

OPENING THE DOOR TO DERs

How FERC Order No. 2222 Creates Opportunity for
Distributed Energy Resources to Participate in Wholesale
Electricity Markets

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INTRODUCTION

On September 17, 2020, FERC issued a landmark order directing Regional Transmission Organizations and Independent System Operators (RTOs/ISOs) to open their electricity markets to participation by aggregated distributed energy resources (DERs). DER adoption has been skyrocketing across the United States, driven by consumer demand for technologies such as solar, energy storage, demand response, energy efficient appliances and equipment, and electric vehicles (EVs). To date, legacy market rules have left these technologies with limited opportunities to provide energy, capacity, or ancillary services in wholesale power markets operated by RTOs/ISO.

Recognizing this gap, FERC's Order No. 2222 requires RTOs/ISOs to remove market barriers preventing the growing number of DERs from fully participating in the RTO/ISO electricity markets that serve two-thirds of consumers in the country. This significant step forward promises many benefits for consumers and the grid, including:

- **Increased Grid Reliability and Resilience:** DERs include fast responding and flexible resources that can significantly improve reliability and grid resilience. These resources can be optimized to improve bulk power system resilience during extreme weather events and provide needed flexibility to respond to variations in intermittent supply resources and more dynamic customer demands. They can also be quickly sited and deployed to address local reliability needs.
- **More Innovation and Competition:** Allowing DERs to participate in wholesale markets alongside conventional technologies will increase competition and spur innovation, allowing for the development of new business models to deploy DERs to provide a range of services in wholesale and retail markets.
- **Lower Consumer Bills:** Allowing DERs to provide services in wholesale markets increases wholesale competition and improves utilization of those resources, deferring the construction of other infrastructure and decreasing congestion on the system, lowering costs for all. By tapping into additional revenue streams in wholesale markets, developers can also offer DER-based solutions to consumers at lower cost.
- **New Revenue Opportunities for DERs:** Participation in wholesale markets unlocks an additional revenue stream that will improve the economics of DER portfolios and limit the risk asset managers face.



REQUIREMENTS OF ORDER NO. 2222 AND KEY FERC DETERMINATIONS

Order No. 2222 requires each RTO/ISO (excluding the Electric Reliability Council of Texas, or ERCOT, which is not subject to FERC jurisdiction) to develop tariff provisions that allow aggregations of DERs to participate directly in their wholesale electricity markets. These tariff provisions must accommodate the physical and operational characteristics of DER aggregations, and allow them to use “one or more” participation models to compete to provide all of the wholesale services they are technically capable of providing.

To comply, each RTO/ISO must file with FERC tariff provisions that establish market rules addressing specific technical and operational details impacting market participation by DER aggregations. As discussed below, these details include eligibility requirements, locational requirements, information and data requirements, metering and telemetry requirements, and coordination requirements among the regional grid operator, the DER aggregator, the distribution utility and the relevant retail regulatory authority (e.g., state public utility commission (PUC), rural electric cooperative board, or municipal utility regulator).

FERC addressed a number of key issues impacting the scope of Order No. 2222 and the resulting market opportunity it will provide to DERs to participate in the wholesale markets through aggregations.

FERC Defines DERs That Can Participate Broadly: Importantly, Order No. 2222 defines the DERs that may participate in a wholesale market DER aggregation broadly to include any resource located on the distribution system or behind a customer meter. This includes battery energy storage, renewable energy, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles and their supply equipment.

States and Utilities May Not Opt Out, But Small Utilities Are Exempt: Similar to Order No. 841 (addressing wholesale market participation by both front-of-the-meter and behind-the-meter energy storage resources), Order No. 2222 does not allow states and utilities to opt out and broadly prevent all DERs on their distribution grids from participating in the wholesale market through an aggregation. FERC concludes, as it did in Order No. 841, that giving state and local retail regulators (including self-regulated municipal and cooperative utilities) an opt-out is not required under the Federal Power Act’s jurisdictional provisions. Unlike Order No. 841, though, Order No. 2222 effectively exempts small utilities by barring RTOs/ISOs from allowing aggregated DERs on the systems of small utilities with



annual retail sales of 4 million MWh or less to participate, unless the relevant regulator of those small utilities (such as a state PUC, rural electric cooperative board of directors, or municipal utility regulator) explicitly opts in and allows such participation.

