

# Order No. 2222: Participation of Distributed Energy Resource Aggregations in Wholesale Markets

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*Introduction to FERC's September 17, 2020,  
Order in Docket No. RM18-9-000*

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# Presentation Outline

- Order No. 2222 background, objectives, and general process
- Compliance requirements
- Critical design considerations
- Stakeholder process



# ORDER NO. 2222

*Background, Objectives, General Process*



# Background

- The FERC issued Order No. 2222 on September 17, 2020
  - The 290 page order amends the Commission’s “regulations to remove barriers to the participation of distributed energy resource aggregations in the capacity, energy, and ancillary service markets operated by Regional Transmission Organizations and Independent System Operators” (Order No. 2222 Summary, p. i)
- The Notice of Proposed Rulemaking (NOPR) that culminated in Order No. 2222 was issued on November 17, 2016, in Docket No. RM16-23-000
  - The original NOPR addressed barriers to participation of electric storage resources and distributed energy resources (DERs) in RTO/ISO administered markets
  - The Commission later bifurcated the proceeding such that the participation of electric storage resources was addressed first in Order No. 841
- In Order No. 2222, the Commission broadly adopted the reforms proposed in the 2016 NOPR with some modifications based on the comments it received, a technical conference held in 2018, post-technical conference comments, and the responses to a data request on interconnection procedures issued in 2019 in Docket No. RM18-9-000



# Objectives and General Process

- Order No. 2222 requires that ISOs/RTOs “allow distributed energy resources to provide all services that they are technically capable of providing through [an] aggregation” (*Id.* at P 130)
  - To comply, ISO/RTOs must revise their tariffs consistent with specific requirements, which are summarized later in this presentation
  - Alternatively, Order No. 2222 allows ISO/RTOs to point to existing tariff provisions as compliant with the Order, but they must demonstrate that those current provisions satisfy the intent and objectives of the Order
- Requests for rehearing/clarification were due on October 18, 2020
  - Very few requests for rehearing were filed
  - ISO New England did not file a request for rehearing or clarification
- Compliance filings are due on **July 19, 2021**
- The Commission left it to “each RTO/ISO to propose a reasonable implementation date, together with adequate support explaining how the proposal is appropriately tailored for its region and implements this final rule in a timely manner” (*Id.* at P 361)

# COMPLIANCE REQUIREMENTS



# Key Compliance Directives of Order No. 2222

- Order No. 2222 has eleven key compliance directives:
  1. Allow DER aggregations (DERAs) to participate directly in RTO/ISO markets and establish DER aggregators as a type of market participant
  2. Allow DER aggregators to register DERAs under one or more participation models that accommodate the physical and operational characteristics of the DERA
  3. Address size requirements for DERAs and individual DERs
  4. Address locational requirements for DERAs
  5. Address distribution factors and bidding parameters for DERAs
  6. Address information and data requirements for DERAs



# Key Compliance Directives of Order No. 2222 (cont.)

7. Address metering and telemetry requirements for DERAs
  8. Establish market rules on coordination between the RTO/ISO, DER aggregator, distribution utility, and Relevant Electric Retail Regulatory Authorities (RERRAs)
  9. Address modifications to the list of DERs in a DERA
  10. Address market participation agreements for DER aggregators
  11. Implement opt-in provision for distribution companies with  $\leq 4$  million MWh of annual sales
- Each directive has specific requirements associated with it that will be further discussed in the next slides



## ***Directive 1 – Allow DERAs to participate directly in RTO/ISO markets and establish DER aggregators as a type of market participant***

- A DER is “any resource located on the distribution system, any subsystem thereof or behind a customer meter... [that] may include, but are not limited to, resources that are in front of and behind the customer meter, electric storage resources, intermittent generation, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles and their supply equipment...” (Id. at P 114)
- A DERA is one or more DERs participating together as a single resource in the wholesale markets
- A DER aggregator is “the entity that aggregates one or more distributed energy resources for purposes of participation in the capacity, energy and/or ancillary service markets of the regional transmission organizations and/or independent system operators.” (Id. at P 118)
  - The CAISO refers to DER aggregators as DER Providers (DERPs) – I use this term in the remainder of this presentation for brevity and clarity

