Energy Storage Participation in RPM
PROPOSAL MATRIX

Number	Design Components[1]	Priority (high/med/low)	Status Quo (Advanced Storage, Storage in PJM Today)	Status Quo (Resources in Capacity Market)	A (PJM Preferred)	B	C	D	E
					Packages				
1	Must offer requirement in day ahead market	low/medium	N/A (Batteries), Required (Storage)	All resources in Capacity market have a Must Offer Req in Day ahead	All Generation resources with capacity commitment (including storage resources) Must offer in day ahead				
2	Minimum continuous electricity time capability	high	No Current Standard, Regulation ;market is hourly; cannot be out for XX mins, or else forfeit bid (Batteries), 10 hours (Storage)	10 Hours	Sustained output for 10 hours continuous operation each day. Resource must produce its nominal capacity value for each hour of the 10 hour interval. Total storage capability of unit must support ability to provide its nominal capacity for 10 continuous hours. At full storage capability and probable time of PJM peak, resource must demonstrate empirically its ability to maintain the 10 hours capacity based on technical documentation. Value is capped at the CIR level				
3	Minimum continuous electricity production capability	low/medium	Continuous Capability for a certain period, 0.1 MW for existing resources (Batteries and Storage)	Continuous Capability for a certain period, 0.1 MW for existing resources	0.1 MW for existing resources				
3a	Power to energy ratio		no pre-defined req	no pre-defined req					
4	Test requirements	medium		- 1-2 hours based on resource type, Steam 2 hrs, Hydro 1 hr - Qualifying test - Seasonal test - Equivalent to duration	Perform annual test each summer (consistent with existing rules): Show that you can produce your nominal capacity value for 1 hour				
4A	rating methodology				Based on min hourly output over 10 continuous hours. At full storage capability and probable time of PJM peak, resource must demonstrate empirically its ability to maintain the 10 hours capacity based on technical documentation				
5	Metering requirements	low/medium	As Defined by Regulation market rules; Energy Market in Load Response Manual, LM Outlines in M11(Batteries), As outlined in M14D (storage)	As outlined in M14D	Same metering requirement as all other generators, All Capacity Resources must have unit specific metering				
6	How does a PJM Resource make itself available/Method of Availability to PJM	medium	Enter through queue process, Register as part of Markets Database, make themselves available trough eMarket- Traditional generators - daily must offer - DR - have to register prior to delivery year - if EO - 20 mins notice, self schedule	Enter through queue process, Register as part of Markets Database, make themselves available trough eMarket- Traditional generators - daily must offer - DR - have to register prior to delivery year - if EO - 20 mins notice, self schedule	Alignment with the RPM current rules, available unless submitted an edart ticket				

7	Offer parameters	high	N/A (Batteries), See Cap Market (Storage)	mins/max, startup, emergency min/max, price/cost based, cost curve Optimized Pumped Storage units only: 1) Beginning and End of Day Storage levels in MW. (INITIAL MW, FINAL MW) 2) GenMin and PumpMin values, which will be the minimum hourly pumping and generating MW (MIN PUMP MW, MIN GEN MW) 3) Pumping efficiency (PUMP FACTOR). 4) Maximum or minimum storage level constraints (MAX MW, MIN MW) Other parameters for regular resources as well: Start up/ shutdown costs	status quo for existing generation
8	Response and recovery	medium/high	Recovery=Min Down Time; Response=Notification time, max run time	Recovery=Min Down Time; Response=Notification time, max run time	status quo as for existing generation (default parameter to be determined)
9	Capacity Value: How to determine UCAP	high	N/A (Batteries), See Cap Market (Storage)	- Discount ICAP based on outage rates, e.g., most gen - UCAP is fraction of ICAP, e.g., intermittent resources - Administratively determined, e.g., Energy Efficiency - Inferior product with limited clearing and price separation, e.g., sub-Annual DR.	ICAP determined by Design Component #2, UCAP calculated the same as all other units (some work required to collect Eford data for storage units, and to establish an advanced energy storage class average Eford)
10	Applicability: what types of resources rules apply to	medium/high	N/A (Batteries), See Cap Market (Storage)	submit day ahead, schedule, blackstart level, never fully depleted	These proposed rules will apply to all Energy Storage Resources
11	Scheduling method	low/medium			Should be bundled with Design Component #1
12	Cost Based Offer Cap (Energy)	high			Similar to current units, but will need to be determined
12A	Cost Based Offer Cap (RPM)	high			Similar to current units, but will need to be determined by IMM
13	Emergency Procedures Obligations	medium			Consistent with rules in M13 Section 6.4
14	Performance Assessment	high	N/A (Batteries), See Cap Market (Storage)	- Seasonal verification test - EFORd and EFORp performance - DR compliance check - MMV for energy efficiency	Summer verification test; EFORd and EFORp performance
15	Settlements/Penalties	high			Same as all other RPM Resources
16	Immature resources/transition mechanisms for determining capacity value	medium/high		Class average values are blended with actual values on a monthly basis to produce EFORd values for future auctions	Status quo (how we test until class average is determined for any new technology type)

Instructions:
1. Copy over design component, priority, and status quo columns from options matrix
2. Complete individual packages in columns by selecting individual component options from the options matrix.