Participation of Load Reductions (Demand Response and Energy Efficiency): In Order No. 2222, FERC explicitly clarifies that demand response and energy efficiency (“customer sites capable of demand reduction”) are included in the definition of DERs that may participate in wholesale aggregations. FERC is somewhat less clear, though, about whether demand response resources located in states or utility service territories that have prohibited their retail customers’ demand response from being bid into RTO/ISO markets under the terms of Order No. 719 may participate in a DER aggregation. While FERC states that Order No. 2222 does not affect the ability of states to opt out of demand response participation under Order No. 719, earlier discussion in the order suggests that a DER aggregation that is capable of making sales for resale in interstate commerce could include any demand response resource, including those in an “opt out” state or utility territory. FERC explains that DER aggregations that are capable of such sales implicate a different part of its authority under the Federal Power Act than do aggregations of demand response alone, suggesting that demand response in the former could be treated differently.

DERs Can Provide Both Wholesale and Retail Services: Order No. 2222 allows DERs participating in retail programs to also participate in the wholesale markets through an aggregator, providing that they are not being compensated twice for the same service (i.e., “double counting”). This marks a shift from the Commission’s original proposal, which would have forced DERs to choose to participate exclusively in either retail or wholesale markets.

Jurisdiction over DER Interconnection: FERC sought additional comments in late 2019 regarding the implications of DER participation in wholesale markets on federal and state authority over DER interconnections and distribution facilities. In Order No. 2222, FERC resolved these questions by disclaiming jurisdiction over the interconnection of DERs to the distribution system when those DERs intend to participate in wholesale markets exclusively through an aggregator. This approach provides needed clarity as to who will hold jurisdiction over these interconnections, but may raise additional questions about whether state and local interconnection processes adequately account for wholesale market participation. **RTOs/ISOs and states may address interconnection issues as part of the compliance process.**



SPECIFIC RTO/ISO COMPLIANCE REQUIREMENTS

As noted above, Order No. 2222 requires each RTO/ISO to establish market rules addressing specific technical and operational details that govern market participation by DER aggregations. These market rules will ultimately determine the extent to which DER aggregations can compete to provide wholesale services in the RTO/ISO markets.

Below, we summarize specific compliance requirements included in Order No. 2222, highlighting some key compliance issues to watch as RTOs/ISOs work with stakeholders to develop their compliance plans.

1. **Eligibility of DER Aggregators to Participate in Wholesale Markets:** Order No. 2222 requires each RTO/ISO to revise its market rules to specify that DER aggregators are an eligible market participant, and to allow them to register their aggregation(s) to provide services under one or more participation models¹ “that accommodate the physical and operational characters of the [DER] aggregation.” FERC gives the RTOs/ISOs flexibility to modify existing participation models for use by DER aggregators, create a new participation model for DER aggregators, or a combination of both. FERC emphasizes that RTOs/ISOs must prove on compliance that their chosen approach “meets the goals of this final rule to allow distributed energy resources to provide all services that they are technically capable of providing through aggregation.”

Within this broad compliance directive, FERC includes a number of more specific directives to the RTOs/ISOs:

- a. **RTOs/ISOs May Not Prohibit Particular Technologies or Combinations of Technology Type:** FERC is explicit that RTOs/ISOs may not adopt rules that prohibit any particular type of technology from participating in a DER aggregation, and that RTO/ISOs must allow different DER technologies to participate in a single aggregation. Notably, FERC

¹ “Participation model” generally refers to the set of market rules and tariff provisions that account for the operational and technical characteristics of a resource type or set of resource types and facilitate their participation in the wholesale markets. In general, existing participation models facilitate the participation of conventional generation resources, demand response resources, and energy storage resources.



emphasizes that RTOs/ISOs should not be concerned about management of different individual resources and technologies within an aggregation: “the [DER] aggregator, not an individual [DER] in the aggregation, is the market participant with whom the RTO/ISO would be interacting[;] . . . the means by which an aggregation is able to provide wholesale services does not change the value of that service to the wholesale grid.”

