



Phase 1

Business Rule Changes- M11 and M12 (No FERC filing needed)
Projected Timeline - complete stakeholder process February Q4-2012 and implement March through October in Q1-2012

- 1) Regulation Performance Score
 - a. Calculated for each hour, or portion of an hour, that each resource regulates
 - b. Feedback to the resource owners via GPM or eMKT in near real time
- 2) Hourly Eligibility
 - a. A resource must maintain a performance score of 25% or better to receive compensation for regulating.
 - b. A resource whose performance score falls below 25% will not receive compensation for that hour
- 3) Disqualification from the regulation market
 - a. When a resource's rolling average score of last 100 hours falls below 40%, it is disqualified from offering into the regulation market.
 - b. When disqualified, a resource must re-test and re-qualify
 - c. Once a unit re-qualifies the rolling 100 hour average resets
- 4) Reduce Economic Ramp Rate when resource is regulating
 - a. When a unit is regulating, reduce the economic ramp rate to minimize the conflict between ramping a resource for energy and regulation.
 - b. The adjusted economic ramp rate is represented by Energy Ramp Rate - Regulation Assignment
 - c. This change better incorporates the Product Substitution Cost in the RMCP
- 5) Regulation Requirement Reduction
Regulation requirement decreases from 1% of forecast peak and valley to .9% of forecast peak and valley.

Phase 2

Business Rule Changes- M11 and M28; PJM OATT Schedule 3, OA Schedule 1; \$1.7.18, \$1.10.1A, \$3.2.2
Timeline- FERC Filing by April 1, Projected Timeline- Implement by Q4-2012 and implement October 1, 2012 pending FERC approval

1. Two-part Offer adjusted by Historic Performance Scores
 - a. Regulation Capability - Adjusted by the historic 100 hour rolling average Performance Score
 - b. Performance Offer including Mileage- Adjusted by the historic 100 hour rolling average Performance Score, Dynamic to Traditional mileage ratio, and benefits factor
- 1-2. Two-part Clearing Performance factors
 - a. Hourly clearing based on lowest total expected production cost
 - a-b. Marginal units determined by capability requirement Adjust the merit order stack for both capability and mileage
- 2-3. Two-part Settlement
 - a. Regulation Capability Payment includes actual Lost Opportunity Cost.
 - a. Performance including merit order stack for both capability and mileage Based on Regulation Capability and Mileage
 - b. Hourly clearing based on lowest total expected production cost
 3. Mileage Payment
 - a. Mileage Payment determined by the maximum of all cleared Performance offers, the actual mileage (Mileage Clearing Price * Normalized Miles of

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RPSTF Proposal Timeline

- ~~the Regulation Control Signal * Performance Factor * Regulation Capability) and the actual performance score~~
- ~~b. Units with the ability to provide fast regulation will receive about 3-4 times more mileage \$ based on current signals~~
- 4. Reduction in Regulation Capability Procured
 - a. Improved performance of regulating resources due to performance scoring should reduce procurement
 - b. Track actual changes in regulation capability procured with CPS1 and BAAL needs driven by delta load or other estimation
- 5. Initial Qualification or Increased Regulation Capability - use the performance factor scoring technique of a unit's ability to follow the actual regulation signal using the current three test benchmark
 - ~~b. —~~

- ~~– Phase 1. Initial qualification replaced by real time performance score evaluation – Phase 2.~~
- 2. Data Transfer and Control Signals (M12 ~~and M14D~~)
 - a. Differentiated by speed
 - i. Slow or traditional signal
 - ii. Fast or dynamic signal
 - b. AREG – unit level hourly assignment, created by SPREGO used by SCED, sent by PJM
 - c. REGA – fleet level regulation signal sent by PJM to traditional units
 - d. REGD – fleet level regulation signal sent by PJM to fast moving units – Phase 1.
 - e. TREG – total fleet capability sent to PJM
 - f. CREG – total fleet response sent to PJM
- 3. Market Clearing (M11 ~~and M15~~)
 - a. Total Regulation Market Size – 1% of forecasted load in peak and valley periods. Decreased to .9 – Phase 1. Adjusted again based on increased performance and moving capability requirement alignment with reliability needs – Phase 2.

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Current State

Change and Phase indicated by color

- 1. Regulation Resource Eligibility Testing (M12)
 - a. 0.15 MW minimum of regulation capability for all resource types ~~(in process of changing to 0.1 MW)~~
 - b. Resources follow square wave control signals for 10 minutes. Replaced by actual control signals – Phase 2.
 - c. 75% passing composite score of 3 consecutive tests for initial qualification, then best 3 out of 4, 3 out of 5, 4 out of 6, or 5 out of the last 7 tests for on-going qualification. Disqualification replaced by performance score threshold
- b. Merit Order Stack – Resource owners submit specific offers to provide Regulation. SPREGO then optimizes the RTO dispatch profile and forecasts LMPs to calculate an hourly Regulation Market Clearing Price (RMCP). Replaced by two part clearing price – Phase 2.
- c. Regulation LOC – takes into account shoulder hour in a make whole payment (M28 § 4.2). Energy Limited Ramp

RPSTF Proposal Timeline

- | Rate will ~~potentially alter LOC potentially lowering it~~ – Phase 1.
- | d. Regulation TPS – tests for market power of a supplier. When test is failed resource receives regulation cost based offer (M15). ~~Cost may need to reflect regulation capability and performance including mileage~~ – Phase 2.
- 4. Verification – After the fact manual process that compares goodness of fit from TReg to resource response (M12 or M28 § 4.3). ~~Replaced with automated Performance Factor based scores and thresholds~~ – Phase 1.
- 5. Regulation Settlement (M28)
 - a. $MW * RCMP + LOC$. ~~Replaced by two-part clearing~~ – Phase 2.
 - b. Settlement is a line item
 - c. Regulation Credit Report delivers more detail.