## ***Directive 2 – Allow DERPs to register DERAs under one or more participation models that accommodate the physical and operational characteristics of the DERA***

- DERAs must be allowed to offer all wholesale services they are capable of providing
- Allow multiple technology types to participate as part of an aggregation, i.e., *heterogeneous aggregations*
- Prohibit the double counting of services, while also allowing simultaneous wholesale and retail program participation
  - The Commission notes that this includes ensuring that a DER is not counted as both a load reduction and a supply resource, or that a DER is not registered to provide the same service twice in an RTO/ISO market



## ***Directives 3 and 4 – Address size and locational requirements***

- Address size requirements for DERAs and individual DERs
  - Establish a minimum size requirement for DERAs that does not exceed 100 kW
  - Establish maximum individual DER size (or explain why a maximum is unnecessary)
  - Allow a single DER to be its own DERA (must be  $\geq$  minimum DERA size requirement and  $<$  maximum DER size requirement)
- Address locational requirements for DERAs
  - DERAs must be allowed across as broad a geographic footprint as “technically feasible”
  - The locational requirements can include either single- or multi-node aggregations

## ***Directive 5 – Address distribution factors and bidding parameters for DERAs***

- If allowing multi-node aggregations, the Tariff must:
  - Require DERPs to provide the total DERA response that would be provided from each pricing node when it initially registers an aggregation and to update these distribution factors if they change; and
- Incorporate bidding parameters into any participation model(s) to account for physical/operational characteristics of DERAs



## ***Directives 6 and 7 – Address information, data, metering, and telemetry requirements for DERAs***

- Address information and data requirements for DERAs
  - Establish information and data requirements on the physical and operational characteristics of a DERA
  - Require that DERPs provide a list of the individual DERs in its aggregation
  - Establish any necessary information that must be submitted for the individual DERs
  - Establish any necessary physical parameters that a DERP must submit to the extent these parameters are not already represented in general registration requirements or bidding parameters
  - DERPs must provide aggregate settlement data for the DERA, retain performance data for individual DERs for auditing purposes
- Address metering and telemetry requirements for DERAs
  - Metering requirements are necessary for the DERP to provide settlement and performance data, or to prevent double counting of service
  - Telemetry requirements are necessary for the RTO/ISO to have sufficient situational awareness to dispatch a DERA and the rest of the system efficiently

## ***Directive 8 – Establish market rules on coordination between the RTO/ISO, DERP, distribution utility, and Relevant Electric Retail Regulatory Authorities (RERRAs)***

- Interconnections of DERs for the purpose of participating in a DERA are state jurisdictional; RTOs/ISOs may require transmission studies
- RTOs/ISOs must incorporate a process allowing distribution utility's review of the individual DERs, triggered by the initial registration of a DERA or changes to an existing DERA
  - Distribution utilities would determine a) whether each DER is capable of participating in a DERA, and b) that the participation of each DER will not create a distribution system reliability or safety issue

## ***Directive 8 – Establish market rules on coordination between the RTO/ISO, DERP, distribution utility, and Relevant Electric Retail Regulatory Authorities (RERRAs) (cont.)***

- Ongoing operational coordination with distribution utilities
  - Address data flows and communication between RTO/ISO, DERP and distribution utility
  - Require DERP to report any changes to its offered quantity and related distribution factors that result from distribution line faults or outages
  - Include coordination protocols and processes for the operating day that allow distribution utilities to override RTO/ISO dispatch of a DERA to maintain the reliable and safe operation of the distribution system
- Voluntary participation of RERRAs in coordinating the participation of DERAs in wholesale markets



## ***Directives 9, 10, and 11 – Modifications to DERAs, market participation agreements, opt-in provision***

- Address modifications to the list of DERs in a DERA
  - DERPs are required to update the lists of individual DERs in each DERA to reflect additions to and subtractions from the list
  - Modification will not require DERPs to re-register or re-qualify the entire DERA
  - To be added to a DERA, new DERs must be deemed by the distribution utility to be eligible to participate in a DERA
- Address market participation agreements for DERPs
  - Must not prohibit any business models
  - Must include an attestation that a DERA is compliant with distribution utility interconnection requirements, tariffs and operating procedures, and with the rules and regulations of the RERRA
- Implement ***opt-in*** provision for distribution companies with  $\leq 4$  million MWh of annual sales