- b. **RTOs/ISOs May Limit DER Participation to Guard Against “Double Counting” of Services:** Order No. 2222 allows DERs to participate in both retail and wholesale markets, providing they do not receive compensation twice for the same service. To effectuate this determination, the order directs RTOs/ISOs to develop market rules that **(1) allow DERs that participate in one or more retail programs to also participate in wholesale markets, (2) allow DERs to provide multiple wholesale services, and (3) set forth narrowly tailored restrictions to ensure DERs are not paid twice for the same service.** FERC states that these restrictions should only apply where the RTO/ISO has determined that a DER proposing to participate in an aggregation is (1) registered to provide the same services in the RTO/ISO markets (individually or as part of another aggregation); or (2) “included in a retail program to reduce a utility’s or other load serving entity’s obligations to purchase services from the RTO/ISO markets.”

- c. **Minimum/Maximum Size of DER Aggregations:** Order No. 2222 allows each RTO/ISO to establish a minimum size of DER aggregation that can participate in its markets, but to ensure that minimum size requirements do not become a barrier to entry the order states that minimum size requirements may not exceed 100 kW for all DER aggregations. FERC rejected arguments that RTO/ISO modeling and dispatch software will not be able to handle a large number of small aggregations, but states that if RTOs/ISOs experience such difficulty in practice, they can return to FERC to propose a larger minimum size requirement. FERC also rejected requests that it establish a maximum aggregation size. Further, FERC allows an aggregation to consist of just a single DER, provided it meets other requirements for wholesale market participation.

- d. **Minimum/Maximum Capacity Size of Individual DERs in an Aggregation:** FERC does not establish a standard minimum or maximum capacity size for individual DERs participating in an aggregation; **it does, however, require RTOs/ISOs to propose a maximum capacity size for individual DERs in an aggregation (or explain why a maximum capacity size is unnecessary).** FERC states that a maximum capacity size is necessary to ensure that larger



resources participate in the markets individually, and to allow RTOs/ISOs to independently model and verify their metering and “provide system operators with greater operational awareness and control to address changing system conditions.”

2. **Allowed Geographic Scope of DER Aggregations:** In Order No. 2222, FERC states that RTOs/ISOs must establish “locational requirements” that allow DER aggregations to be “as geographically broad as technically feasible.” FERC gives RTOs/ISOs flexibility in the implementation of this requirement, however, and in particular declines to mandate that DER aggregations be permitted across multiple pricing nodes, **leaving open the potential that RTOs/ISOs may propose to limit aggregations to a single node.** FERC emphasizes the benefits of multi-node aggregations, however, and stresses that RTOs/ISOs “must provide a detailed, technical explanation for the geographical scope” they propose to allow, including, for example, “discussion of the RTO/ISO’s system topology and regional congestion patterns, or any other factors that necessitate its proposed locational requirements.”
3. **Establishment of Distribution Factors and Bidding Parameters:** To accommodate the physical and operational characteristics of DER aggregations, Order No. 2222 requires each RTO/ISO that allows multi-node aggregation to put in place market rules that require DER aggregators to provide them with distribution factors – i.e., the total DER aggregation response that would be provided from each individual pricing node – when they register their aggregation, and to update these distribution factors as they change. This information facilitates the ability of DER aggregations to provide services and RTOs/ISOs to measure and pay for those services. Further, the order directs RTOs/ISOs to incorporate bidding parameters into their market participation models to account for the physical and operational characteristics of DER aggregations. FERC gives RTOs/ISOs flexibility in proposing bidding parameters and does not specify any that must be adopted, but notes that they may be necessary to “recognized [DERs’] multiple uses,” and emphasizes that they must allow DER aggregators to update them as needed.
4. **Information and Data Requirements Placed on DER Aggregators:** Order No. 2222 requires RTOs/ISOs to adopt market rules that set forth clear requirements for the information and data DER aggregators must provide, including information about the physical and operational characteristics of the aggregation, the list of individual DERs in the aggregation, and any information that is required to be provided about individual DERs in the aggregation. These information and data requirements include:



- a. **Aggregate Settlement Data and Performance Data:** The order directs RTOs/ISOs to require DER aggregators to provide aggregate settlement data and to retain performance data for individual DERs in the aggregation for purposes of auditing performance. FERC states that this information must be consistent with the settlement and auditing data requirements imposed on other market participants.
 - b. **Physical Parameters of the DER Aggregation:** FERC declined to mandate that RTOs/ISOs require DER aggregators to provide specific information on physical parameters, noting that this information may already be captured in general registration requirements or bidding parameters. Instead, RTOs/ISOs have flexibility to establish requirements for submission of physical parameter data if it is not already captured.
 - c. **Obligation to Provide a List of DERs in an Aggregation, and to Update that List as Changes Occur:** The order requires DER aggregators to provide a list of individual DERs in their aggregation to the RTO/ISO, and to update that list as it changes; **FERC states that if the RTO/ISO needs additional information beyond this list, it must “identify and explain . . . what additional specific information” it needs.** FERC notes that RTOs/ISOs only need information necessary to model a DER aggregation as a whole, and that requiring more detailed information about individual DERs “may be an unnecessary and burdensome requirement.” In addition, the order requires DER aggregators to update the list of DERs in an aggregation and associated data as changes occur; they are not, however, required to re-register or re-qualify the entire aggregation. FERC states that changes to the list will trigger the distribution utility review process described below (see 6a).
5. **Metering and Telemetry Requirements:** Order No. 2222 provides RTOs/ISOs flexibility to determine metering and telemetry requirements for DER aggregations, and declines to adopt any specific requirements. Instead, RTOs/ISOs are given flexibility to propose their own metering and telemetry requirements. FERC states that RTOs/ISOs must explain why their proposed metering requirements are necessary to ensure the provision of settlement and performance data and prevent double counting of services (as discussed above), and why their telemetry requirements are necessary to ensure sufficient situational awareness to dispatch the aggregation and the system efficiently. **The order also declines to rule on whether it is just and reasonable for an RTO/ISO to impose metering and telemetry requirements on individual DERs in an aggregation; instead, it gives the RTOs/ISOs flexibility to demonstrate that such**



requirements are necessary. FERC states that RTOs/ISOs must explain why any metering and telemetry requirements they propose will not result in undue barriers to individual DERs joining an aggregation. In addition, the order requires that RTO/ISO metering requirements rely on existing distribution utility or local regulatory authority metering system requirements wherever possible, to avoid imposing duplicative and unnecessary requirements and costs on DERs and DER aggregators.

6. **Requirements for Coordination Between RTOs/ISOs, DER Aggregators, Distribution Utilities, and State and Local Regulators:** Order No. 2222 requires RTOs/ISOs to develop extensive market rules to address coordination between all of these entities. These requirements include:

- a. **Distribution Utility Review of DERs Included in an Aggregation:** The order requires **RTOs/ISOs to develop a process for distribution utilities to review the individual DERs that comprise a DER aggregation.** The process must set forth transparent and specific review criteria that distribution utilities will apply to determine (1) whether a DER is capable of participation in an aggregation; and (2) that participation of a DER will not pose significant risks to the reliable and safe operation of the distribution system. With respect to whether a DER is “capable” of participating in a DER aggregation, FERC suggests that the review criteria should focus on whether a DER is already participating in a retail DER program that includes a condition that the DER not also participate in RTO/ISO markets. With respect to reliability and safety, FERC states that potential impacts to be considered in the review criteria could include possible increased voltage above acceptable limits or equipment overloads, and that where such impacts are found, distribution utilities should have the opportunity to alert the RTO/ISO and recommend that the DER causing them be removed from an aggregation. RTOs/ISOs must set forth a reasonable amount of time by which distribution utilities must complete their review that is not longer than 60 days. Finally, the order requires RTOs/ISOs to have a dispute resolution process in place that allows interested parties (such as DER owners and DER aggregators) to contest the results of the distribution utility process, including the recommended removal of a DER from an aggregation. FERC also states that such disputes can be brought to it for resolution, through its Dispute Resolution Service or through a formal complaint under Section 206 of the FPA.
- b. **Coordination Regarding Operation of DERs:** FERC also requires RTOs/ISOs to adopt processes for coordination of the operation of DERs that (1) address data flows and



communications among the RTO/ISO, DER aggregator, and distribution utility; (2) require DER aggregators to update its offered quantity and distribution factors that result from distribution line faults or outages; and (3) allow a distribution utility to override an RTO/ISO dispatch of a DER aggregation when needed to maintain the reliability and safety of the distribution system.

