

ESA Regulation Proposal PJM RMISTF

June 22, 2016



Energy
Storage
Association

ESA Position

ESA understands PJM's need for a RegD signal without energy neutrality. We are prepared to support a package that abandons energy neutrality, but...

- Situation on long duration energy imbalances still a problem
- Ramp and energy limits should be treated comparably
- Possibly more room for energy optimization in new signal

ESA members have made hundreds of millions of dollars of investment in resources designed for the current signal. We can not support any package that does not make reasonable accommodation for those resources' continued performance.

New rules should both address current issues and provide proper incentives for continued investment in future storage projects.

Benefits Factor

ESA agrees with the IMM's proposed "MRTS" approach to calculating the benefits factor curve. However, we strongly oppose one aspect of the PJM engineering study used in that approach.

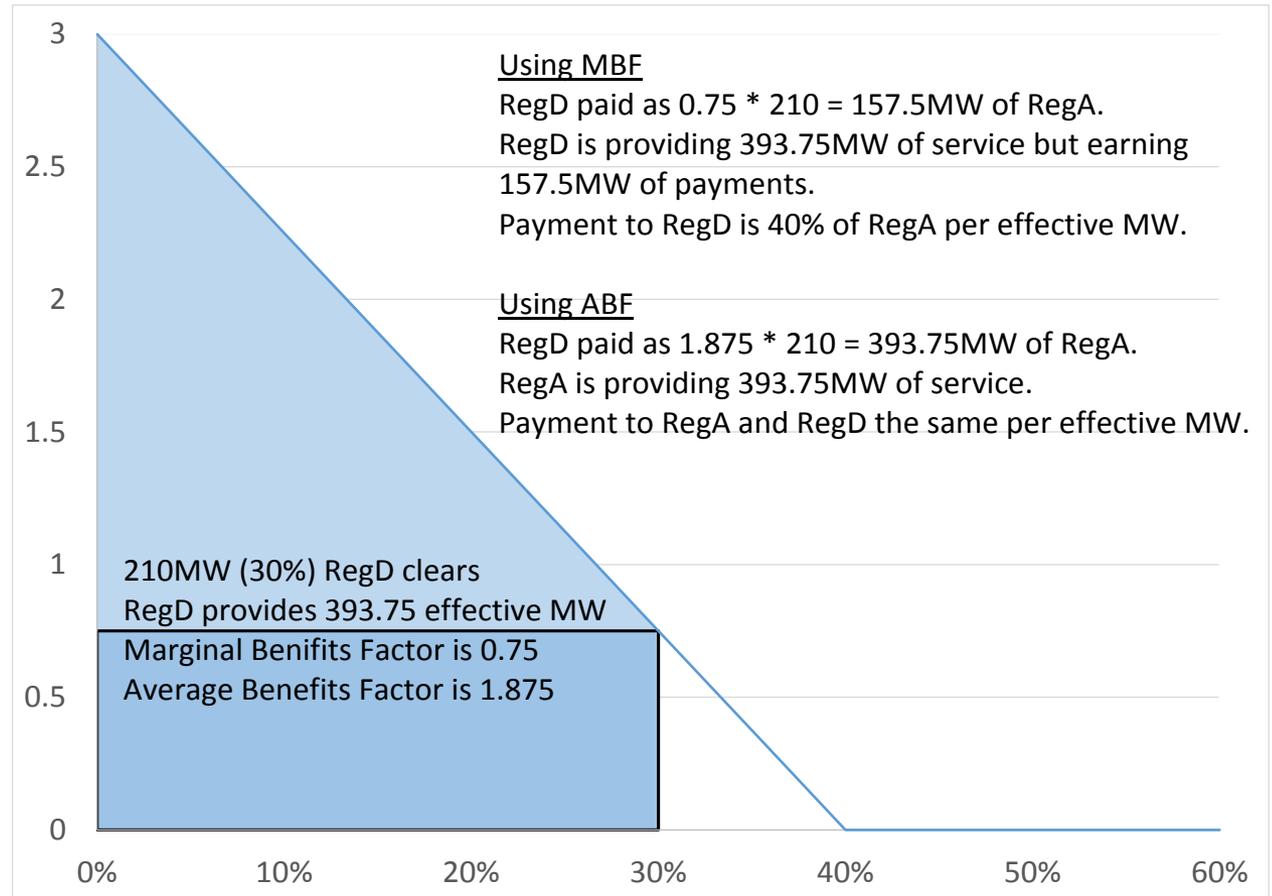
PJM's proposes to send an energy-unlimited RegD signal, but then calculate the BF assuming RegD resources are limited to 30 minutes of energy.

