separated.

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 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.

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?

i. What is the anticipated cost and benefit to become a MISO or PJM market participant?
ii. What is the anticipated cost and revenues of a retail meter per month per rate?

iii. What would be the anticipated cost and revenues of an additional wholesale meter per month?
iv. What is the estimated cost for any necessary billing software improvements?

b. Would such improvements help enable distributed energy resource (DER) dual participation in the future?

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

April 8 order, pp. 3-5 (footnote omitted). Comments were due no later than 5:00 p.m. (Eastern time) on May 6, 2021.

On May 6, 2021, the Commission received comments from Consumers Energy Company (Consumers); DTE Electric Company (DTE Electric); a joint filing by The Michigan Energy Innovation Business Council (Michigan EIBC), Advanced Energy Economy (AEE), and Advanced Energy Management Alliance (AEMA) (collectively, MEIBC); and the Commission Staff (Staff). This order summarizes the comments and provides further guidance on how the Commission will proceed with facilitating the participation of ESRs in the MISO and PJM markets.

Comments

Consumers and DTE Electric support the position that the Commission should keep retail programs and wholesale market participation separate and require that an ESR choose to participate in either the retail market or the wholesale market through MISO.

MEIBC supports the position that the Commission should allow dual participation of ESRs in both retail and wholesale markets.

The Staff provides several recommendations for the implementation of dual participation of ESRs in retail and wholesale markets. The Staff takes the position that the Commission should not establish any pilots or programs addressing dual participation at this time and should instead encourage utilities interested in pursuing dual participation models to establish pilot programs to test this option.

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

All commenters recognize benefits that may accrue to the broader customer base from the addition of ESRs to Michigan's electric supply portfolio. The commenters state that ESRs have the potential to benefit the customer base by deferring distribution system upgrades, facilitating greater usage of intermittent renewable energy, allowing for more flexibility in the distribution system, and lowering costs to customers.

Consumers' comments distinguish the distribution benefits from the supply benefits of adding ESRs to Michigan's electric supply portfolio. Consumers discusses ESRs potential to defer distribution system upgrades and provides a methodology to evaluate potential distribution benefits. *See*, Consumers' comments, pp. 2-4. Consumers notes that ESRs can compete economically with other supply resources and that ESRs add elasticity to the grid to account for the intermittent nature of renewable energy. Consumers comments that ESRs have the benefit of increasing the use of intermittent renewables and thereby allow low-cost intermittent generation to be used during more hours of the day, decreasing electricity costs for all of Michigan's utility customers.

DTE Electric comments that ESRs can provide non-market benefits at the wholesale level, such as the ability to defer transmission upgrades, inject reactive power, and manage bulk system

reliability and power quality. DTE Electric also states that "[a]t the wholesale level, intermittent renewables will drive a need for increasing flexibility in the supply mix, which storage can help provide, and the value of many of the corresponding benefits can be directly quantified in dollar terms." DTE Electric's comments, p. 5. DTE Electric notes that ESRs can take advantage of arbitrage opportunities in the wholesale market by charging during times of low prices and discharging during times of high prices. At the distribution level, DTE Electric acknowledges that ESRs can help manage distribution system conditions by mitigating equipment overloads and voltage fluctuations as new technologies are added to the distribution system, serving as a non-wire alternative (NWA) to defer traditional system investment, and providing backup power and resiliency.

MEIBC comments on the value of ESRs as a unique load balancing and load management resource that supports the integration of greater amounts of renewable resources onto the grid. MEIBC also provides a graphic from Rocky Mountain Institute[3] on the benefits to ISO/RTOs, customers, and utilities. *See*, MEIBC's comments, p. 3. MEIBC highlights a number of benefits of ESRs including: energy arbitrage, frequency regulation, voltage support, blackstart, resource adequacy, transmission and distribution deferral, backup power, and increased solar photovoltaic self-consumption shown in the provided Rocky Mountain Institute graphic. MEIBC adds the following additional benefits not captured within the graphic:

> peak shaving and demand response services that lower overall costs to procure energy; support for electric vehicles [EVs] 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.

[3] Rocky Mountain Institute, *The Economics of Battery Energy Storage: How Multi-Use, Customer-Sited Batteries Deliver the Most Services and Value to Customers and the Grid*, p. 5.

Id. Finally, MEIBC recognizes that monetary benefits associated with service in Michigan are significant and quantifiable as ESRs provide additional or more efficient services to customers such as lower electricity costs via time-of-use (TOU) rates and frequency regulation. MEIBC's comments, p. 4.

The Staff comments that a diverse resource portfolio better situates utilities to deal with changing economics, technologies, and resources. The Staff comments that ESRs can increase generation diversity which can reduce economic risk. The Staff also comments that ESRs may be used as NWAs which may eliminate or defer the need for certain future distribution or transmission upgrades. The Staff notes that ESRs can "charge with cheaper off-peak power and discharge at peak times to reduce the need for expensive peak capacity." Staff's comments, p. 5. The Staff later notes that ESRs could also be used as "blackstart" resources to reenergize shutdown areas of the system in the event of widespread outages and would be able to provide ancillary services and sell energy at a wholesale price. *Id*., p. 9. The Staff recommends that appropriate methodologies for calculating benefits to the broader customer base be considered in general rate cases. *Id*., p. 5.

