

New FERC Energy Storage Rule: Framework for Creating Participation Models

Expanded Use of Storage Resources, Development of Rules, Impact on Resources and Existing Potential Fleets

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Today's faculty features:

Elliot Hinds, Partner, **Crowell & Moring**, Los Angeles

Levi McAllister, Partner, **Morgan, Lewis & Bockius**, Washington, D.C.

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Morgan Lewis

crowell  moring

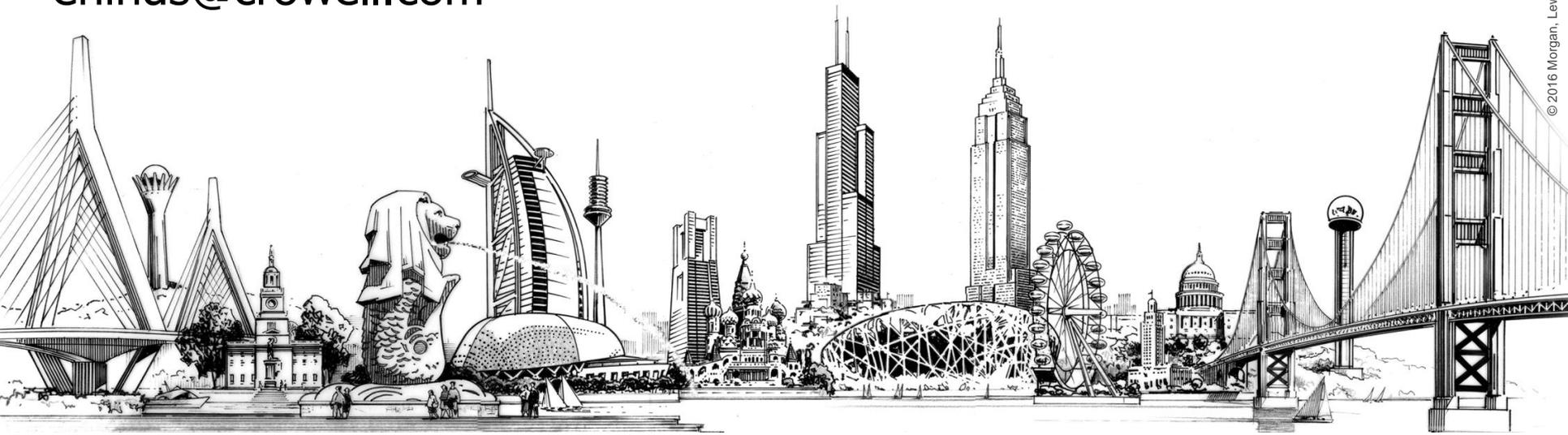
NEW FERC ENERGY STORAGE RULE: *FRAMEWORK FOR CREATING PARTICIPATION MODELS*

Levi McAllister

levi.mcallister@morganlewis.com

Elliot Hinds

ehinds@crowell.com



ORDER NO. 841: HOW DID WE GET HERE?

FERC Focus on Storage

- FERC has long recognized the potential for storage to bring economic and reliability benefits to consumers.
- Various FERC rulemakings and administrative issuances have focused on issues relevant to storage since at least 2011.
- Notable examples:
 - Order No. 755: Frequency Regulation Compensation in the Organized Wholesale Power Markets
 - Order No. 784: Third Party Provision of Ancillary Services; Accounting and Financial Reporting for New Electric Storage Technologies
 - Order No. 792: Small Generator Interconnection Agreements and Procedures
 - Order No. 819: Third-Party Provision of Primary Frequency Response Service
 - Policy Statement: Utilization of Electric Storage Resources for Multiple Services When Receiving Cost-Based Rate Recovery

Need for Reform

- FERC had been evaluating the need for reforms to better accommodate storage participation in wholesale markets.
 - In November 2015, FERC hosted a panel to discuss electric storage resources.
 - In April 2016, FERC Staff issued data requests to ISOs and RTOs and a Request for Comments to determine whether electric storage resources face barriers to participating in the capacity, energy, and ancillary service markets that potentially lead to unjust and unreasonable wholesale rates.
 - In November 2016, FERC issued a Notice of Proposed Rulemaking (NOPR) preceding Order No. 841 proposing to amend its regulations to remove barriers to the participation of electric storage resources in the RTO/ISO markets.
- Efficiency and competition concerns arise when resources that are capable of providing services are precluded from participating.