# CRITICAL DESIGN CONSIDERATIONS



# Facilitate the Participation of DERAs in Wholesale Markets

- Register DERAs in a manner that accommodates the physical and operational characteristics of the DERAs
- Allow multiple technology types to participate as part of a DERA
- Prohibit the double counting of services
- Establish size requirements
  - Minimum size requirement for DERA cannot exceed 100 kW
  - Establish maximum individual DER size
- Allow for single resource aggregations
  - Allow a single DER to be its own DERA (must be  $\geq$  minimum DERA size requirement and  $<$  maximum DER size requirement)
- Establish locational requirements and any associated distribution factors and bidding parameters
  - Single- vs. multi-node footprint for DERAs
  - Required bidding parameters based on type(s) of individual DERs in a DERA

# Coordination Between the ISO, DERP, and Distribution Utility

- Interconnection and registration of new DERs and DERAs
  - Develop process for registration that includes distribution utility review
  - Make changes, if necessary, to transmission study review for individual DERs seeking to participate in a DERA
- Changes to DERA composition over time
  - Establish process for changing list of DERs in a DERA
  - ISO-NE allows similar changes for assets in a Demand Response Resource aggregation
- Ongoing operational coordination
  - Day-ahead clearing
  - Real-time dispatch
  - Distribution utility overrides
- Potential roles of RERRAs as defined by the FERC include:
  - Interconnection processes
  - Dispute resolution between DERP and distribution utility
  - Data sharing requirements for metering data
  - Overseeing distribution utility review of DER participation
  - Establishing rules for dual wholesale market/retail program participation

# Metering and Telemetry

- To ensure a balanced energy market settlement, the metering of Generator Assets and Load Assets is conducted by Assigned Meter Readers and Host Participants pursuant to OP-18
- Telemetry provides operational data to the ISO that is critical to maintaining reliability of the bulk power system
  - Used in the ISO's modeling and control systems so that the ISO can balance supply and demand in the New England control area in real time
  - Provides situational awareness so that system operators can quickly respond to changing conditions in the power system
- Preliminary discussions with some market participants indicate that metering and telemetry requirements could require DERAs to incur significant costs
- The ISO may potentially rely on metering and telemetry data obtained through compliance with distribution utility or local regulatory authority metering system requirements

# STAKEHOLDER PROCESS



# Process Description

- The ISO plans to gather perspectives of various stakeholders before bringing a proposal for consideration in the NEPOOL stakeholder process
- By **December 22**, we request that interested stakeholders provide their perspectives and feedback on Order No. 2222 to Henry Yoshimura at [hyoshimura@iso-ne.com](mailto:hyoshimura@iso-ne.com)
- From the comments received, the ISO will offer to have discussions in January and February with interested entities directly affected by Order No. 2222 compliance requirements
- The ISO will then develop a proposed approach that will be vetted through the NEPOOL process

# Process Schedule

- **Dec 2020:** Kick-off discussion on Order No. 2222 compliance
- **Dec 2020-Feb 2021:** ISO discussions with entities directly affected by Order No. 2222 compliance requirements
- **Feb 2021:** High-level design approach reviewed with the NEPOOL Technical Committees—MC, RC, TC—as appropriate
- **Mar 2021:** More detailed presentation to NEPOOL Technical Committees; take the discussion to working groups if a referral is given
- **Apr 2021:** Continued discussion with NEPOOL; draft Tariff changes released, initial discussion of any conceptual amendment proposals
- **May 2021:** Continued discussion of draft Tariff changes with NEPOOL, continued discussion of any amendment proposals
- **Jun 2021:** Technical committee vote on Tariff changes including any proposed amendments
- **Late Jun 2021:** Participants Committee vote on Tariff changes including any proposed amendments
- **July 19, 2021:** Filing with FERC

# Q&A AND DISCUSSION