2. While the Commission may include conditions in retail tariffs that prohibit electric storage resources from simultaneously participating in the retail and wholesale markets, what other options are available to ensure electric storage resources are able to stack their full value?

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

i. Prohibiting dual participation through retail tariff changes.
ii. Allowing dual participation under current regional transmission organization rules.
iii. Other options to better enable dual participation.

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

The commenters recognize the uncertainty of regulatory rules, the necessity for metering upgrades, rate avoidance/cross-subsidization, and the lack of data sharing or information as conditions that prohibit ESRs from fully and simultaneously participating in the retail and wholesale markets. Commenters recognize the opportunity for Michigan to develop comprehensive tariff and rate structures and provide wholesale revenue opportunities as benefits of allowing dual participation.

Consumers and DTE Electric propose that the utilities serve as the interface between retail customers and the MISO market to ensure ESRs can realize their full value stack while mitigating the barriers to full participation of these resources.

MEIBC proposes an alternative to dual participation "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 cost or aggregated market revenues." MEIBC's comments, p. 5. MEIBC notes Indiana Michigan Power Company's DR aggregation program as an example of this option. *Id*.

The Staff notes that one alternative to allowing dual participation would be for market participants to coordinate with the respective distribution utilities to provide market information. Staff's comments, pp. 10-11.

Uncertainty of Regulatory Rules

Consumers outlines concerns that wholesale energy storage market rules are in development and are yet uncertain. The company takes the position that it would be prudent for distribution utilities and the Commission to see what wholesale market requirements ultimately develop, and to gain a greater understanding of how ESRs perform and what impact they will have on capacity and distribution planning, resource procurement, and customer pricing, before considering introducing

the complexities of dual participation in retail and wholesale markets. The company points to FERC orders 2222 and 2222-A[4] as examples of ongoing development of market rules applicable to ESRs and states that there is a lack of operational performance data due to storage having relatively low market penetration. Consumers' comments, p. 5.

DTE Electric states that prohibiting dual participation through retail tariff rates "[p]rovides opportunity and flexibility for Michigan to develop comprehensive tariff and rate structures to compensate the entire value stack associated with energy storage." DTE Electric's comments, p. 9.

The Staff comments that "the primary benefit of prohibiting dual participation in the wholesale and retail markets . . . is that it would allow further evaluation of the multiple challenges that dual participation presents" that would not come to pass if dual participation is prohibited. Staff's comments, p. 6. The Staff recommends that the Commission consider conditioning the participation of ESRs in retail markets on their nonparticipation in wholesale markets for a period of at least five years to allow RTOs and states to gain more experience with ESR dual participation and to allow rules and procedures governing dual participation to emerge. The Staff also recommends that this condition include a stay-out provision that would prevent an entity electing to participate in either the retail or wholesale market from participating in the other market for the five-year period. *Id*., p. 3.

[4] *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 172 FERC ¶ 61,247 (September 17, 2020) (Order 2222); *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators,* 174 FERC ¶ 61,197 (March 18, 2021) (Order 2222-A).

Necessity for Metering Upgrades

All parties comment that metering and software upgrades may be necessary for dual participation of ESRs in the retail and wholesale markets.

Consumers states that for ESRs that are co-located with load or other resources, intricate metering configurations and accounting practices would need to be devised to distinguish between retail and wholesale transactions. Additionally, the company states that a metering system will have to be created to distinguish and separately account for an ESR's retail charging and discharging versus its wholesale charging and discharging. Consumers' comments, p. 6.

DTE Electric comments that prohibiting dual participation avoids the costs necessary to upgrade metering infrastructure, utility billing systems, and associated processes. DTE Electric also notes that accounting, tracking, and reconciliation of a single resource's wholesale and retail transactions within a single billing period will be complex and administratively burdensome. DTE Electric's comments, p. 10.

MEIBC notes that advanced metering infrastructure (AMI) can capture the amount of energy injected and withdrawn from the grid, but where AMI technology is unavailable, third-party metering will be necessary to fill the gaps. MEIBC's comments, p. 16.

The Staff comments that the major obstacle for the dual participation of ESRs in the wholesale markets is the technical complexity of metering or otherwise delineating between retail and wholesale market participation. The Staff comments that "without the development of alternative proposals, possibly through metering arrangements or other pilot programs developed at the state level, ESRs may be required to obtain a second meter to delineate between retail and wholesale transactions to satisfy the RTO/ISO rules." Staff's comments, pp. 11-12 (internal quotation marks

omitted). The Staff also notes the difficulty of incorporating MISO settlements into retail billing systems, which would increase the complexity and cost of such systems. *Id*., p. 11.

Risk of Rate Avoidance or Wholesale/Retail Arbitrage

With the need for upgraded metering comes concerns related to retail rate avoidance and cross-subsidization. Consumers explains that dual participation creates an unfair risk of ESRs charging at wholesale rates for energy but delivering services and being compensated at retail rates. The company states that the costs of this risk would be borne by non-participating customers and self-reporting of retail and wholesale transactions could be susceptible to error. Consumers' comments, p. 6.

DTE Electric comments that prohibiting dual participation eliminates potential retail rate avoidance and the resulting cross-subsidization issues. DTE Electric explains that "if not implemented properly, dual participation by customer-owned behind-the-meter ESRs could present the opportunity for customers to effectively bypass the distribution utility by charging a battery at wholesale and discharging at retail rates." DTE Electric's comments, p. 10.

