Initial List of Discussion Topics for an Energy Storage Workshop

This is not meant to be an exhaustive list, but rather a starting point to show the range of energy storage issues and to foster discussion

**Resource/Technology Definitions**

* New resource category
  + What technologies are included
* How to address hybrid units
  + AC-coupled
  + DC-coupled

**Operations**

* Communication of Resource Status and Resource Owner’s desired Operational Constraints
  + Non-physical operational resource limitations
* Reliability Requirements
  + Frequency and Low/High-voltage Ride Through
  + Reactive Support (during charging, discharging, or no activity)
  + Frequency Response
  + Limitations on recharging
  + AS qualification and testing (consideration of state of charge)
  + Compliance metrics
* PRC contribution (consideration of state of charge)
* Outage evaluation studies and Study Network Apps (consideration of state of charge)
* State Estimator

**Market**

* Overview of proposed Storage Resource model for providing energy and Ancillary Services in Day-Ahead and Real-Time Markets considering device limits (Min and Max State of Charge)
* AS provision from Storage Resource (consideration of state of charge)
* ORDC Reserve contribution from Storage Resource (Online and Off-line)
* Storage Resource bids and offers
  + Maintaining a monotonically non-decreasing curve from charging (bid to buy) to discharging (offer to sell)
  + Offer mitigation
* Storage Resource modeling in RUC process (how to manage State of Charge over the RUC study period)
* Should ERCOT management of State of Charge be an option
* Storage Resource submission time-lines for bids/offers
* COP Changes to support new data items related to State of Charge for Storage Resource

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**ERCOT Systems**

* RIOO/Registration
* NMMS (include modeling changes)
* EMS
* MMS

**Settlements**

* Wholesale Storage Load treatment
* Price settlement for charging and discharging
* Metering requirements

**Planning**

* Assumptions for capacity reporting
* Modeling requirements and assumptions for Transmission Planning Studies
  + Reliability Studies
  + Economic Studies

**Reporting**