- c. **Role of Retail Regulators:** Order No. 2222 also requires each RTO/ISO to specify in its market rules how it will accommodate and incorporate voluntary involvement of state and other relevant retail regulators in coordination of the participation of aggregated DERs in their wholesale markets. FERC does not specify any particular roles that RTOs/ISOs must give to state and local regulators, but suggests they could include, among other things, developing interconnection agreements and rules, data sharing and/or metering and telemetry requirements, establishing rules for multi-use applications of DERs, and overseeing distribution utility review of DERs included in aggregations. FERC also suggests that the CAISO Distributed Energy Resource Provider (DERP) tariff could provide an example of how retail regulators are incorporated.
7. **Establishment of Standard Market Participation Agreements:** Order No. 2222 also requires each RTO/ISO to develop a standard market participation agreement (i.e., contract) that governs the relationship between, and defines the roles of, the RTO/ISO and the DER aggregator. This standard agreement must include an attestation by the DER aggregator that it “is compliant with the tariffs and operating procedures of the distribution utilities and the rules and regulations of” relevant retail regulators. FERC also states that the standard agreement may not limit the business models under which DER aggregators can operate.

NEXT STEPS

Interested parties may file requests for rehearing and/or requests for clarification of Order No. 2222 at FERC no later than Monday, October 19, 2020. The filing of a request for rehearing is a necessary prerequisite to seeking judicial review of the order. FERC entertains requests for clarification at its discretion, but typically issues a subsequent order addressing those requests and providing further clarification as appropriate.



RTOs/ISOs are required to submit proposed tariff revisions to comply with the requirements of Order No. 2222 at FERC within 270 days of the date the order is published in the Federal Register. FERC will review these proposals to determine whether they address the technical and operational details of aggregated DER participation in a manner that is consistent with Order No. 2222, are otherwise just and reasonable, and ensure that DER aggregations can provide all of the wholesale services they are technically capable of providing.

FERC did not propose a specific date by which each RTO/ISO must have market rules allowing for aggregated DER participation in place. Instead, it directed that each RTO/ISO propose in its compliance filing “an implementation plan appropriately tailored for its region,” and stated that this plan “must outline how the final rule will be implemented in a timely manner.”

RTO/ISO COMPLIANCE – SUMMARY OF KEY ISSUES TO WATCH

We can expect to see RTOs/ISOs announce plans in the coming weeks for how they will work with stakeholders to develop their compliance filings. Engagement in these stakeholder processes will be critical to ensure that the proposals filed with FERC fully comply with the requirement that organized wholesale electricity markets allow aggregations of DERs to provide all of the services they are technically capable of providing. As highlighted above, there are several key compliance issues to watch as each RTO/ISO develops their proposals to implement Order No. 2222:

- **Criteria for determining when a DER may not participate in a wholesale aggregation because it would result in double counting for the provision of the same service** (see 1.b., above)
- **Determination of the maximum capacity size of DER in an aggregation** (see 1.d., above)
- **Whether DER aggregations will be permitted over multiple nodes or limited to a single node** (see 2, above)
- **The data provision and metering and telemetry requirements applied to both DER aggregators individual DERs, including the information about individual DERs that is necessary** (see 4.c, above) **and the metering and telemetry required at individual DERs in an aggregation** (see 5, above)
- **The process of distribution utility review of DERs included in an aggregation and sign off on their ability to reliably and safely participate in the wholesale market** (see 6.a., above)



- RTO/ISO implementation of the other requirements regarding coordination between the RTO/ISO, distribution utility, DER aggregation, and state and local retail regulators, including implementation of the new requirement to allow state and local retail regulators to participate in coordination if they chose (see 6, above)
- Whether RTOs/ISOs and states address interconnection issues as well as streamlining/coordination of interconnection requirements

CONCLUSION

Order No. 2222 opens a significant opportunity for DERs to provide critical services in wholesale markets, improving competition, lowering consumer costs, increasing reliability and resilience, and providing a platform and incentives for innovation in DER technologies and consumer-facing services. However, we can expect to see variations in implementation among the six grid operators this order applies to. Designing the details with an eye toward removing all barriers to DER competition is crucial in order to harness the potential benefits of Order 2222.