The Staff also comments that with dual participation, there is added potential for cost subsidization through double payments. Staff's comments, p. 11.

Data Limitations

MEIBC comments that prohibiting dual participation likely provides an advantage to utility-built and utility-owned storage projects because utilities are most likely to have access to the retail market and most likely to have access to data and information necessary to develop electric storage resources. MEIBC's comments, p. 5. MEIBC also notes that allowing RTOs, utilities, developers, and customers to explore interactions among participants, such as data sharing and the use of technology in metering, would be an added benefit of allowing dual participation.

The Staff comments that it sees metering and data-sharing arrangements with the transmission and distribution utilities as the most likely path for successfully reducing the cost of ESR dual participation. The Staff notes that under current RTO/ISO rules, ESRs can participate in both the wholesale and retail markets without any further action by the Commission. Dual participation would require the ESR market participant to delineate between wholesale and retail transactions. However, as MEIBC notes, market participants may face substantial barriers to collecting and providing the information necessary to delineate these transactions. The Staff posits that one option to better enable dual participation would be for the Commission to facilitate and encourage pilot programs for Michigan distribution utilities aimed at solving the metering and billing challenges of ESR dual participation. Finally, the Staff notes that increased and secure utility data access frameworks that have already been initiated in other contexts may address some obstacles to ESR dual participation. The Staff gives the example of the implementation of the GreenButton Connect My Data functionality throughout the industry. Staff's comments, p. 13.

Limiting Wholesale Opportunities and Benefits

DTE Electric comments that prohibiting dual participation in wholesale and retail markets potentially removes wholesale revenue opportunities for ESRs otherwise willing to participate in both markets. DTE Electric's comments, p. 10.

MEIBC concurs with DTE Electric that prohibiting dual participation through retail tariff changes limits the benefits storage resources can provide to customers via both the wholesale and retail markets. MEIBC comments that prohibiting dual participation could constrain economic opportunities for ESRs, which would mean that ESRs may not be able to achieve their full value in the short term. MEIBC states that forcing ESRs to choose between retail programs and wholesale

revenues reduces the economic opportunities available for ESRs, resulting in the underutilization of these resources. MEIBC's comments, p. 5.

The Staff notes that prohibiting dual participation would not preclude participation in the wholesale market but would require the ESR to choose which of the two markets to participate in. The Staff comments that the consequences of its proposed five-year stay-out requirement would be that ESRs may not be able to reach their full value, at least in the short term. Staff's comments, p. 7.

Realizing the Full Value Stack

Consumers comments that utilities are the best positioned to maximize the value created by ESRs for utility customers. The company states that "[i]f there is uncertainty regarding the availability and nature of service that ESRs will be able to provide at the retail level, the potential distribution, supply, and grid resilience benefits discussed above may be difficult or impossible to realize." Consumers' comments, pp. 5-6. Consumers also comments that it is feasible to craft a retail tariff that fully captures the value stack of customer-sited ESRs. Consumers proposes that the utility serve as the interface with MISO, either as a resource aggregator or as the administrator of an ESR retail program that includes the managed provision of additional services to MISO. The company posits that this would give customers access to the wholesale markets while minimizing the costs relating to resource management, metering, and settlements. Consumers also comments that allowing the utility to serve as the interface with the RTO/ISO markets would ensure there are no conflicting obligations, double compensation for services, or wholesale/retail arbitrage.

DTE Electric comments that retail tariff rates are fully capable of capturing the entire value stack of ESRs, including one or multiple components of energy, capacity, and ancillary services. DTE Electric states that "[s]hould customer interest in storage dual participation arise, [it] could

develop retail tariffs specifically designed to capture wholesale and retail value for the participating customer." DTE Electric's comments, p. 9. DTE Electric concurs with Consumers that as a utility, the company could take on the market participant's responsibilities to submit wholesale bids and offers on behalf of customers, receive dispatch instructions for the ESR, and serve as the interface to handle other aspects of ESR participation in the MISO market. DTE Electric agrees that having the utility serve as the interface could minimize impacts to utility billing and metering systems and avoid excessive costs and upgrades, while providing customers access to the wholesale market. DTE Electric comments that it "intends to propose a comparable approach developed for large customers seeking to participate in MISO's Demand Response Resource Type-I participation model, which offers access to MISO's energy market." *Id*.

MEIBC supports the position that allowing dual participation for those that find dual participation beneficial will open opportunities for storage to provide value and cost savings. MEIBC states that direct participation in retail and wholesale programs may provide better compensation for storage as a result of bidding services directly into markets. MEIBC also comments that participation in wholesale and retail markets would allow ESRs to directly respond to dispatch signals, increasing operational value to both distribution and bulk systems. Lastly, MEIBC adds that "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." MEIBC's comments, p. 8.

The Staff proposes that one path toward dual participation would be to allow any ESRs meeting the approved RTO/ISO requirements developed by MISO and PJM to participate in the retail market. The Staff points to MISO's tariff HHH as an example of established mechanisms by

which an RTO/ISO could provide rebate to an ESR for portions of energy used to charge under a non-wholesale rate. Staff's comments, p. 9. The Staff also acknowledges that one advantage to allowing dual participation under the current RTO/ISO rules is that dual participation may be done without any action by the Commission. The Staff comments that, given the possibility of expensive metering additions and improvements, alternative proposals are likely needed to make dual participation feasible under existing tariffs. Staff's comments, p. 12.

