

Performance Score

Regulation Market Issues Senior Task Force

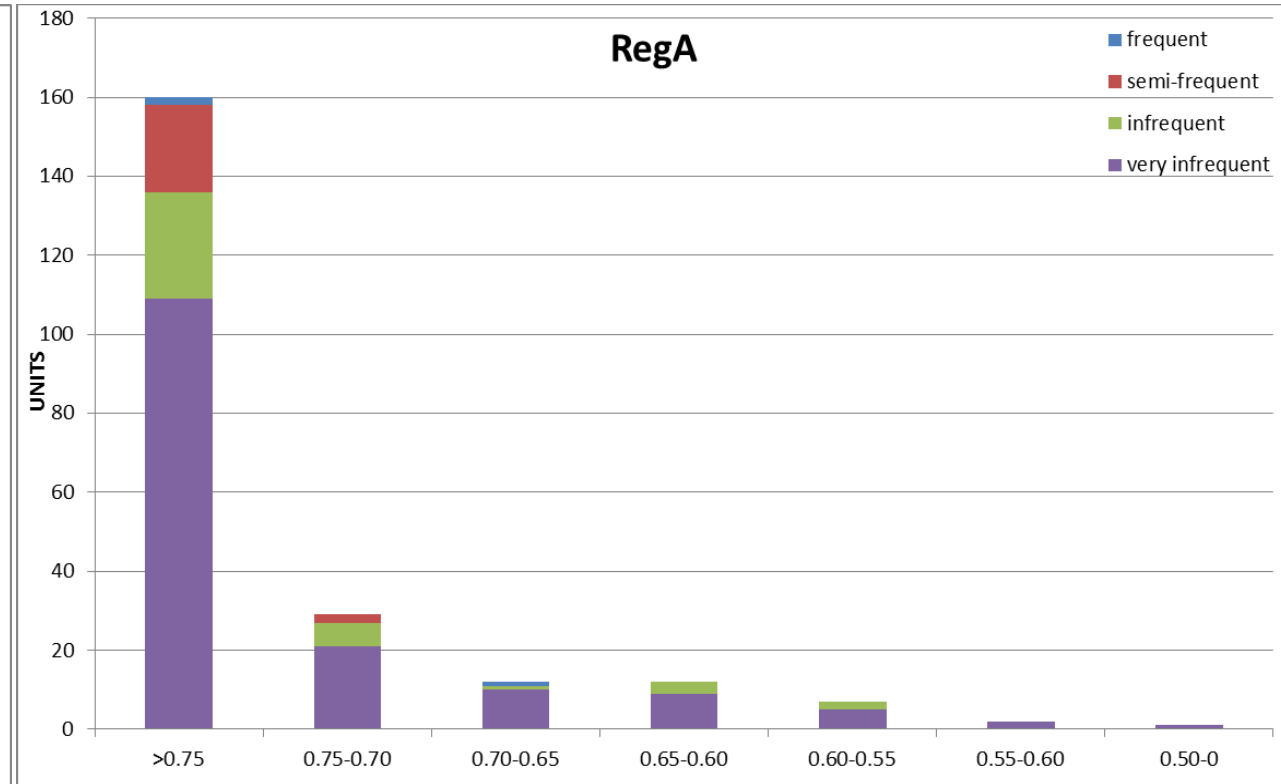
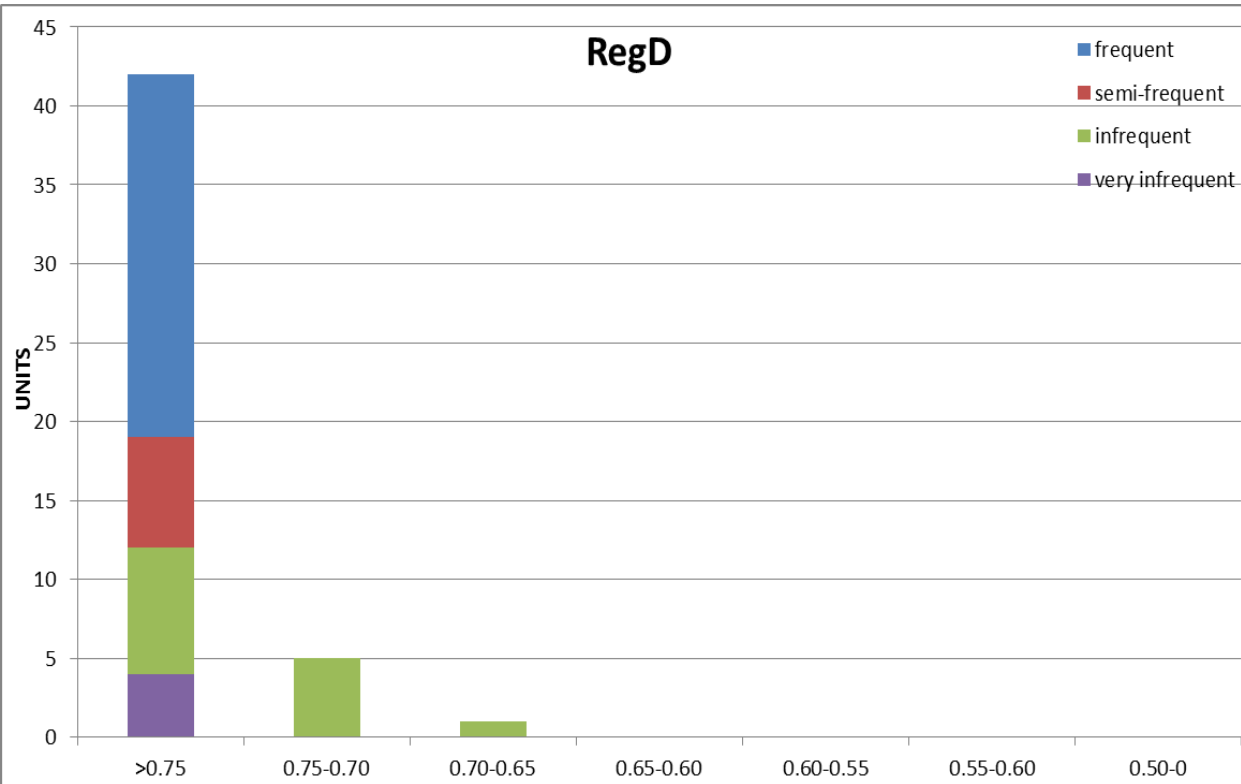
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Compliance

