Capacity Value of Storage Resources

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PJM MIC

Sustainable FERC

Sustainable FERC Project

Policies for a Clean Electric Grid

March 11 Filing

The March 11th filing should set interim rules and commit PJM to developing permanent ones based on ELCC.

- Do not defend the 10 hour rule
- On March 11, file tariff changes that:
  - Give storage capacity value at the lesser of its 4 hour output or MFO. Both IEEE and Astrape studies support 4 hours under current conditions.
  - Give hybrids capacity value up to the sum of their storage and other components, not to exceed MFO.
  - Give storage and hybrids currently in the queue a one-time-only opportunity to raise their CIR request without changing MFO without losing queue position.
- Request a compliance order to file an ELCC-based method by early 2021.

Long term proposal summary

- Value storage based on MWh using ELCC
- Storage rules only apply to energy-limited resources, not to power-limited ones
- UCAP is a measure of exchange, not a description of obligation
- CSR obligations and penalty exposure are consistent with the calculation of their ELCC
- Additional must-offer and emergency procedures obligations
- Flexibility to increase MWh of existing storage

Value of CSRs

- PJM calculates the ELCC value of a Megawatt-hour
  - Done prior to BRA based on storage eligible to offer.
  - Fixed for a delivery year at the BRA value, may change for each year.
  - ELCC calculation uses historical hourly loads. Consistent with how generation is treated, assumes perfect dispatch.
  - Single ELCC model that includes storage, wind, and solar.
- Resources that end up with a greater capacity value than their MFO are not considered energy-limited and treated as gen.
- UCAP of storage is:

eFORd * ELCC of a MWh * MWh

UCAP is measure of exchange

The UCAP value of a CSR reflects the amount of generation it can replace with equivalent reliability. It is not a description of the CSR's obligation.

- Just as for generation, obligation and penalty rules must be consistent with the basis of their UCAP.
- For storage, this means to have the committed amount of MWh and MFO in service and at PJM's disposal.
- Storage that enters PAIs not fully charged (unless directed so by PJM) exposed to penalties.
- Storage that performs as directed to its MWh/MFO limit does not face penalties.

CP treatment is consistent w/gen

Generation's UCAP is calculated based on historical eFORd and ICAP. Generation's obligation is consistent with that. On average, a generator that maintains its historic eFORd will not face CP penalties.

Example:

100MW ICAP, 10% eFORd unit has 90MW UCAP

Capacity obligation is its UCAP not its ICAP

90% of the time, that unit will over perform by 10MW

10% of the time, that unit will underperform by 90MW

These balance out over time, fleets, and bilaterals

We ask for similar treatment for storage: capacity obligations must reflect the assumptions made to determine UCAP. Otherwise, storage will be under obligation to provide services it is not compensated for.

Additional Rules

- Operational requirements to ensure full capacity value is realized:
  - Storage with a capacity obligation must maintain at least a real-time energy offer (to charge or discharge).
  - Additional emergency procedures obligations (e.g., maintain full charge) T.B.D. by PJM.
- The current exception of storage from capacity must-offer requirements is justified by storage facing unmanageable CP penalties. With the proposed penalty structure, that risk is mitigated, and CSRs should have the same RPM must-offer as generation.
- Existing storage can add MWh to maintain its CIRs without applying to the queue.