- Resources with more than 30 minutes storage will provide services they are not being compensated for.
- Resources with less than 30 minutes storage will be take a performance hit for not following a signal they were already assumed to not to be able to follow. This derates the units twice for the same limitation.

This approach violates basic rate-making principals, and we do not believe it will pass muster at FERC.

Settling on MBF is discriminatory

- The MBF *always* results in RegD earning less per effective MW than RegA.
- The Average Benefits Factor pays equally.
- ABF is the area under the benefits curve divided by total MW.
- Note that this is essentially the same problem raised by the IMM last year regarding effective MW in scheduling.



Settling on MBF is discriminatory

Contrary to FERC orders

- FERC has already ruled that using MBF for settlement violates equal compensation for equal service.
- FERC has already considered and rejected the argument that MBF produces the same price as two separate products with an exchange rate.

Unnecessary with new signal design

- Energy neutrality decreases with more RegD
- More difficult signal reduces value of shorter duration resources and sends correct “no new entry” market signal.
- Price signal encourages new entry at ever higher durations



Proposal on Signal and Benefits Factor

- Use PJM's mutually optimized signal approach
- Treat RegA ramp limits as RegD energy limits: something to be optimized, but not a hard constraint.
 - This approach sends the right signal to new or better technologies. High energy storage and fast ramp RegA should both be able to earn premiums.
 - RegA is already essentially a ramping product. Might as well admit that and proceed accordingly.
 - Open to compromise to limit performance hit on slower units (e.g., send ramp-unlimited signal, but only score on 5-min ramp signal).
- Calculate benefits isoquants based on signal, not assumed resource response.
 - Performance score already correctly accounts for resource falloff.
 - RegD energy neutrality automatically gets worse with more RegD. Performance scores will effectively limit amounts of short duration storage and provide proper signals to develop longer duration resources.
- Settle performance payments using Average Benefits Factor



Mileage Payments

Mileage has a direct impact on the VOM of many storage technologies. PJM's proposed new signal roughly triples the mileage asked of RegD. This makes mileage payments vital.

- Keep existing performance price component and payments using mileage ratio.
- Both PJM and the IMM have said that shortened battery life from cycling is an appropriate portion of a cost-based performance offer and is allowed under current rules. Clarify M15 to make this explicit.



Scheduling

We propose more flexible regulation scheduling to improve system imbalance issues and to help existing storage cope with loss of energy neutrality.

- Schedule using flexible/inflexible method currently used for SR
 - Well-vetted and established as technically feasible and not creating market problems.
- Automatically increase regulation intra-hour when needed.
 - Whenever regulation signals peg for 5 minutes, procure additional RegA for remainder of hour and for next hour if in last 15 min of hour.
 - Quantity is greater of 100MW or amount by which ACE exceeds TREG over any 5 minute interval.

Scheduling

We propose more flexible regulation scheduling to improve system imbalance issues and to help existing storage cope with loss of energy neutrality.

- Formalize intra-hour derating
 - Any regulation unit may derate itself by telemetering a lower TREG back to PJM (or other means).
 - Derated units loose assignment for remainder of hour. Replacements picked up from available flexible resources.
 - Derated units only paid for regulation provided. Charging self-derated units for cost of replacement regulation to be discussed with 5-minute settlement.
 - Performance score measured based on lowered amount of regulation.
 - Units already have these rights.
- This should be better for both control and pricing
 - System control is not served by keeping non-performing resources committed.
 - Prices will be lower than if the units taking advantage of deratings had to leave the market entirely.



Scoring

Current performance scoring is far too lenient. For the market design to work, the performance score must accurately measure equivalent MW.

- Performance score is even more important than benefits factor, but so far has no engineering basis.

Proposal

- Use precision as score. Use best score with 0 and 10 second delay to allow for communications latency.
- Units must score 75% to qualify and maintain 75% 100-hour rolling average to remain in the market.
 - No reason given for lower threshold to stay in; appears discriminatory against new entrants and encourages gaming of qualifications.

Estimated Lost Opportunity Cost

We believe that the LMP used to estimate LOC when scheduling regulation is consistently high. This alters the relative merit of energy and non-energy regulation resources, and provides incentive for resources to offer at below true cost.

Proposal

This problem is partially addressed by intra-hour scheduling. For units that are still scheduled inflexibly:

- Publish the estimated LMP used to estimate LOC.
- Adjusted estimated LMP up or down by average error over last week, or other time windows at PJM's advice.