

Illinois State University/Argonne National Laboratory
2016 Energy Storage Conference
Session 5: Creating a Marketplace for Storage

FERC Staff Perspective:
Commission Activities to Reduce Barriers to Storage
Participation in Wholesale Electricity Markets

Tom Dautel, PE, Manager/Economist
Office of Energy Policy and Innovation
Federal Energy Regulatory Commission

August 31, 2016

Outline

- FERC primer
- FERC activities related to storage
 - Recent related rulemakings
 - Currently open generic/rulemaking proceedings
 - Responses to requests for tariff changes
 - Responses to project-specific requests

Disclaimer: My comments today represent only my opinion and do not necessarily represent the opinions of the Federal Energy Regulatory Commission or any Commission members

FERC Primer

- FERC generally has jurisdiction under the Federal Power Act over
 - Wholesale electric energy sales
 - Interstate electric transmission service
- States generally have jurisdiction over retail electric energy sales and electric distribution service
- The Commission's FPA jurisdiction is technologically neutral
 - Ensuring rates/rules related to jurisdictional transactions are "just and reasonable"
 - Ensure rates/rules do not provide "undue preference or advantage"
- However, under the "undue preference or advantage" powers, the Commission has historically acted to ensure that technologies do not face inappropriate barriers to market participation

Related Portions of Recent Rulemakings: Ancillary Services

- Order 755 (2011): Frequency Regulation Compensation
 - Requires RTOs and ISOs to compensate frequency regulation resources based on the actual service provided via:
 - A capacity payment that includes the marginal unit's opportunity costs
 - A performance payment that reflects the quantity of frequency regulation service provided when accurately following instructions from system operator
 - This sends a better price signal for faster-ramping resources, and increases market efficiency
- Order 784 (2013): Third Party Provision of Ancillary Services
 - Requires transmission providers to take speed and accuracy into account in their determination of reserve requirements for frequency regulation and primary frequency response
 - May benefit faster-ramping energy storage resources

Related Portions of Recent Rulemakings: Interconnection

- Order 792 (2013): Small Generator Interconnection
 - Revised definition of “Small Generating Facility” in the *pro forma* SGIA to explicitly include “storage for later injection of electricity” into the grid
 - Clarified that storage can use the fast-track SGIP
 - Clarified how thresholds should be applied in determining qualification as a small generator or eligibility to use the small generator fast track process
 - Threshold not necessarily compared to simple sum of maximum output of each device at a facility
 - Rather, relevant facility size can be computed at *less than* sum of maximum output of each device *if proper control systems are in place* to so limit the total facility output
 - This can facilitate netting of storage with other generation output, so that adding storage doesn’t necessarily increase the interconnection burden

Currently Open Generic Proceeding on Electric Storage (AD16-20)

- In April 2016, the Commission issued identical data requests to each RTO/ISO, and a (separate) request for public comments, regarding the RTO/ISO market rules for electric storage resources
- Issues included:
 - The qualification and performance requirements for market participants
 - Required bid parameters
 - Treatment of electric storage resources when they are receiving electricity for later injection to the grid
- 44 total comments received
- Commission reviewing comments to determine what, if any, further action to take

Some Comments Received in Storage Proceeding

- Create new state of charge and other bid parameters that recognize storage's unique operational characteristics
- Allow storage to participate in the markets as dispatchable demand and compensate differently than traditional load resources
- Modify and/or make transparent how software treats storage
- Reduce minimum market participation thresholds to 100 kW in all markets
- Reduce minimum run time and commitment interval requirements to 30 minutes
- Allow storage to provide reserves
- Include storage in the transmission planning process
- Ensure that storage pays LMP (not retail rates) for charging energy used for wholesale services

Commission reviewing comments to determine what, if any, further action to take

Currently Open Proceeding on Generator Interconnection (RM16-12/RM15-21)

- In May 2016, Commission staff held a technical conference to explore generator interconnection issues, including interconnection of electric storage resources
- Staff received post-conference comments from 17 entities on storage-related interconnection issues such as:
 - How the existing *pro forma* interconnection procedures and agreements apply to storage resources
 - How to model electric storage resources for interconnection studies
 - Whether the relevant size of a facility, for threshold purposes, can be the MW output level that the facility is control-limited to, rather than sum of output ratings of individual devices at facility (similar to clarification made for small generators in Order 792)
 - How to streamline the interconnection process for adding storage resources to existing facilities
- Commission reviewing comments to determine what, if any, further action to take

FERC Responses to ISO/RTO Tariff Change Proposals

- For example, recent CAISO proposals:
 - Distributed Energy Resource Provider (DERP) framework (ER16-1085)
 - Approved in June 2016
 - Enables aggregation of distributed energy resources
 - Helps distributed resources reach CAISO's 0.5 MW minimum participation threshold
 - Allows DERs to use data concentration services to interact with the ISO through one point of contact
 - Energy Storage and Distributed Energy Resources (ESDER) initiative (ER16-1735)
 - Approved in August 2016
 - Allows non-generator resources (includes storage) to submit their state-of-charge as a bid parameter in the day-ahead market instead of having state-of-charge assumed by the CAISO
 - Clarified how baselines should be calculated for storage providing demand response

FERC Responses to Project-Specific Requests

- Another way FERC creates policy and precedent is by responding to storage related filings
- Typically such filings involve request for either special rate treatment or for approval of special provisions within service agreements
- Two examples on following slides...

Example 1: Nevada Hydro Lake Elsinore Advanced Pumped Storage (LEAPS)(ER06-278)(2008)

- 500 MW pumped storage facility with associated transmission lines
- Nevada Hydro requested that:
 - Entire project be considered a transmission asset
 - Cost recovery take place via CAISO's transmission charges, with incentive rates
- Nevada Hydro contemplated CAISO taking operational control of storage asset and optimizing asset with cost/revenues accruing to the ISO
- CAISO did not wish to take operational control due to a potential conflict of interest – operating as both transmission provider and generation operator
- CAISO recommended that LEAPS project be treated as generation asset and participate in wholesale power markets, like all other pumped storage
- FERC denied request to treat storage assets as transmission, and declined to require CAISO to take operational control of storage assets



Example 2: Western Grid Battery Project (EL10-19) (2010)

- Multiple sodium sulfur battery facilities (10 to 50 MW each) proposed to be located at various sites within CAISO's territory
- Similar to Nevada Hydro, Western Grid requested that:
 - Batteries be considered transmission assets
 - Cost recovery take place via CAISO's transmission charges, with incentive rates
- Western Grid contemplated CAISO taking operational control of storage assets
- Unlike in Nevada Hydro, Western Grid batteries would *not* participate in the wholesale market; would only operate when called upon by the ISO *for reliability purposes*
- Addressed the conflict of interest concern present in Nevada Hydro:
 - Costs/revenues of charging/discharging batteries would accrue to Western Grid (not the ISO), and accrued revenues would be passed through to ratepayers
- Because of these differences, FERC approved the request for cost recovery as transmission with incentive rates, contingent upon project being selected through planning process
- Project was not selected in CAISO's planning process, so not built

Thank you!

Tom Dautel

Office of Energy Policy and Innovation

Federal Energy Regulatory Commission

Thomas.Dautel@ferc.gov