



FERC Proposes Market Reforms for Energy Storage and Distributed Energy Resources

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On November 17, the Federal Energy Regulatory Commission (FERC or Commission) issued a [Notice of Proposed Rulemaking](#) (NOPR) aimed at allowing energy storage resources and all categories of aggregated distributed energy resources (DERs) to more fully participate in organized electricity markets.¹ As storage and DERs have become increasingly common, independent system operators (ISOs) and regional transmission organizations (RTOs) have developed individual methods of integrating these resources. While leaving significant elements for each market to determine, the NOPR would move towards a standard – and more expansive – role for these resources in markets.

Background

Storage and DERs have received significant attention from FERC in the past year. The NOPR specifically responds to comments received in a Commission [inquiry](#) into barriers to storage participation in organized markets. FERC also recently has sought information on [storage interconnection issues](#) and the ability of storage resources [to serve as transmission assets and deliver multiple services](#). Additionally, the California Independent System Operator (CAISO) submitted and FERC accepted [market rules allowing for aggregated DERs to participate](#) in CAISO's markets.

Notice of Proposed Rulemaking

The Commission proposes to act under section 206 of the Federal Power Act, based on a finding that current market rules in ISO/RTO tariffs may not be just and reasonable, and may be unduly discriminatory toward storage and DERs. In addition to widely varying requirements between markets, current rules often lead storage and DERs to register as other types of resources (such as generation or demand response), as storage and DERs may not be specifically designated or recognized in tariffs, and may therefore be unable to receive compensation for all services which they can provide to a market. FERC is not proposing any changes applicable outside of organized markets

Energy Storage: Recognizing a Distinct Resource

In the NOPR, the Commission proposes to specifically define and acknowledge the ability of storage resources to both withdraw and inject power from the grid, and the NOPR would require RTOs and ISOs to establish a "participation model" (a unique category or set of categories of grid resources) for storage, so that storage can be classified as such rather than as another type of resource (e.g., generation or demand response). Each market's model must allow storage resources to offer all of the capacity, energy, and ancillary services they are technically capable of providing, and must be neutral regarding particular storage technologies such as flywheels, batteries, and pumped hydroelectric. Additionally, FERC proposes to require RTOs and ISOs to make storage resources eligible to provide non-market services procured by market operators, including blackstart, primary frequency response, and reactive power. The Commission also proposes to allow storage resources to derate capacity values to ensure that they can actually meet any applicable capacity obligation, while still being able to provide other services. Comments are requested on whether and how storage resources should be able to simultaneously provide energy and ancillary services.

¹ In the NOPR, FERC proposes to define an "energy storage resource" as "a resource capable of receiving electric energy from the grid and storing it for later injection of electricity back to the grid regardless of where the resource is located on the electrical system." FERC proposes to define a DER as "a source or sink of power that is located on the distribution system, any subsystem thereof, or behind a customer meter." The NOPR focuses on aggregators of DERs as market participants, and FERC indicates that many DERs may find it uneconomical to participate in wholesale markets absent the economies of scale and operational attributes achieved via aggregation.

The proposed market rules would require adjustment to bidding parameters to account for the characteristics of storage. FERC proposes to require markets to include the state of charge, upper and lower charge limits, and maximum energy charge and discharge rates in bid parameters, and to allow storage resources to include at their discretion minimum and maximum charge times and run times. The proposed rule would make self-management of the state of charge the default for storage (whereas in some markets today, the market operator manages the state of charge); additionally, storage resources would also become subject to penalties for failing to adhere to an awarded dispatch schedule.

To fully integrate storage into electricity markets, organized markets would be required to allow storage resources to be dispatched and to set the market clearing price as a seller or buyer, consistent with applicable market rules (for instance, storage must be available as a dispatchable resource to set market prices). Each market would be able to set its own minimum size requirement for storage participation, but the minimum size could not exceed 100kw (which the PJM and SPP markets use as a threshold today). Finally, FERC proposes to require that any resales of electricity from a storage resource must be at the wholesale locational marginal price.