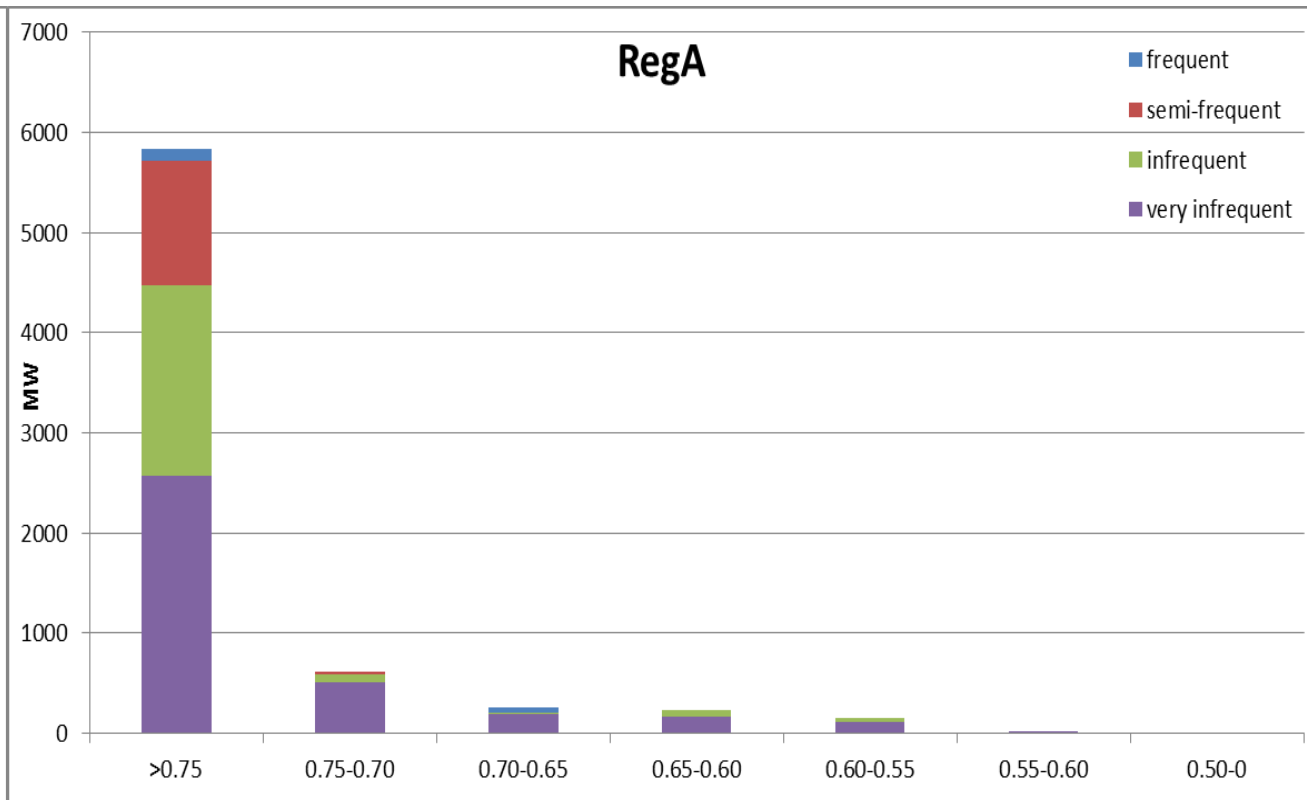
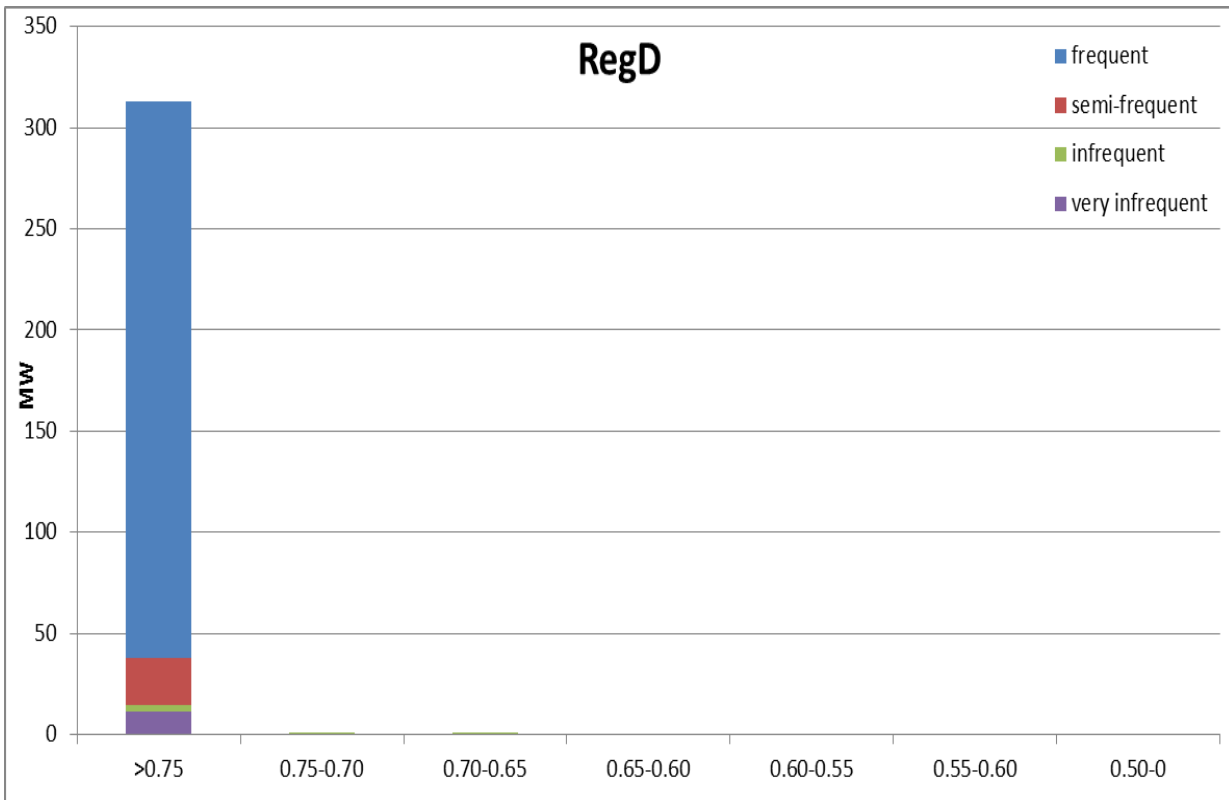
- Evaluated units and associated MWs that provided regulation in the last six months
 - Bucketed resources in frequency of regulation service provided
 - Frequent – provided regulation for > 50% of hours
 - Semi-Frequent – provided regulation for 25-50% of hours
 - Infrequent – provided regulation for 5-25% of hours
 - Very Infrequent – provided regulation for <5% of hours
- 75% of units and 83% of MWs providing regulation in the last 6 months have an average performance score > 75%

