



Federal Energy Regulatory Commission

FERC Policy and Grid-Scale Storage

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Official Disclaimer

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- *The speaker does not represent the views of the Federal Energy Regulatory Commission.*
- *My experience: Economist; RTO and ISO markets for electricity and ancillary services, storage, renewable energy integration, transmission cost allocation, market power mitigation.*

Agenda

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- The big orders that defined open access
 - o Order No. 888
 - o Order No. 890
- Generic rulemakings/orders
 - o Order No. 755 – Frequency Regulation Compensation
 - o Order No. 784 – Third Party Provision of Ancillary Services & Accounting Standards
 - o Order No. 792 – Small Generator Interconnection
 - o NOPR (Docket No. RM155-2) – Market-Based Rates for Frequency Response Service
- Some precedent – where has FERC already made decisions?
 - o Various RTO/ISO tariff rules concerning storage resources
 - o CAISO Tx planning
- What is next?

The Big Orders – Open Access

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➤ Order No. 888 (1996)

- o All transmission providers must have an Open Access Transmission Tariff (OATT)—established the *pro forma* tariff.
- o OATT must detail minimum terms for service—non-discriminatory
- o Public utilities and transmitting utilities can recover costs through their transmission rates
- o No terms of the Order are specific to storage.

The Big Orders – Open Access

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➤ Order No. 890 (2007)

- o Changed the Ancillary Services schedule from what was required under Order No. 888.

- “reactive supply and voltage control, regulation and frequency response, energy imbalance, spinning reserves, supplemental reserves and generator imbalance services, respectively, may be provided by **non-generation resources**” (emphasis added)
- Note: New technologies are more prominent in the RTO and ISO regions.

The Big Orders – Open Access

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- Order No. 890 (2007)
 - o Added transmission planning requirements.
 - Transmission providers must have an open process to consider transmission and transmission alternatives. All resources must be treated comparably.
 - In practice, this means if anyone proposes a transmission alternative (i.e. use a battery to provide voltage support rather than using another transmission line) it must be considered. But there is no requirement to use that other resource.
 - o Nothing specific to storage—but it opens the door.

Generic Orders – Order No. 755

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- Order No. 755: Frequency Regulation Compensation in the Organized Wholesale Power Markets (2011)
 - o Only applies to RTOs/ISOs
 - o Resource-neutral—takes no position on technologies and does not “pick winners”
 - o However, relevant to storage because of the economics

Generic Orders – Order No. 755

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- Legal Finding: undue discrimination in how resources are compensated.
 - o Frequency regulation is a service, not just injections and withdrawals of real power.
 - o Therefore, asking resources to provide more service must result in those resources being paid more (all other things equal)
 - o Compensation must reflect the differences in how much service is provided.

Generic Orders – Order No. 755

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➤ Order No. 755 Requirements

- o Uniform clearing price for capacity to provide Frequency Regulation (Capacity Payment). Market-based price based on bids. Must include opportunity costs.
- o Uniform clearing price for the provision of real-time Frequency Regulation service (Performance Payment). Market-based price based on bids.
- o Payment must account for accuracy.
- o Great flexibility allowed for the RTOs and ISOs to design detailed market rules that work appropriately for their regional markets.

Generic Orders – Order No. 755

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- Order No. 755 did not
 - o address qualification as a regulation resource.
 - o specify bidding parameters, etc. that would determine how the prices are calculated.
 - o address how resources are dispatched.
 - o create different “classes” of resources (i.e. “fast” versus “slow” resources).
- The rule focused exclusively on compensation.

Generic Orders – Order No. 755

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- Compliance – all RTOs/ISOs have complied and implemented new rules.
- Rules vary by RTO/ISO.

Generic Orders – Order No. 755

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- RTO/ISO Implementation
 - Clearing methods & determining prices
 - Measuring accuracy
 - CAISO, MISO, NYISO, and SPP are straight-forward
 - PJM and ISO-NE are not
 - Dispatch methods also vary (not impacted by O. 755)
 - Charge state management varies by RTO/ISO also

Generic Orders – Order No. 784

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- Third Party Provision of Ancillary Services; Accounting and Financial Reporting for New Electric Storage Technologies (2013)
 - o Mostly applies outside of RTOs/ISOs.
 - o The *Avista* restriction limited third party sales of Ancillary Services: Transmission Providers could only procure AS from third parties at cost-based rates.
 - o Self-supply of AS was at fixed MW rates.

Generic Orders – Order No. 784

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➤ Market-Based Rate Authority

- Easier for competitive suppliers to gain MBRA for imbalance and operating reserve sales.
- New mitigation options for sellers of reactive supply and frequency regulation

Generic Orders – Order No. 784

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➤ Self-supply

- New rule: if a transmission customer wants to self-supply, the TO must account for speed and accuracy of resources the TC will use in determining reserve requirement.
- In other words, if the TC has really fast and accurate resources, they can self-supply fewer MW than otherwise.

Generic Orders – Order No. 784

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➤ Transparency

- Transmission providers required to post data on regulation reserve requirements.
- Easier to compare speed and accuracy for third-party sellers.

Generic Orders – Order No. 792

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- Small Generator Interconnection (2013)
 - 20 MW or less
 - Applies nation-wide
- Many changes made to SGIP/SGIA
 - Pre-Application Reporting by the transmission provider
 - Fast-track process changes
 - Review of required upgrades

Generic Orders – Order No. 792

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➤ SGIP and Storage

- Small Generating Facility definition changed to explicitly include storage devices.
- Clarified how capacity will be measured (maximum amount of injection).

Generic Orders – Sales of Frequency Response at Market-Based Rates

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- Market-Based Rates Notice of Proposed Rulemaking (2015) (Docket No. RM15-2)
 - Applies to primary frequency response (i.e., not frequency regulation) only.
 - In anticipation of individual, unbundled, sales.
 - Proposal: If you have MBR authorization for energy now, you are presumed to not have market power in the sales of frequency response.

Other Commission Precedent

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- Various RTO/ISO rules on treatment of storage as an ancillary services resource – all frequency regulation.
- CAISO Transmission planning—*Western Grid*.
 - CAISO had to consider this resource as a transmission alternative. The precedent is set.
 - It was not chosen.

Next Steps?

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- Next steps depend on the industry.
- Next storage project proposed as a transmission alternative?
- Proposed transmission and generation project?
- Is there an existing RTO/ISO rule that is unduly discriminatory or unjust and unreasonable? Tell us.

Thank you!

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Questions?

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