Energy Storage Enhancements Final Proposal Discussion

Gabe Murtaugh
Storage Sector Manager, Market & Infrastructure Policy

Market Surveillance Committee Meeting
General Session
November 21, 2022

Energy storage enhancements includes changes to ensure reliable storage operation and modeling

Enhancements for reliability:

1. Improved accounting for state of charge while providing regulation
2. Enhanced bidding requirements for resources providing ancillary services
3. Exceptional dispatch tools for storage resources to hold state of charge and opportunity cost compensation

Enhancements to co-located model:

4. Electable mechanism to prevent ‘grid charging’
5. Extension of the co-located model to pseudo-tie resources

Improvements to the storage default energy bid:

6. Add an opportunity cost component into the day-ahead default energy bid

The policy proposes to help ensure storage resource availability while providing ancillary service

The policy includes two proposals to address ancillary service issues:

1. Update the state of charge equation so that it reflects regulation awards
   - Will make estimated state of charge more accurate
   - Will use a formula that includes different hourly multipliers (periodically updated)
2. Require bids alongside ancillary service awards
   - Will ensure that storage resources have sufficient state of charge to provide ancillary service
   - Bidding requirements will apply in the real-time market

The policy proposes to expand exceptional dispatch tools for storage resources to hold state of charge

- The policy proposes a new form of exceptional dispatch to hold state of charge
  - Today the exceptionally dispatch tool only specifies a certain power (MW) output from resources
  - Operators can require storage resources to hold state of charge
  - This tool will only apply in the real-time market

- The policy develops an opportunity cost methodology to compensate storage resources
  - The methodology compares two counterfactual energy schedules, based on bids and prices, one with the exceptional dispatch in place and one without to determine lost opportunity

The policy proposes an operation mode to allow co-located storage the ability to avoid grid charging

- Resources will only charge when generation is scheduled from on-site resources
  - An additional constraint ensuring storage charging schedules do not exceed output from other co-located resources will be observed
  - Functionality will apply in the day-ahead and real-time market
  - Functionality would not preclude self-schedules in the day-ahead market
- Functionality will be electable on an hourly basis
- Offer the ability for storage to “back down” when energy from renewables does not meet schedule

The policy extends additional co-located features to pseudo-tie resources

- Pseudo-tie resources will be allowed to participate in the market similar to co-located resources today
  - This policy will allow co-located resources outside of the ISO balancing area to utilize undersized transmission and interconnection when modeled as a pseudo-tie resource
  - These pseudo-tie resources will have access to newly proposed features as well as existing features
  - Resources are required to receive approval from balancing area they are located in

The policy updates the default energy bid for storage resources in the day-ahead market

- This policy aligns the day-ahead and real-time default energy bids by including opportunity costs in the day-ahead formulation
- This should prevent instances where storage resources are scheduled ‘too early’ in the day-ahead market
  - Storage will not be mitigated below opportunity costs