

Energy Storage Participation in RPM

				Solution Options ²							
Number	Design Components ¹	Priority (high/med/low)	Status Quo	Δ	В	C	D	F	F	G	н
1	Must offer requirement in day ahead market	(ingivineariow)	Currently not allowed to bid into capacity	Self-scheduling	PJM optimization (e.g. pumped hydro)					G	
2	Minimum continuous electricity time capability		 No current standard PICA standard obsolete for limited energy resource 4 hours (based on fuel limited resources) regulation is hourly market cannot be out for XX mins or else forfeit bid dependent on market software 								
3	Minimum continuous electricity production capability		 Continuous capability for a certain period 0.1 MW for existing resources 								
4	Test requirements		 1-2 hours based on resource type, Steam 2 hrs, Hydro 1 hr Qualifying test Seasonal test Equivilant to duration 								
5	Metering requirements		- As outlined in manual 14D - LM outlined in manual 11 - Energy market in load response manual	Comply with rules in Manual 14D							
6	Method of availability to PJM as a generating resource		 Traditional generators - daily must offer DR - have to register prior to delivery year if EO - 20 mins notice, self schedule 								
7	Offer parameters		mins/max, startup, emergency min/max, price/cost based, cost curve 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								

Options Matrix

8	Response and recovery					
9	Capacity Value: How to determine UCAP	 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. 				
10	Applicability: what types of resources rules apply to	 PS - submit day ahead, schedule, blackstart level, never fully depleted battery would never deplete due to degradation compared to PS 				
11	Scheduling method					
12	Cost Based Offer Cap					
13	Emergency Procedures Obligations					
		 Seasonal verification test EFORd and EFORp performance DR compliance check 				
14	Performance Assessment	- MMV for energy efficiency				
15	Settlements/Penalties					
16	Immature resources/transition mechanisms					

Directions:

¹Design Components - each is an "attribute" or "component" of any proposed solution. Consensus of the group should be sought on selection of a set of solution criteria. ²Solution Options - each is a solution alternative elicited from the stakeholder group that meet one of the specific solution criteria.

To complete the matrix:

- 1. Elicit from the stakeholder group a set of components (attributes) desired for any proposed solution. Enter a short label for each in the Design Components column.
- 2. If needed, enter a more detailed description of each criteria on the "Component Details" tab.
- 3. Using informal/non-binding voting, rate each component's priority in the final solution as "high/medium/low"
- 4. Elicit from the stakeholder group potential solution alternative(s) for each component. Enter a short label for each in the Solution Options columns.
- 5. If needed, enter a more detailed description of each potential solution option on the "Solution Details" tab.
- 6. Once the matrix is filled out, the group will attempt to select a single solution alternative (column) for each component (row) to form a solution "package". Example: cells 1B, 2C, 3A, 4B, 5D could make up a solution package.
- 7. If consensus is achieved on a single package (Tier 1 decision-making method), this will be documented in a Consensus Proposal Report to the parent committee.
- 8. If not, the group will identify up to 3 possible solution packages in a comparative Proposal Alternatives Report to the parent committee (Tier 2 decision-making method).