



FERC Order No. 2222

*Presentation to the DOE Electricity Advisory
Committee*

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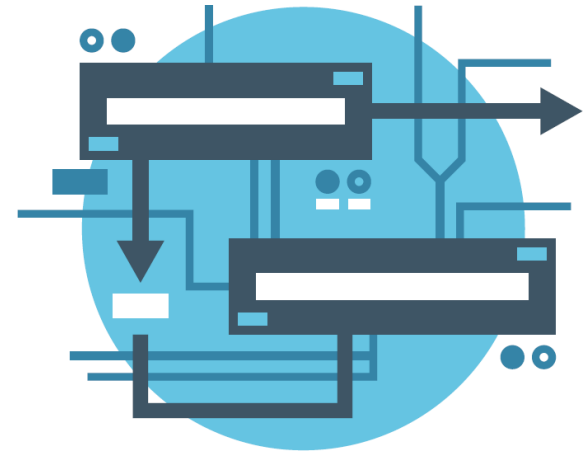


Participation of Distributed Energy Resource Aggregations in Wholesale Markets

- Topics discussed in today's presentation:
 - *What is ISO New England's role in the Order No. 2222 process?*
 - *What are the top 3 implementation/design complications/issues that you are experiencing with Order No. 2222?*
 - *Where do we go from here?*
- Order No. 2222, issued on September 17, 2020, requires that ISOs/RTOs create a market participation model that allows distributed energy resources (DERs) to provide all wholesale services that they are technically capable of providing through an aggregation of resources
- ISO New England's (ISO-NE's) role is to comply with Order No. 2222 by:
 - Revising our tariff to be consistent with specific requirements from the Order, or
 - Demonstrating how current tariff provisions satisfy the intent and objectives of the Order
- FERC granted ISO-NE a **February 2, 2022** compliance filing deadline

Distributed Energy Resource (DER) Proliferation Challenges Current Approaches

- **ISO New England must comply with Order No. 2222 while continuing to fulfill critical roles**
 - Grid operation, market administration, and power system planning
- Presently, most generation and some demand response are dispatched by the ISO to meet **price-inelastic demand**
- With more behind-the-meter technologies, net demand could become **less predictable**
- In a high-DER future, power flows become **more variable, bi-directional, and less predictable**
- Real-time operations, wholesale/retail market design, and regional planning become **more complex**



Top Three “Pain Points”

1. A top-down approach to DER participation in markets will be inefficient and unreliable under high DER adoption.
2. Participation of DERs or of DER aggregations (DERAs) in wholesale markets likely will be limited.
3. With limited participation, the benefits will likely be low, but the cost of compliance is expected to be high.

A Top-Down Approach To DER Operations Will Be Unreliable And Inefficient

- ISOs/RTOs operate and administer markets for **all resources** connected to the high-voltage transmission system
 - Transmission systems have a network architecture that allows power to flow along multiple pathways
- Under Order No. 2222, DERAs participate in wholesale markets along with resources on the high-voltage transmission system
- DERAs are located on the lower-voltage distribution system
 - Distribution systems have a radial architecture designed for one-way power flow
- DERAs participating in wholesale markets will be economically dispatched along with transmission-connected resources, **but without regard to distribution system limitations**
 - ISOs/RTOs do not model distribution systems
 - Distribution utilities, the systems they own, and service to retail customers are regulated by the states
 - Should DERs proliferate, coordination of DERA operations in real-time between the ISO/RTO and the distribution utilities will be cumbersome resulting in reliability problems and inefficiencies

Participation of DERs in Wholesale Markets

Likely to be Limited

- Order No. 2222 prohibits “double counting”
 - For example, if a behind-the-meter DER is paid for the MWhs it produces, and the same MWhs are used to reduce the customer’s load profile, then that DER will be double counted as both a supply resource and as a load reduction
 - The settlement of demand response resources is an exception to this rule
 - Double counting should be avoided as it increases system costs and results in cost shifting
- Since a behind-the-meter DER will not be allowed to receive both wholesale market payments and retain retail savings for the same energy produced, DER participation in wholesale markets will likely be limited as a consequence
 - Using DERs to reduce retail charges appears to be a superior value proposition compared to wholesale market participation
 - In 2020, the average retail rate in New England (all customer sectors) was 17.68¢/kWh, while the average all-in wholesale rate (New England Hub for all hours) was 3.402¢/kWh
 - The CAISO established its DERA model in 2016, but no DERA participates in this model for this reason

Benefits Will Likely be Low, But Compliance Costs are Expected to be High

- As just explained, the participation of DERs in wholesale markets likely will be limited, which limit their benefit
- But compliance costs are expected to be high
 - The ISOs/RTOs will have to design new systems to accommodate DERAs consisting of aggregations of “heterogeneous” technologies
 - Distribution utilities would also need to have systems in place to:
 - Review DER eligibility to participate in wholesale markets,
 - Implement any needed metering infrastructure changes, and
 - Assess DER impact on distribution system reliability and safety when DERAs seek to register for wholesale market participation, and to conduct day-ahead planning and real-time operations
 - Retail regulators may also need to establish rules, requirements, or cost recovery mechanisms associated with distribution utility requirements under the Order

Where Do We Go From Here?

- Instead of the top-down approach, the focus ought to be the development of Distribution System Operators (DSOs)
- Maintaining efficiency and reliability require that the operation of DERs be managed within the distribution system in which they are located
 - In a high-DER future, constraints on distribution systems affect the simultaneous operation of DERs in **specific locations**
 - Knowledge of (visibility) and control over DER operation in real time **improves system reliability**
 - Distribution systems are **more extensive and complex** – modeling will be a challenge
- The DSO would determine the **feasibility** of operating DERs in its footprint and coordinate with the ISO the **economic** dispatch of DERs along with wholesale market resources
 - To maintain distribution system safety and reliability, the DSO must operate DERs in their system, not the ISO
 - To achieve economic efficiency, the DSO must dispatch DERs and/or purchase energy from (or supply energy to) the wholesale market, on an least-cost basis

Q&A AND DISCUSSION



Additional Information

- The ISO recently launched a [key project page](#) for Order No. 2222 – the page houses information including committee materials, regulatory filings and Orders, and other related materials
- The ISO posts regular updates on Order No. 2222 and other initiatives on the [ISO Newswire](#)

For More Information...



- Subscribe to the **ISO Newswire**
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