FERC indicates that the sale of energy to charge a storage device for later resale in the energy or ancillary services markets constitutes a "sale for resale" within the meaning of the Federal Power Act, and is therefore FERC-jurisdictional. Ensuring that power flows for charging and discharging storage resources are properly tracked and compensated on a market-by-market basis may prove complex, particularly for storage resources attempting to provide services at both the wholesale and retail levels.

Distributed Energy Resources: Enabling Market Participation via Aggregators

FERC proposes to allow aggregators of DERs to participate directly in wholesale markets, explaining that individual DERs may not be able to economically implement the requirements necessary to qualify as market participants. This follows upon the acceptance of the CAISO's proposal to allow such participation earlier this year. Notably, FERC has moved forward with proposing a requirement across all organized markets without waiting for implementation data from CAISO.

Under the NOPR, each ISO and RTO would need to enable aggregated DERs of any resource category (such as distributed generation, storage, and load) to participate comparably to resources of the same category interconnected at the wholesale level. This means that any aggregation of DERs would need to meet the same minimum size and operational criteria as a wholesale resource of the same type in the same market – for instance, if a market's minimum generator size were 0.5MW, an aggregation of distributed generation would need to meet or exceed the same threshold to participate.

Under the NOPR, RTOs and ISOs would need to establish rules regarding the eligibility of resources to participate via an aggregator. FERC also proposes that to avoid the potential for aggregated DERs being compensated for the same services through multiple programs, any aggregated DERs receiving retail revenues (for instance, via state-administered net energy metering programs) would be barred from participating at the wholesale level.

FERC proposes to require ISOs/RTOs to provide flexibility in locational requirements for DERs in an aggregation, as aggregated resources would not be required to have the same interconnection point, or to all be in front of or behind respective customer meters. Instead, DER aggregators would need to supply detailed information on distribution factors (indicating which pricing nodes the resources within a DER aggregation are located at), and bidding parameters. Aggregators would need to provide both default distribution factors, and would then update the factors for offers and bids. While FERC indicates that the information requirements on DER aggregations must not be overly burdensome, information supplied to the market operator should include total capacity, maximum and minimum operating limits, ramp rate, minimum runtime, and default distribution factors (if applicable). The NOPR also proposes to streamline the process for modifying aggregations, and would require markets to allow changes to the DERs within an aggregation (such as adding or removing resources) without necessitating reregistration of all resources within the aggregation.

Integrating aggregated DERs will require significant resource data exchanges between aggregators and market operators. FERC is not proposing to mandate any specific metering or telemetry requirements, but instead would leave each ISO/RTO to identify the necessary requirements at the aggregator (rather than the distributed resource) level. Each market will also be required to establish processes to ensure coordination with aggregators and the applicable distribution utility, and to develop a new participation agreement specifically for DER aggregators.

Next Steps

Comments on the NOPR [are due by January 30, 2017](#).

FERC has proposed to require RTOs and ISOs to submit a compliance filing six months after the effective date of a final rule, and for the new tariff requirements to become fully effective twelve months from the compliance filing date.

Implications

The proposed rule is the most significant step taken in FERC's recent engagement on storage and DER issues, and has the potential to substantially change the participation of these resources in organized markets. Significantly, the proposed rule would create specific market roles for storage and DERs, rather than the present method of trying to integrate these resources into preexisting market categories, providing opportunities for additional revenues and potentially making financing of these resources more feasible for developers. Additionally, the proposed rule – while allowing for some regional variance – would create a common framework for participation of storage and aggregated DERs in organized markets, and as such should provide greater opportunities for development of such resources. One area to watch closely is the emergence of any potential federal-state jurisdictional issues, both for storage resources trying to provide retail as well as wholesale services, and for customer- or distribution-sited DERs.

In a [separate proceeding](#), FERC is accepting comments through December 14 on treatment of storage as a transmission asset and the ability of storage resources to receive compensation for multiple services. Additionally, CAISO's early efforts on integrating DERs into the wholesale market via aggregation will result in mandatory annual performance reviews, and the availability of data and any early challenges encountered by CAISO may inform final Commission action on the NOPR.

For more information

For assistance or additional information, please contact [David Yaffe](#), [Doug Smith](#), [Gabe Tabak](#) or anyone within the firm's [Electricity](#) practice group.

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