

Phase 1

Projected Timeline - complete stakeholder process Q4-2011 and implement 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
 - 5
 - 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

Projected Timeline - Implement by Q4-2012 pending FERC approval

1. Performance factors
 - a. Adjust the merit order stack for both capability and mileage
 - b. For initial 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
2. Two part settlement
 - a. Based on Regulation Capability and Mileage
 - b. Hourly clearing based on lowest total expected production cost
3. Mileage Payment
 - a. Payment determined by:
(Mileage Clearing Price * Normalized Miles of the Regulation Control Signal * Performance Factor * Regulation Capability)
 - 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

Current State

Change and Phase indicated by color

1. Regulation Resource Eligibility Testing (M12)
 - a. 0.5 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 – 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 alignment with reliability needs – Phase 2.
 - 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 – Phase 2.
 - c. Regulation LOC – takes into account shoulder hour in a make whole payment (M28 § 4.2). Energy Limited Ramp Rate will 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 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.