ORDER NO. 841: KEY ELEMENTS

Order No. 841

- Issued February 28, 2018.
 - 15 months after the NOPR was issued.
 - Issued by a Commission that is substantially different in composition from the Commission that issued the NOPR.
 - *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 (2018).
- Order No. 841 largely adopts the proposals set forth in the NOPR.
 - The crux of the rulings and the rationale underlying them are designed to:
 - Ensure efficiency in the organized markets; and
 - Promote competition in the organized markets.

Order No. 841

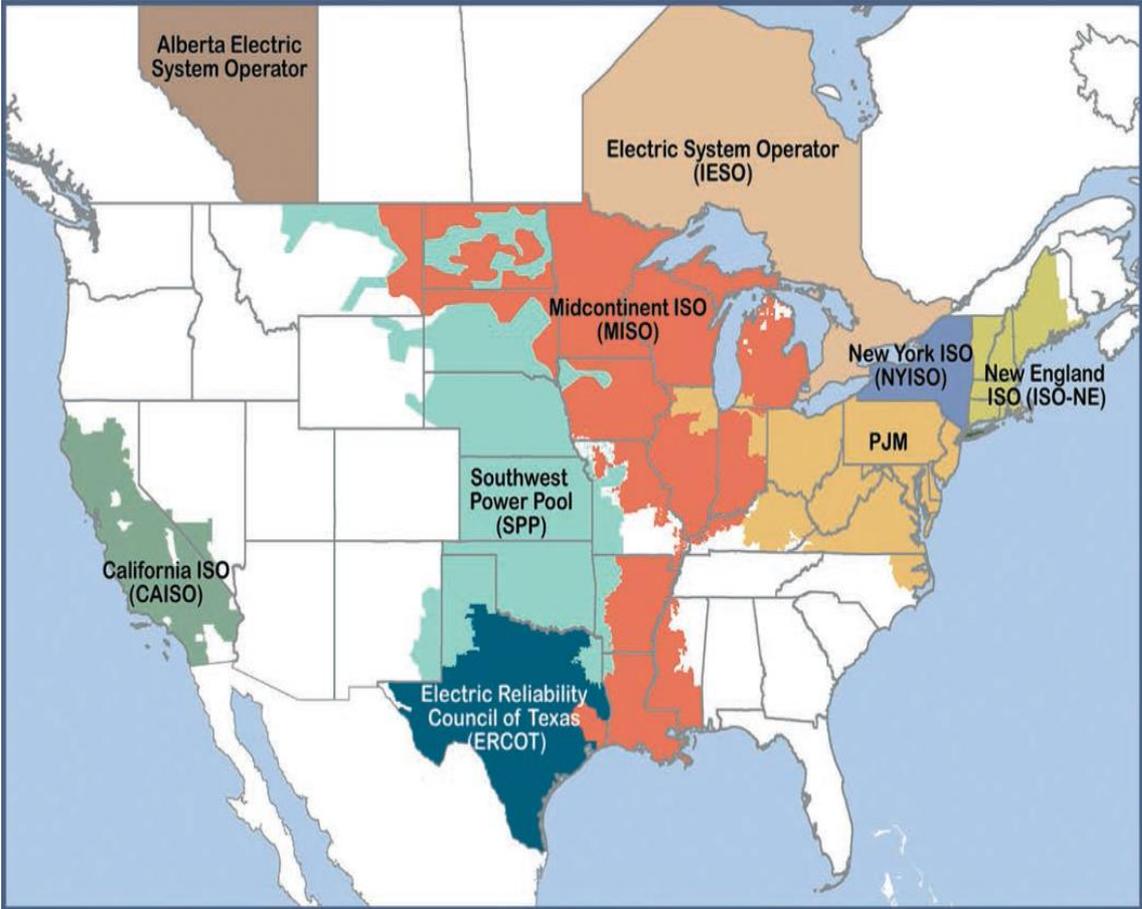
- What is FERC doing?
 - Mandating that organized markets allow energy storage resources to participate in those markets just as any other resource is able to do.***
 - How can FERC do this?
 - FERC has authority under the Federal Power Act to ensure that the rates, terms, and conditions of jurisdictional service are **just and reasonable**.
 - RTO/ISO market activities are conducted pursuant to FERC-jurisdictional tariffs and market rules.
 - Energy storage resource participation in the organized markets has not been uniformly available.
 - FERC found that existing participation models limit the scope of services electric storage resources may provide or are designed for electric storage resources with very specific characteristics (e.g., pumped-hydro facilities).
 - Thus, FERC determined that organized markets are providing **unjust or unreasonable** terms and conditions of service.
- *** Caveats apply, as discussed in this presentation.