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

a. How do other states' electric storages separate the retail and wholesale transactions as required by Order 841? Direct, separate metering systems? Or another arrangement?
b. Provide examples of retail tariffs that illustrate how these transactions are separated.

All commenters provide information on New York's model for dual participation of ESRs. Consumers distinguishes the model from circumstances in Michigan, stating that New York Independent System Operator, Inc. (NYISO) operates only within state boundaries. Consumers also states that NYISO, having ultimate authority to determine ESR resource schedules, prioritizes wholesale obligations and the wholesale market over the retail distribution systems and non-wholesale obligations. Consumers also refers the Commission to Consolidated Edison Company's tariff, specifically Riders R and Q,[5] as examples of New York retail tariffs within the state's dual participation regime. Consumers' comments, p. 7.

DTE Electric's comments include the following language from NYISO's Market Administration and Control Area Services Tariff: "resources 'may simultaneously participate in the ISO-administered wholesale markets and in programs or markets operated to meet the needs of distribution systems.'" DTE Electric's comments, p. 13 (quoting NYISO Market Administration

[5] Electric Tariff of Consolidated Edison Company of New York, Public Service Commission No. 10 – Electricity, Leaf 244 (January 9, 2020).

and Control Area Services Tariff, section 4.1. 11 – Dual participation). DTE Electric comments that this language suggests that "the focus of NYISO's dual participation programs is on allowing resources which provide distribution support services (such as non-wires alternatives) to also provide wholesale services." DTE Electric's comments, p. 13. DTE Electric also explains that Section 13.2.4 of the tariff generally requires that ESRs separately and directly meter energy injections and withdrawals. DTE Electric states that such metering must ensure "the Meter Authority and/or ISO is able to distinguish the energy injections and withdrawals of the Energy Storage Resource from all other injections and withdrawals behind the point of interconnection." *Id*.

MEIBC gives an overview of New York's Value of Distributed Energy Resources (VDER) tariff and explains how the technology-neutral tariff values energy that remains on-site and energy that is exported. *See*, MEIBC's comments, p. 11. MEIBC comments that the VDER tariff allows DERs to take compensation via the utility or direct participation with NYISO. MEIBC also notes New York's Dynamic Load Management programs, which "recognize and compensate retail level values while allowing dual participation in the wholesale market." [6]

MEIBC names California and Massachusetts as states that have undertaken the development of processes to allow dual participation in wholesale and retail markets. MEIBC notes California Public Utilities Commission's (CPUC's) order on multiple-use applications for storage rulemaking. *See*, MEIBC's comments, p. 8 (citing CPUC's January 11, 2018 Order in Rulemaking 15-03-011). MEIBC identifies categories of multi-use applications, or "storage

[6] MEIBC's comments, p. 12. (citing New York Public Service Commission Case No. 14-E-0423, Proceeding on Motion of the Commission to Develop Dynamic Load Management Programs (December 15, 2014); New York Public Service Commission Case No. 18-E-0130, Order Establishing Term-Dynamic Load Management and Auto-Dynamic Load Management Program Procurement and Associated Cost-Recovery (September 17, 2020).

applications that provide multiple services to different entities or jurisdictions to allow stacking of more than one service." *Id*. DTE Electric comments that while there is extensive deployment of ESRs and DERs in California, the California Independent System Operator "does not allow dual participation as resources must have round-the-clock availability for ISO dispatch." DTE Electric's comments, p. 13.

MEIBC comments that Massachusetts has incentivized and sited community solar and storage within the ISO New England (ISO-NE) footprint through its Solar Massachusetts Renewable Energy Target (SMART) program. MEIBC states that the SMART program allows dual participation of solar-plus-storage resources, enabling them to earn revenue by providing both retail and wholesale services. MEIBC's comments, p. 13. MEIBC notes that the SMART program offers various "compensation rate adders," including one for projects that include energy storage, and that the systems can also participate in the ISO-NE energy, reserves, regulation, and capacity markets. *Id*. MEIBC comments that the SMART program is imperfect in that energy market participation is rarely aligned with bulk power system needs, and there are barriers that prevent many systems from selling other services. MEIBC also notes that many solar-plus-storage systems participating in SMART do not physically separate out and meter their station services, which 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. *Id*. MEIBC provides the example of Sunrun, a residential solar provider that was able to successfully bid distributed solar-plus-storage systems from Massachusetts and across New England into the ISO-NE Forward Capacity Market. MEIBC's comments, p. 14.

Finally, MEIBC comments that in most instances, separate metering is not required for ESRs 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. MEIBC notes that additional software or metering may be necessary to exchange data with MISO or PJM, particularly to dispatch multiple storage assets in tandem. MEIBC's comments, p. 14.

4. What metering improvements or software improvements would be needed to meet the electric storage resource dual-participation requirements of Order 841 and Midcontinent Independent System Operator, Inc.'s and PJM Interconnection L.L.C.'s respective compliance filings?

a. Order 841 requires direct metering of electric storage resources but allows each regional transmission organization to propose other metering requirements that could be used in lieu of direct metering, but electric storage resources must be able to account for non-wholesale transactions when reporting their wholesale transactions to Midcontinent Independent System Operator, Inc.

