Energy Storage Integration
Feedback Update

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Background

• Since the announcement of the NYS PSC REV initiative, there has been a growing interest in wholesale market participation of storage resources.

• Currently, the NYISO has several resource classifications that can accommodate participation of storage in the wholesale markets:
  - Energy Limited Resource (ELR)
  - Limited Energy Storage Resource (LESR)
  - Demand Side Ancillary Services Program (DSASP)
  - Special Case Resource (SCR)
Initiative Scope

• In the short term, the NYISO is evaluating its current programs in which energy storage resources can participate and assessing potential needs for expanding and/or enhancing such existing programs.

• In the longer term, the NYISO will evaluate storage optimization techniques that will provide additional tools to aid the scheduling of energy storage resources.

• This initiative is for wholesale grid connected storage resources only (i.e., resources in front of the meter on the transmission system without any load, all other storage resources will be addressed as part of the NYISO’s distributed energy resource [DER] program initiative) and the remainder of this presentation addresses such grid connected energy storage resources.
Updates

• State of Charge Management
  - There is a proposed project for 2017 to assess making “State of Charge Management” for regulation signal available to more storage resource types than just LESRs

• Energy Storage Optimization and Integration
  - There is a proposed project for 2017 to continue this project and assess further opportunities to optimize and integrate grid connected energy storage resources in the wholesale market
Feedback Received on Storage Use Cases

Potential Models for Grid Connected Energy Storage Resources (GCSR)
Energy Storage resource only

- Examples may include: pumped storage hydro, battery, flywheel, and thermal
  - Capacity and/or Energy and/or Ancillary Services
Energy Storage resource plus non-intermittent generation (Single Resource)

• As a single resource (one meter) where storage is used to enhance the capabilities of the Generator
  - Capacity and/or Energy and/or Ancillary Services
Energy Storage resource plus non-intermittent generation (Multiple Resources)

- As separate resources at the same facility (multiple meters)
  - Capacity and/or Energy and/or Ancillary Services
Energy Storage resource plus intermittent generation (Single Resource)

- As a single resource (one meter) where the storage “firms up” the intermittent generation (e.g., solar and/or wind paired with storage)
  - Capacity and/or Energy and/or Ancillary Services
  - Market Participants have expressed an interest in pursuing an option where the combined resource retains, at least in part, the generator’s intermittent status
Energy Storage resource plus intermittent generation (Multiple Resources)

- As separate resources at the same facility (multiple meters)
  - Capacity and/or Energy and/or Ancillary Services
  - May facilitate DC coupling, while seeking to retain intermittent status for Generator
Other Feedback Received

- Mobile Storage
- Fuel Constrained Bidding
- Runtime Performance (Capacity) Model
- Runtime Aggregations
- Fast Response Product
- Over/Under Bid
• Mobile Storage
  ▪ A concept of mobile storage or long term outage for reasons other than a maintenance outage
  ▪ Scenarios noted by Market Participants for consideration
    • Scenario 1 – Storage moves between points on the transmission grid staying in the wholesale market
    • Scenario 2 – Storage moves between transmission and distribution grids but stays in the wholesale market
    • Scenario 3 – Storage moves between transmission and distribution grid and enters in and out of wholesale market

• Fuel Constrained Bidding
  ▪ Explore the expansion of the concept to include the optimization of grid connected energy storage resources
• Runtime Performance (Capacity) Model
  - Allow for more resources to participate in the capacity market by providing pay for performance/capability incentives for “limited runtime” resources
  - Consider the creation of multiple minimum runtime duration classifications for ELRs with corresponding payment structures for each classification

• Aggregations to allow for more resource participation in the capacity market
  - Allow resources with runtime durations less than the minimum requirements for participation in the capacity market to be aggregated to meet the minimum requirements
• Fast Response Product
  ▪ Consider and research the need for a “fast response” product to help alleviate intermittent RTD price spikes
    • This may be as simple as leveraging current product/service availability and providing bids for a unit reflecting a very fast response rate; or
    • Something more complex that involves the creation of a new product/service that exists in between AGC (6 seconds) and RTD (5 minutes)

• New bid structure allowing for intra-hour changes in storage resource status based on specified price points (“over/under bid”)
  ▪ Consider a new type of simultaneous bid that allows for generation if price is more than X or charging if price is less than Y
    • The bid would also allow for injection (discharging) and withdrawal (charging) inside of an hour
Next Steps

• The NYISO is requesting feedback on which items should be evaluated for 2018 and beyond projects
  ▪ In addition to feedback provided at today’s meeting, please provide any additional feedback by no later than August 19, 2016

• August – September 2016
  ▪ NYISO will develop an initial proposal based on the feedback received
  ▪ NYISO is evaluating which suggestions fit into current scopes of 2017 projects
  ▪ Currently targeting to present an initial proposal at MIWG by the end of September 2016
Questions/Feedback

Please contact
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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system

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