Order No. 841

- Final rule most directly impacts RTOs/ISOs, storage resources, and other FERC-jurisdictional wholesale market participants.
 - E.g., utilities, power marketers, independent power producers
 - Potential to have significant, indirect impact on non-market participants as well
- Final rule extends FERC jurisdiction over participating resources located on state-regulated distribution systems
 - Without end-use consumption, energy remains subject to the Commission's jurisdiction.

Scope of Application

North American ISOs and RTOs



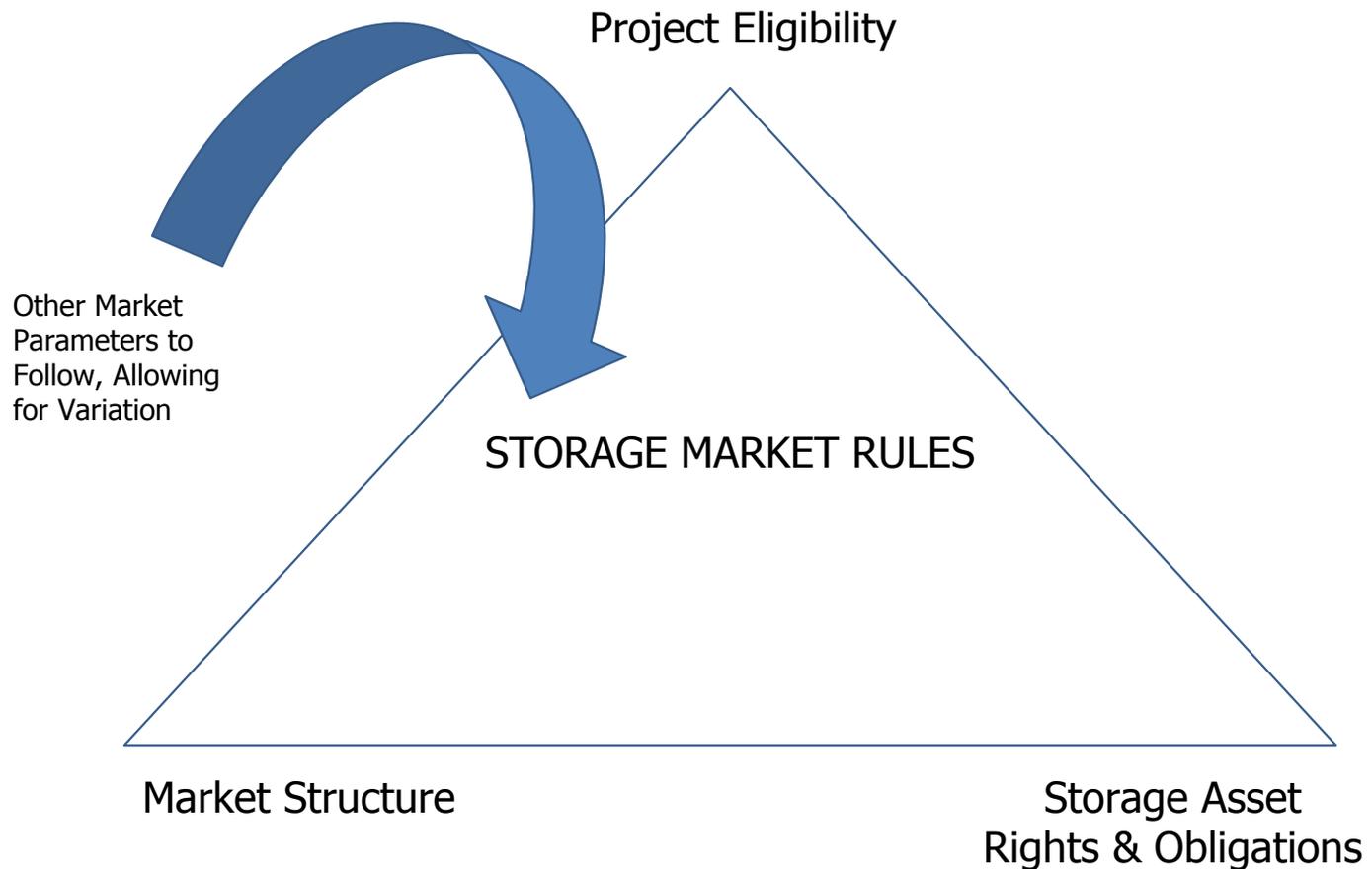
RTO/ISO Participation Model

- FERC adopted its NOPR proposal to require each RTO/ISO to revise its tariff to include a model to facilitate the participation of electric storage resources.
- Order No. 841 grants RTOs/ISOs flexibility to tailor market rules that best suit their individual market designs.
 - Rules must recognize physical and operational characteristics of electric storage resources.
- Existing participation models may be preserved (e.g., participation models for pumped-hydro resources or demand response).
 - Any storage participation model modified to comply with Order No. 841 must be made available for all types of electric storage resources.
- RTO/ISO tariff changes must specify whether eligible resources will participate in through existing or new market participation agreements and whether any existing market rules apply will apply to the resources participating under the electric storage resource participation model.

RTO/ISO Participation Model (cont'd)

- FERC objective is for new market rules to ensure a level playing field for all resources.