Consumers comments that necessary metering improvements would include multipurpose bidirectional billing and supervisory control and data acquisition meters at each site to provide data for the ESR. Consumers estimates that more than 50% of its active customer meters have these capabilities. The company also anticipates that software improvements may be required to accommodate ESRs. The company's best estimate is that the necessary software would build on its existing enterprise resource planning software with connections to a central raw data storage repository and development of additional data visualization reports to track ESR performance using data made available on a daily and monthly basis. Consumers' comments, p. 8.

DTE Electric concurs with Consumers that, to participate in both wholesale and retail markets, ESRs would need to be separately metered with revenue grade metering to ensure accuracy in billing and settlement. DTE Electric comments that "[f]or ESRs which are behind the same point of interconnection as load or other resources, separate revenue grade metering is also required to distinguish ESR's charging and discharging from the activities of the co-located load or other resources." DTE Electric's comments, p. 14. DTE Electric also comments that upgrades to the

metering and billing system will likely be necessary, in particular "the integration of the MISO settlement process (which takes place on a 105-day cycle that includes three interim settlement statements and one final settlement statement) and the utility billing process (which takes place on a monthly cycle)." *Id*. DTE Electric comments that the utility will need to have systems and processes in place to audit whether resources are indeed using wholesale energy for wholesale services and retail energy for retail services to avoid the risk of retail avoidance through charging at wholesale and discharging at retail. *Id*.

MEIBC comments that metering can be done more efficiently by capturing more granular information in more frequent intervals with AMI. MEIBC comments that where AMI is not present or where its full capabilities are not being utilized, third-party metering may be necessary to fill the gaps. MEIBC's comments, p. 16.

The Staff comments that the delineation between ESRs retail and wholesale transactions could be facilitated through metering and software changes. The Staff comments that under Order 841, either additional direct metering will be required, or the market participants will need to otherwise delineate between their retail and wholesale activities through alternative approaches under the RTO/ISO rules. Staff's comments, p. 14. Additionally, the Staff outlines the MISO position that market system enhancement (MSE) should be implemented before its compliance with Order 841. The Staff notes that on May 17, 2021 MISO requested that FERC extend the effective date of its tariff revisions addressing ESR market participation from June 6, 2022, to March 1, 2025, in order to expedite MSE implementation.[7] However, following the May 6, 2021 due date for comments in

[7] Staff's comments, pp. 14-15 (citing FERC Docket No. ER19-465-000, 001, *Midcontinent Independent System Operator, Inc.'s Request to Defer Effective Date of Compliance with Order No. 841* (March 4, 2021), pp. 1-2, 26).

this docket, FERC rejected MISO's request to defer the effective date.[8] MISO subsequently requested rehearing of that decision on June 16, 2021.[9] To date, FERC has not acted on MISO's request for rehearing, so it was deemed denied by operation of law on July 19, 2021, and the original June 6, 2022 MSE implementation date stands, absent additional FERC action.[10] The Staff also notes that PJM's compliance filing was approved with an effective date of December 3, 2019. Staff's comments, p. 8.

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

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

i. What is the anticipated cost and benefit to become a Midcontinent Independent System Operator, Inc. or PJM Interconnection L.L.C. market participant?
ii. What is the anticipated cost and revenues of a retail meter per month per rate?
iii. What would be the anticipated cost and revenues of an additional wholesale meter per month?
iv. What is the estimated cost for any necessary billing software improvements?

b. Would such improvements help enable distributed energy resource dual participation in the future?

Consumers comments that, as a general proposition, it believes that the costs of ESR participation should go to the party causing those costs. Consumers comments that, if a customer, third party, or utility is developing an ESR, the costs of metering, telemetry, and interconnection should be included in the project costs. Consumers' comments, p. 8.

DTE Electric comments that the benefits of wholesale market participation by an ESR will accrue to the ESR's owner in the form of revenues for wholesale services provided. DTE Electric

[8] *Order Denying Request to Defer Effective Date*, 175 FERC ¶ 61,120 (May 17, 2021).
[9] *Request for Rehearing of the Midcontinent Independent System Operator, Inc.*, FERC Docket No. ER19-465-000 (June 16, 2021).
[10] *Notice of Denial of Rehearing by Operation of Law*, 176 FERC ¶ 62,033 (July 19, 2021).

also comments that the costs of improvements needed to enable wholesale market participation of ESRs should be borne by the ESR, consistent with cost causation principles. DTE Electric's comments, p. 15.

MEIBC comments that while it does not believe there is need for significant metering improvements, any necessary improvements would benefit all customers. MEIBC also comments that the costs of any necessary improvements should be recovered in a similar manner to the other distribution grid upgrade expenses. MEIBC comments that the main benefit of becoming a member of an RTO is access to the wholesale markets and/or pursuing transmission alternatives and a process and structure to do so in a relatively fair manner. Its comments state that the costs to the storage project include the fees for joining the RTO, the higher administrative burden, and the implementation and ongoing costs necessary to comply with RTO tariffs, rules, and information systems. MEIBC's comments, pp. 16-17.

