

LS POWER

Capacity Market Principles



July 27, 2018

PJM Stakeholder Process

- The recent FERC Capacity Order provides for a brief paper hearing process with initial comments due from stakeholders by Aug 28
- LS Power appreciates this opportunity to provide input to PJM's response to the FERC Capacity Order
- PJM requested input from market participants by July 27th and scheduled two stakeholder meetings for Aug 2nd and 15th
- LS Power herein provides comments to PJM in response to the FERC Capacity Order and looks forward to continuing to work with PJM on this important issue

Market Principles

LS Power supports constructs that produce rational market signals. Subsidized resources currently participating in PJM cause market distortions

Rational Market Signals

- Support long term investment
- Necessary for a well functioning market
- Enhance grid reliability and resiliency through appropriate economic incentives
- Are being distorted by resources receiving subsidies

Subsidized Resources

- Any resource receiving out of market payment
- Subsidies allow a resource to influence market outcomes without consequences from the result
- No longer have an incentive to act rational – able to disregard market outcomes
- Any participation in the Capacity Market should be:
 - Limited
 - Mitigated to the extent possible

FERC Response

- FERC Found that subsidized resources' participation in the PJM capacity market is unjust, unreasonable, and unduly discriminating or preferential
 - Paragraph 68, FERC Docket EL16-49, *et al*
- PJM to evaluate handling subsidized resources in the existing FRR framework

Capacity Market Principles

- LS Power supports the use of the Minimum Offer Price Rule (“MOPR”) to mitigate subsidies
- LS Power does not support the Unit Specific Fixed Resource Requirement (“FRR”) Alternative
- In lieu of FRR, LS Power proposes an alternative: Resource Specific Requirement (“RSR”)
 - A choice for resources desiring to be removed from RPM rather than being subject to MOPR

RPM Market Constructs

Minimum Offer Price Rule

- Should be expanded to include:
 - Existing resources receiving subsidies
 - All technology types
- Unit specific exemption should be available to Subsidized Resources subject to:
 - Costs determined by the ACR process
 - Forward looking Energy Margin forecast
 - Minimum cost by technology type and vintage established by PJM and Monitoring Analytics

Fixed Resource Requirement

- Current FRR will result in:
 - Suppressed Capacity pricing
 - Incorrect market signals
- Load removed from RPM at a rate greater than pool cleared reserve margins
- Produces improper price signals that will reduce market reliability over the long term

Resource Specific Requirement (RSR) - Principles

RSR is a mechanism by which a subsidized generation resource will leave RPM and remove an appropriate amount of load. After entering into the RSR, the generation resource will not receive capacity credits and the affected load will not incur capacity charges

Load Obligations and Reliability

- Load will be removed from the LDA where a resource's power is electrically delivered – not physical plant location
 - Load will be removed from each affected LDA at a rate calculated by PJM
- Removing a resource from an LDA will reduce reliability for both the LDA and RSR load by decreasing resource diversity and increasing the reliance on imports
 - The remaining competitive generation and load in an LDA would be subject to an increased reliability requirement
 - The increased requirement will be calculated using the current CETO/CETL process with RSR resources and effected load removed from the study using the current 1 in 25 LOLE criteria
 - The new Reliability Requirement will be used to clear the BRA and subsequent IA's

Allocation of RSR Costs

- Load should not be required to bear the incremental costs of a resource's RSR election
- The resource itself will be responsible for the direct capacity and reliability costs of participating in the RSR alternative
 - This cost will be credited to affected load in the PJM footprint

Subsidized Resources - Market Participation

Subsidized Resources will have two options to participate in RPM:

1. Offer into the BRA and Incremental Auctions subject to MOPR
2. Elect the RSR Alternative

Minimum Offer Price Rule for Subsidized Resources

- MOPR for Subsidized Resources will only be enacted if:
 1. More than 5,000mw of Subsidized Resources are eligible to participate in the BRA for a delivery year
 2. More than 3.5% of an LDA's Reliability Requirement is procured from Subsidized Resources
- MOPR Resources would have an opportunity to apply for a Unit Specific Exemption ("USE")
 - Will defray impact on economic resources receiving an unnecessary subsidy
 - Prevents artificial Capacity Price inflation from excess MOPR restrictions
 - The USE shall include long term capital cost recovery for existing resources calculated at market value

Resource Specific Requirement for Subsidized Resources

- Pool wide RSR participation capped at 12,000mw per Delivery Year
- Resources electing the RSR alternative are locked in for the remainder of the unit's service life
- RSR participation in each LDA will be capped at 10% of the LDA's reliability requirement
- To become eligible, a Subsidized Resource must have cleared the previous three BRA's

RSR Mechanics Example – Reliability Calculation

After RSR elections are made, PJM will calculate (1) the load removed from the pool with the RSR resource and (2) the increased reliability requirement associated with each effected LDA

Reliability Impact Calculation

- Initial parameters are based on PJM’s CETO/CETL studies with RSR resources and load included
- A “CETO Addback”* is then calculated by comparing the CETO/CETL study without and without RSR resources and load
 - This is the incremental reliability requirement to the LDA created by the RSR election

*CETO Addback is the additional reliability requirement to meet 1 in 25 LOLE with RSR resource excluded

BRA Parameters - Including RSR

Local Reliability Requirement	11,501	(a)
CETO	5,620	(b)
Load Forecast	9,363	(c)
Reserve Margin	22.8%	[(a-c)/c]

Load Removal Calculation

- Starting with the Reliability Requirement (a) calculated above, subtract the RSR resource UCAP (d)
- Sum the CETO Addback and (e) to generate the final reliability requirement (g)
- Using the new Local Reliability Requirement (g), calculate the load that is served based on the initial LDA reserve margin
- The difference between (h) and the original load forecast is the amount of load removed from the market with the RSR resource

BRA Parameters - RSR Excluded

Local Reliability Requirement (baseline)	11,501	(a)
(-) RSR Resource	(2,301)	(d)
Unadjusted Local Reliability Requirement	9,200	a+d = (e)
(+) CETO Addback	400	(f)
New Local Reliability Requirement	9,600	e-f = (g)
<i>Reserve Margin</i>	28.2%	(g-h)/g
Residual Load	7,490	(h) = e/(1+RM)
Load to Travel with RSR	1,873	c-h

RSR Mechanics – Auction and Cost Allocation

PJM will clear the Capacity auction using non-RSR generation and the updated reliability requirement. Additionally PJM will calculate increased reliability cost due to RSR elections for each LDA. The incremental reliability cost will be refunded to non-RSR load

Auction and Cost Allocation Example

- PJM will clear the auction using the updated reliability requirements and RSR resources removed as market sellers
- After clearing the auction, PJM will calculate the incremental reliability cost due to RSR resources in each LDA¹
- The incremental cost will be charged on a pro-rata basis to each RSR resource in an effected LDA
 - These charges will be refunded to load by PJM

Auction Results Example

Reliability Requirement	9,600	(g)
Load Participating	7,758	(h)
Clearing Price	\$225.0	
RSR Uplift	\$25.0	
(x) UCAP Cleared	9,750	Auction Result
RSR Reliability Cost (\$000s)	\$88,969	
<i>Load Refund (\$/mw-d)</i>	<i>\$25.0</i>	
<i>Net Load Cost (\$/mw-d)</i>	<i>\$200.0</i>	

¹ – the amount will be equal to the additional total cost to load from increased procurement and clearing price directly attributable to RSR resources

Other

- LS Power thanks PJM for allowing us to provide these comments and to continue to work with PJM in addressing this important issue.