- RTOs/ISOs are not precluded from structuring market designs based on technical requirements.
 - Electric storage resources may still need to meet minimum technical thresholds to participate.
- Electric storage resources are not precluded from continuing to participate under existing participation models for which they already qualify (e.g., demand response).
- Market designs may need to differentiate between electric storage resources.
 - Example: electric storage resources interconnected to grid at different points (i.e., at the transmission system, the distribution system, or behind-the-meter) may require different metering and accounting practices

841 Storage Market Structure



Resource Eligibility

What is an Electric Storage Resource?

A resource that:

- Is capable of receiving electric energy from the grid and
- Is capable of storing electric energy for later injection back to the grid

The resource can be located on:

- the interstate transmission system
- a distribution system
- Behind the meter

But once the resource injects electric energy back to the grid, that is interstate commerce and subject to FPA and FERC regulation.



ELIGIBILITY

MUSTS

- Tariffs must define physical and operational characteristics and not be based on type of storage resource (technical requirements to provide service \neq qualification criteria).
- Storage project must be able to participate in all services it is capable of providing, including those purchased outside of the organized market.
- Minimum size requirement for participation \leq 100kW (no uniform accrediting process to determine project capacity)

TO BE DEVELOPED

- RTOs have discretion to decide whether the characteristics will be defined by bidding parameters or some other means.