The Staff comments that the costs of improvements necessary for the dual participation of ESRs in retail and wholesale markets should be covered by those market participants receiving benefits from such improvements. Staff's comments, p. 15. The Staff also recommends that methodologies to calculate benefits be considered in general rate cases and that in the event a tariffed program is developed for ESRs, the benefits be shared with the ESR providing benefits and the broader customer base. The Staff submitted that, if changes are made to retail billing systems, the costs should be allocated according to the resulting benefit. Staff's comments, p. 5.

6. How can lessons about, and challenges with, dual participation of electric storage resources be applied to distributed energy resources under Federal Energy Regulatory Commission Orders 2222 and 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?

Consumers comments that challenges presented by ESR and distributed energy resource (DER) aggregation bear great similarity to those relating to DR aggregation. The company comments that issues include: potential double counting of the resources, lack of public utility commission oversight in the wholesale markets, lack of accountability of aggregators of retail customers (ARCs) with respect to erroneous registrations and/or deficient reporting, lack of enforcement of wholesale market penalties for such issues, and uncertainty in how to properly account for and address capacity issues in long-term generation planning when utilities do not have control of or visibility into such issues. Consumers' comments, p. 10.

DTE Electric comments on the similarities between its experience with DR for electric choice customers and ESRs. DTE Electric comments that it has participated in the stakeholder process to prepare for Order 2222 and FERC Docket No. ER20-2591-0000.[11] DTE Electric notes that if DER aggregator registration requirements are based on the current ARC registration requirements, additional measures will likely need to be taken to protect customer privacy and ensure timely and accurate registration information. DTE Electric comments that, like DR, behind the meter DERs will have an impact on peak load contribution. This contribution will need to be accounted for to have accurate data to determine the base calculation for the annual MISO Planning Resource Auction and alternative electric suppliers' capacity demonstrations for the State of Michigan. DTE Electric's comments, p. 20. DTE Electric also comments that the DR aggregation process

[11] DTE Electric's comments, p. 20. (citing Docket No. ER20-2591-000, Motion to Intervene and Comments of Consumers Energy Company (August 21, 2020)).

follows the Customer Protections in Section 14 of the electric rate book as approved by the Commission and that similar customer protection policies would need to be established to protect customer data in the DER aggregators' registration process. DTE Electric's comments, pp. 21-22. Finally, DTE Electric makes several comments about the existing ARC registration review process that bear on the importance of having accurate and complete registration information and verification processes to assure reliability as the system becomes more dependent on aggregated resources. *See*, DTE Electric's comments, pp. 22-24.

MEIBC comments that lessons learned in Michigan with respect to dual participation of ESRs will likely be directly applicable to the participation of DERs under FERC Orders 2222 and 2222-A. MEIBC comments that the unique characteristics of DERs will need to be considered in implementing Order 2222. MEIBC's comments, p. 17.

The Staff comments that work done at this stage with respect to dual participation of ESRs in retail and wholesale markets has the potential to inform the implementation of Orders 2222 and 2222-A. The Staff comments that "[t]he issues common to each framework include separation of retail and wholesale revenue streams, potential data access for third-parties, and cost allocation of improvements (e.g., software and metering upgrades)." Staff's comments, p. 16.

Discussion

The Commission thanks the participants in this docket for their informative comments on this matter. The Commission sees great promise in the many benefits ESRs can bring to the grid, and continued advances in technology, cost declines, customer demand, and market development are all combining to significantly increase the use cases for ESRs at both the wholesale and retail levels. After review of the comments and consideration of relevant issues, the Commission finds that participation in the wholesale market could be effectively facilitated by an electric distribution

company or utility, and that a well-designed retail tariff that accounts for the full value stack of ESRs and is attractive to customers may be the best way to begin integrating ESRs into the electric grid at increasing levels. Thus, while not foreclosing the possibility of broader dual participation of ESRs in both the wholesale and retail markets at this time, the Commission finds value in having investor-owned utilities propose tariffs that provide an appropriate pathway for the deployment of ESRs within their respective service territories. Specifically, the Commission encourages Michigan's investor-owned electric utilities to propose pilot programs in upcoming rate cases that:

- Provide for the utility to participate in the wholesale market on behalf of the customer-owned ESRs, including potentially engaging a third party to serve as an aggregator for the customer-owned ESRs;

- Develop tariffs and rates that allow ESRs to benefit from participation in the wholesale market; either by having a utility act as the market participant and pass applicable market revenues for capacity, ancillary services, and energy on to the ESR as if it was participating in the market on its own behalf, or by developing a proxy based on wholesale revenues for compensating the ESR;

- Compensate the utility with an administrative fee for serving as the Market Participant in the applicable RTO and, if applicable, engaging the third-party aggregator for the ESR;

- Provide a retail tariff that appropriately utilizes and compensates an ESR that does not directly participate in the wholesale market; and

- Explore the further integration of retail tariffs with wholesale market participation at the direction of the customer.

