Mosaic Power / A.F. Mensah RMISTF Executive Summary

Mosaic Power and A.F. Mensah are generally supportive of the changes in the PJM/IMM package, but notes that the package does not address the stated goal of sending appropriate market signals to participants. The IMM has noted that the amount of RegD resources entering the PJM markets is inconsistent with the PJM marginal benefits curve. However, the proposal to settle on the MRTS is based on an over-simplification of the problem and will not achieve the intended effect.

A clear market signal requires rational price formation. Mosaic Power analysis has shown that the marginal clearing price is considerably below the settled price. The disconnect between bid prices and settled prices is by far more a significant factor than the MRTS at settlement. As demonstrated, the settled price is essentially the result of several randomizing factors and yields a lottery-like marketplace. The MRTS acts like a tax on lottery winnings, which while discouraging over-building, does not contribute to a useful market price signal.

The key factors in the disconnect between the clearing price, which is often zero to a few cents a megawatt, and the settled price, which is typically between $5 and $50 per megawatt are:

1) The inclusion of the LOC in the clearing and settling price. The LOC at clearing time is calculated with the margin between PJM's best estimate of energy costs and the actual energy costs. The LOC at settling reflects the maximum actual difference between the predicted and actual LOC for any node with a regulating resource that is co-optimized with energy. Because of the incentive to bid near zero plus LOC, the regulation settled price is primarily based on the maximum error over a set of pricing points.

2) The distribution of regulation prices is dramatically skewed between the low median price and much higher average price. It is the infrequent "lottery winning" hours that drive the average market returns. Because these winning hours are the result of unforecasted system conditions, they can't be predicted, and resources must be in market to receive these returns, there is a rush to the bottom in bidding. Bids are uniformly far below costs in the expectation that over time the average returns will justify operations. This eliminates any correlation in bidding between normal operation costs and prices of operating regulation resources.

3) The regulation market is small, and of the small number of market participants, most elect to act as price-takers, either by bidding zero, or by self-scheduling. This thinly traded market further obscures the actual costs and inhibits the formation of any broadly meaningful price.

4) The MRTS discounts the offer price by the relative mix of RegA and RegD participants in the market. However, the MRTS is not known at the time the regulation bids are submitted, and the bidding parties do not have a means to know how their offer will be valued by PJM. A resource that bids its costs is likely to be discounted on an hour-by-hour basis by a different value depending on the bid stack, and it will be settled at that amount different than it bid. While MRTS is useful for PJM to select an optimal mix of fast and traditional regulation resources, it is a detriment to rational price formation when used in settlement.

   As proposed by PJM/IMM, the MRTS would be applied inconsistently between clearing and settlement. In clearing, each unit would clear at a unique MRTS value, but in settlement, as proposed, they would be paid based solely on the market MRTS. This value is less than or equal to the unique values at which every unit cleared. This would result in RegD resources providing a much larger proportion of effective MW to the market than they would be paid for.

   When settling on the MRTS, the resource revenue is double-discounted. The MRTS discounts the value of the resource by applying a valuation based on the class average performance as a key input to the MRTS curve, and again by the individual resource performance through the performance score. This is unjustly against fast regulation resources because traditional resources are not penalized for their average class performance, but are assumed to have a class-wide benefit of 1.

To address these concerns in the limited scope of the RMISTF, Mosaic Power and A.F. Mensah are focused on these specific modifications to the PJM / IMM proposal:

1) Do not include MRTS in settlement. The MRTS curve provides an optimal mix of fast and traditional regulation. The performance score provides the necessary pay-for-performance without penalizing fast resources as a class for the under-performance of a few.

2) Restrict Self-Scheduling to those resources providing for their internal or bilateral regulation needs. This places more resources in the pool for better price formation. Self-Scheduling also results in the selection of low-performing regulation resources when clearing prices are above zero.

3) Resources that fail the TPS, and have excess market power, should not be permitted to drive prices below cost. In such cases, the minimum bid should be the Manual 15 costs.

Questions and Comments should be addressed to

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