Market Structure *highlights*

MUSTS

- Characteristics must include:
 - state of charge
 - min/ max state of charge
 - min/max charge limit
 - min/max charge time
 - min/max run time
 - min discharge limit
 - min charge limit
 - charge/ discharge ramp rate

TO BE DEVELOPED

Market Structure *highlights*

MUSTS

- Storage can be dispatched as supply and demand and can set the wholesale market clearing price. But it must be dispatchable.
- Rules cannot require storage to be a price taker.
- Storage must have the same ability to self-schedule.
- Rules cannot require storage to participate as supply and demand simultaneously and must not allow conflicting supply offers and demand bids from the same resource for the same market interval.

TO BE DEVELOPED

- RTOs are encouraged to consider whether storage can provide ancillary services without an energy schedule.
- RTOs shall determine the mechanism for avoiding conflicting bids.

Market Structure *highlights*

MUSTS

- Projects can de-rate their capacity to meet minimum run-time requirements (not considered physical withholding).
- But storage cannot de-rate below capacity obligations it has in place (such as must-offer).
- Bidding parameters must be allowed to be submitted in both day and hour ahead markets
- Manually dispatched storage must be eligible for make whole payments.

TO BE DEVELOPED

- RTOs are flexible on the make whole payment methodology they adopt.
- Rules need to provide “a means” for storage to provide capacity without changing min. run-time or must-offer requirements.
- There cannot be universal scarcity pricing rules that apply just to moving from charging to discharging.

Storage Asset Rights & Obligations

MUSTS

- Rules must allow storage projects to manage their state of charge. But projects will be subject to applicable penalties for schedule deviations.
- Market monitors have the ability to review bids to detect economic or physical withholding.
- Energy sold to a storage resource that then is resold back to the grid will be priced at wholesale LMP and transmission charges will apply.
- Where storage is providing service as load, it does not have to pay the same transmission charges as load does.
- Unavoidable efficiency losses are charging energy and not a component of station power that is settled at wholesale LMP.

TO BE DEVELOPED

- RTOs are flexible on the telemetry or communications they use to track the project in real time.
- RTOs can determine how projects are to submit physical, operational and commercial information.
- RTOs can determine the amount, type and manner of submitting information about the project.
- RTO can decide whether its charging energy or a component of station power.

841 Process Map

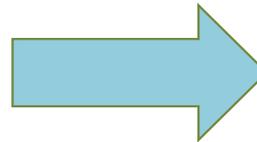
- February 2018 – Order 841 Issued



- April 2018
 - Technical Conference on DER Issues in Separate Docket
 - FERC rules on motions for rehearing



- *ISO/RTO Compliance Filing Process [NOW]*



- December 3, 2018 – Compliance Filings Due



- December 3, 2019 – Required Implementation Date (365 days from filing)

CAISO: wants to address through existing energy storage and distributed energy resource implementation initiative (in process since 2016 and very active)

ISO-NE: Integrating Markets and Public Policy (IMAPP) began in 2016 & "Competitive Auctions with Sponsored Policy Resources" (CASPR)

MISO: Steering Committee evaluating whether Energy Storage Task Force will coordinate stakeholder input on Order 841 compliance.

NYISO: Already was in process through Energy Storage Resource asset design and DER Aggregation roadmap

PJM: Market Implementation Committee actively reviewing how rule changes will work through the stakeholder process.