As background, the Commission adopted a definition of "pilot" in its February 8, 2021 order in Case No. U-20645 (February 8 order). All commenters from the present case, with the exception of AEMA, participated in the stakeholder process that preceded the issuance of the February 8 order, and the Commission adopted the definition of "pilot" as follows: "A pilot is a limited duration experiment or program to determine the impact of a measure, integrated solution, or new business relationship on one or more outcomes of interest." February 8 order, p. 7. The

Commission will use the Proposed Definition and Objective Criteria for Utility Pilots put forth in Exhibit A of the February 8 order to evaluate the utilities' proposed pilot programs. In addition, the Commission encourages the utilities to use the most current participation model requirements in the development of their pilot programs, while acknowledging that the MISO tariff language is updated regularly and may continue to evolve.

In developing their respective ESR pilot offerings, the Commission encourages each utility to consider multiple structures, including potentially having the utility participate in the wholesale market on behalf of the customer-owned ESR and having the utility engage a third party to serve as an aggregator of ESRs, particularly for ESRs individually below size requirements. As noted above, these pilots may also include retail tariffs that utilize and compensate the ESR appropriately in lieu of direct participation in the wholesale market, including tariff provisions that pass applicable market revenues for capacity, ancillary services, and energy to the customer as if the ESR was participating in the market on its own behalf. For smaller distributed ESRs, utilities may also consider pilot offerings that aggregate and utilize those ESRs in the wholesale market and provide compensation to the resource owners. In addition, the Commission encourages the development of different offerings for different rate classes.[12]

Information relating to the costs for the implementation of any pilots should be collected to further inform the Commission's review of the reasonableness and prudence of various options, including utility participation and third-party aggregation.

[12] For example, a residential-focused ESR pilot may analyze energy storage provided for the purpose of maintaining reliability for residential customers on a distribution circuit compared to energy storage as a system service that benefits industrial customers. In each case, rates may signal flexibility and value for storage providers and rates may include more substantial TOU pricing to see how aggregated ESRs respond and the benefits they provide.

Consistent with the February 8 order outlining expectations for utility pilot programs, the Commission requests that all proposed pilot programs, whether administered by a utility or third-party aggregator, collect detailed data to report the following:

- Quantification of benefits, not limited to:
  - Economic value of wholesale market participation;
  - Economic value of retail market participation;
  - Compensation provided to ESR owners; and
  - Grid benefits.

- Quantification of utility costs, not limited to:
  - Costs to serve as an administrator; and
  - Costs to engage the services of third party to serve as the market participant in the RTO/ISO, if applicable.

- Non-economic benefits arising from the pilot.

- Speed of dispatch.

- Percentage of aggregated ESRs responding, if applicable.

- Data availability, formats, access, or related issues impacting pilot planning and deployment.

A number of commenters also outlined the resiliency and deferred distribution upgrade benefits that ESRs can provide; thus, the Commission is interested in pilots that examine storage

as an NWA.[13] Should utilities propose pilots for ESRs serving as NWAs, the Commission is interested in a comparative analysis of solutions with and without retail and wholesale benefits from storage in siting NWA solutions, including whether sited locations would differ once retail and wholesale market participation are considered.

The Commission emphasizes that this is not an exhaustive list of issues a dual participation pilot may explore and encourages utilities to detail further desired learnings in accordance with the Objective Criteria for Utility Pilots. Pilots may also be designed to consider: low-income assistance, as some distributed ESRs are better suited for affordability; inclusion of multiple value streams from retail, wholesale, reliability, or other areas; metering solutions with one or multiple metering technologies; and different business models or customer recruitment strategies.

The Commission finds that this approach–encouraging utilities to propose well-designed retail tariffs that account for the full value stack ESRs offer, while also allowing for participation through the utility in regional wholesale markets–is a reasonable next step in enabling increased

[13] A number of utilities have proposed using storage as an NWA as part of their recently-filed distribution plans. The April 12, 2018 order in Case No. U-20147 opened the docket for DTE Electric, Consumers, and Indiana Michigan Power Company (I&M) to file five-year distribution investment and maintenance plans. In its plan, DTE Electric proposed three NWA pilots with storage aspects and two other technology pilots involving energy storage. The NWA pilots include: Port Austin substation NWA pilot to be implemented between 2022 and 2024; Veridian NWA pilot to be implemented between 2022 and 2026; and O'Shea Park battery project to be completed in 2022. The other technology pilots include a mobile battery trailer to be purchased by 2025 and a small solar and storage testing facility. *See*, *2021 Distribution Plan Grid Draft Report*, (August 2, 2021), pp. 396-403. Consumers is currently conducting a pilot at the Moline substation to study residential customer-sited storage. Consumers is also planning the Cadillac Solar Battery project, expected to have begun commercial operation in May 2021; a portable battery project, expected to have begun commercial operation in June 2021; a battery to allow islanding and mitigate potential outages, expected to begin commercial operation in 2024; and a small long-duration battery to support load transfers, expected to begin commercial operation in 2022. *See*, *Electric Distribution Infrastructure Investment Plan*, (June 30, 2021), pp. 109, 220. While I&M is not proposing any specific pilot plans at this time, the company stated that it "desires to pilot battery energy storage in Michigan in anticipation of a significant increase of these installations on its system." *Michigan Five-Year Distribution Plan*, (July 30, 2021), p. 68.

participation of ESRs in the electric grid. Should the proposed offerings ultimately fail to fully meet the goals of customers in utilizing ESRs, or unreasonably limit the opportunity to fully realize the multiple benefits ESRs can provide, the Commission may then consider other options to better enable ESRs to market and monetize the various benefits they offer at both the wholesale and retail levels.