Current Performance Score Distribution

- 75% of units providing regulation in the last 6 months have an average performance score > 75%



- ~83% of MWs in the regulation market have an average performance score > 75%



- Regulation Participation Threshold
 - Participation in regulation needs to be held to a higher standard than the current 40% threshold
 - Participation thresholds should be in line with the qualification threshold (TBD)
 - 75% 100-hour rolling average score to participate in regulation market
 - PJM supports a transition period for the increase in participation threshold to allow evaluation of resource performance with new performance calculation and new control signals
 - Compensation threshold to stay status quo
 - Compensation received when hourly score > 25%

Appendix

- Performance Score Calculation: Re-evaluated the calculation of accuracy, delay and precision, and the inclusion of all three components
 - Using all components in performance scoring captures resource performance effectively when resources are following the signal fairly well, but does not do a good job during periods of poor performance
 - Value in keeping status quo equation to be able to capture signal correlation, timeliness and absolute error
 - Proposing an initial threshold evaluation on precision before scoring resources to better capture periods of poor performance
 - If precision score $> 75\%$, score interval status quo $(1/3A + 1/3D + 1/3P)$
 - If precision score $< 75\%$, score interval as precision only $(1/3*0 + 1/3* 0 + 1/3P)$

	Current	75% threshold	75% threshold, no precision
Performance Calculation	$\frac{1}{3} A + \frac{1}{3} D + \frac{1}{3} P$	<p>If $P < 75\%$ $0 + 0 + \frac{1}{3}P$</p> <p>If $P > 75\%$ $\frac{1}{3} A + \frac{1}{3} D + \frac{1}{3} P$</p>	<p>If $P < 75\%$ $0 + 0 + 0$</p> <p>If $P > 75\%$ $\frac{1}{3} A + \frac{1}{3} D + \frac{1}{3} P$</p>

Scoring equations are used on a 10-second interval basis, each component is then averaged for the hour for overall performance score

A = Accuracy
 D = Delay
 P = Precision



- Regulation Qualification Testing
 - Qualification testing requirements to stay status quo
 - 3 passing tests for new regulation resources (75%)
 - 1 passing test for ownership/signal path changes (75%)
 - 1 passing test for unit up-rates (75%)
 - Up-rate tests will be limited to once per quarter
 - Performance scoring of qualification test will be in line with new proposed calculation
 - Threshold check on precision
 - If precision score $> 75\%$, score interval status quo ($1/3A + 1/3D + 1/3P$)
 - If precision score $< 75\%$, score interval as precision only ($1/3*0 + 1/3* 0 + 1/3P$)