SPP: Dealing with membership issues (Mountain West/ Xcel)

UNRESOLVED ISSUES

Jurisdictional Issues

- New jurisdiction asserted:
 - Storage resource injections onto the grid are now FERC jurisdictional if the resource is participating in wholesale markets.
 - Injections did not always trigger FERC jurisdiction (*i.e.* net metering)
 - *Sun Edison LLC*, 129 FERC ¶ 61,146 (2009), *reh'g granted on other grounds*, 131 FERC ¶ 61,213 (2010)
 - *MidAmerican Energy Co.*, 94 FERC ¶ 61,340 (2001)
- Historical assertions reaffirmed
 - FERC's prevailing view is that energy remains subject to its jurisdiction if it is delivered to a storage resource and not consumed (*i.e.* no sale for end-use).
 - Wholesale distribution charge.
- Questions about how far FERC can/will go?
 - Interpreting FERC's claim that its authority applies to "wholesale market rules for participation of resources connected at or below distribution-level voltages"

FERC Compliance Issues

- Resources previously not subject to FERC's jurisdiction SHOULD:
 - Be mindful of new compliance obligations; and
 - Seek assistance in meeting them.
- Participation in wholesale markets --- yes, even for BTM or others on distribution facilities – raise FERC compliance requirements.
 - Market-based rate authority
 - Changes in status
 - Federal Power Act Section 203 for acquisitions and/or dispositions.
- Cannot assume that storage resources avoid these as qualifying facilities.
 - Are storage resources FERC QFs under Part 292?

DER Participation

- Final rule does not address market participation by aggregated distributed energy resources (DERs).
- FERC originally proposed to require that each RTO and ISO accommodate the participation of DER aggregations in RTO/ISO markets.
 - Same concerns over barriers to participation by the new DERs that are smaller, interconnected to lower voltage networks, and geographically dispersed.
- FERC concluded that more information is needed on aggregated DERs before enacting any further reforms.

DER Technical Conferences

- FERC convened technical conferences April 10-11 to gather more information on distributed energy resources.
- Panelists addressed jurisdictional issues concerning distributed energy resource participation in wholesale markets.
 - Some argued that states should decide whether to permit DER participation as both retail and wholesale resources .
- Panelists raised concerns with the technical and operational challenges of distributed energy resources located on the distribution grid participating in wholesale markets.
 - Distribution systems are not created equally across the country; some are far behind in terms of the system upgrades needed to support DER participation.
- Panelists also highlighted coordination challenges
 - Need for distribution utility to maintain visibility over DERs on their system for reliability purposes.
 - Challenges and complexity in communicating between distribution utility, DER, DER Aggregator, RTO/ISO, and transmission owner.

Requests for Rehearing

- Various entities have sought rehearing over different aspects of Order 841.
- Notable issues on rehearing:
 - *Role of states:* The role of states was featured prominently in some challenges to the final rule. In particular, some entities argued that FERC should allow states to opt-out of allowing distribution-sited electric storage resources from participating in wholesale markets.
 - *Extent of FERC jurisdiction over distribution-sited or behind-the-meter storage resources:* Arguments address whether FERC has the authority to make decisions that govern retail sales and impact distribution system reliability. FERC's view is that it has exclusive jurisdiction over wholesale market rules as they pertain to resources interconnected at or below distribution-level voltages.
 - *100 kW threshold:* Technical concerns over accommodating resources as small as 100 kW, which RTOs/ISOs may not be able manage effectively.
 - *Implementation Period:* Some entities requested that the Commission extend the timetable in light of, for example, the pending decision on DER participation.
- Requests for rehearing do not toll RTO/ISO compliance dates.

IMPACTS ON STORAGE DEVELOPMENT

Examples of State Initiatives

Storage Mandates

- California, Utah, Oregon and Massachusetts
- NY – Governor directed goal of 1,500 MW energy storage by 2025, which count towards a 2030 energy storage goal that will be established by the Public Service Commission later in 2018
- Maryland considering

Pilot Projects

PA (considering legislation allowing market participation by pilots)

Energy Storage Association tracks

Issues to Consider

- Variation among the models proposed by RTOs and ISOs
- Impact on peakers
- Ability to secure financing
- Contractual hurdles in developing and transactional documentation
- Impact of/on non-FERC jurisdictional markets
- Role of information sharing & market monitor