THEREFORE, IT IS ORDERED that Michigan investor-owned electric utilities are encouraged to propose pilot programs in upcoming rate cases that meet the criteria outlined in this order and the Proposed Definition and Objective Criteria for Utility Pilots set forth in Exhibit A of the February 8, 2021 order in Case No. U-20645, and included in this order.

The Commission reserves jurisdiction and may issue further orders as necessary.

Any party desiring to appeal this order must do so in the appropriate court within 30 days after issuance and notice of this order, pursuant to MCL 462.26. To comply with the Michigan Rules of Court's requirement to notify the Commission of an appeal, appellants shall send required notices to both the Commission's Executive Secretary and to the Commission's Legal Counsel. Electronic notifications should be sent to the Executive Secretary at mpscedockets@michigan.gov and to the Michigan Department of the Attorney General - Public Service Division at pungp1@michigan.gov. In lieu of electronic submissions, paper copies of such notifications may be sent to the Executive Secretary and the Attorney General - Public Service Division at 7109 W. Saginaw Hwy., Lansing, MI 48917.

MICHIGAN PUBLIC SERVICE COMMISSION

Daniel C. Scripps, Chair

Tremaine L. Phillips, Commissioner

Katherine L. Peretick, Commissioner

By its action of August 11, 2021.

Lisa Felice, Executive Secretary

Proposed Definition and Objective Criteria for Utility Pilots

The following objective criteria will be used by Michigan Public Service staff when evaluating future pilot proposals coming before the Commission for funding approval. These objective criteria apply to all utility projects meeting the following definition of pilot.

A pilot is a limited duration experiment or program to determine the impact of a measure, integrated solution, or new business relationship on one or more outcomes of interest.

Provide the information below for each proposed pilot. Due to the variation in utility pilot topics, not all listed criteria may be applicable to an individual pilot. If any areas are not applicable to a pilot, the utility should indicate "not applicable" with brief justification.

Utility provision of data listed in the objective criteria is not envisioned to guarantee funding approval. Likewise, failure to provide information for some of the listed criteria or subcomponents is not envisioned to automatically lead to funding rejection.

1. ***Pilot need and goals detailed.***
    a. Need for the pilot is expressed. Results of past similar pilots and findings are shared to justify the need for the proposed pilot.
    b. Pilot goals and desired learnings detailed.
    c. Reference any pending applicable regulatory dockets, legislation, or other consideration relevant to the pilot project.
2. ***Pilot design and evaluation plan designed and presented together.***
    a. Pilot program design and evaluation plans are designed together so examined metrics and collected data support evaluation of the pilot in meeting goals and desired learnings.
    b. If applicable, define target customer population, selection rationale (including those for location-driven programs), recruitment plans, and evaluation plans for customer adoption and satisfaction.
    c. If statistical analysis will be conducted on pilot results, a statistically significant sample size must be selected, supported, and detailed. If a statistically significant sample size is not selected, justification must be provided.
    d. If statistical analysis will not be conducted, justification must be provided as well as an approach for evaluating pilot goals.
    e. If changes are required during implementation, pilot design, and evaluation impacts are shared.
3. ***Pilot project costs detailed.***
    a. Project costs are detailed by source and amount for applicable periods.
    b. Availability of non-utility funding and whether any was pursued (such as state or federal funding opportunities) described.
    c. Anticipated cost-effectiveness and net benefits when deployed at scale described.

        i. Quantification of expected benefits of the pilot and the evaluation criteria/methods used.
    d. Proposed rate recovery approach detailed.

4. ***Project timeline detailed.***
    a. Proposed timeline for the pilot project and any related reports or evaluations delineated.

5. ***Stakeholder engagement plan detailed.***
    a. Stakeholder engagement plan before, during, and after pilot takes place detailed.
    b. Interim and final stakeholder reporting described.
    c. Expected publicly available data from pilot shared under proper protections and privacy.

6. ***Public interest detailed.***
    a. Public interest justification, including supporting the transition to clean, distributed energy resources; enhancing reliability, safety, affordability, or equity; or other related goals, and the pilot's expected impacts described.
    b. Any added benefits to ratepayers or the energy delivery system, either due to proposed site selection or through other pilot variables, especially if any system weaknesses or forecasted needs are addressed, shared.
    c. Expected impacts of the piloted measure on reliability, resilience, safety, and ratepayer bills detailed.
        i. Pilot reduction goals for metrics like customer bill, outage minutes/frequency, and OSHA reportable, as well as the translation to full deployment expectations.
    d. Expected local or Michigan-based employment and business opportunities created by pilot described.
    e. Any potential impacts or added benefits of the pilot on low-income customers, seniors or other vulnerable populations described.
    f. Any other public benefits detailed.

P R O O F O F S E R V I C E

STATE OF MICHIGAN)

Case No. U-21032

County of Ingham)

Brianna Brown being duly sworn, deposes and says that on August 11, 2021 A.D. she electronically notified the attached list of this **Commission Order via e-mail transmission**, to the persons as shown on the attached service list (Listserv Distribution List).

Brianna Brown

Subscribed and sworn to before me
this 11th day of August 2021.

Angela P. Sanderson
Notary Public, Shiawassee County, Michigan
As acting in Eaton County
My Commission Expires: May 21, 2024

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