

Real – Time Market Price Volatility under SMD Operation

Management Committee

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Background

- Increased price volatility is occurring regularly in the Real-Time Market (RTM). This volatility is indicated by unpredictable and significant positive and negative RTM price spikes.
- The ISO RTM scheduling objective is to meet RTD demand by minimizing bid production cost through the efficient use of available resources.
- The SMD software was designed to achieve this objective through the optimal commitment of available resources.
- In practice, the SMD software may result in the suboptimal commitment of available resources due to forecasting uncertainties between the commitment (RTC) and dispatch (RTD) scheduling horizons.

Background

- **Forecasting uncertainty between the commitment (RTC) and dispatch (RTD) scheduling horizons is the primary cause of increased price volatility :**
 - *Load forecast uncertainty in the commitment horizon (30-60 minutes in advance of RTM pricing interval) is significant at ~1.0% and may result in the suboptimal commitment of resources to meet RTD demand.*
 - *Phase angle regulator schedule changes between the RTC and RTD runs can result in the suboptimal commitment of generating resources to efficiently address transmission constraints.*
 - *Many other potential system events may occur after the commitment horizon that can result in the suboptimal commitment of resources to meet RTD demand (e.g. loss of generation or a forced transmission outage that does not result in a reliability violation).*

Proposed Corrective Measure

- **Based on these findings, it was determined that additional resources need to be made available for RTD to address the consequences of suboptimal commitment decisions by RTC due to forecasting uncertainty.**

- As a result, the ISO recommends the following:
 - *Provide RTD with the additional resource availability of eligible 10-minute units, thereby mitigating the impact of suboptimal commitment decisions that result in inefficient market outcomes. Eligible 10-minute units are those units that are offline and have met their minimum down time requirements, subject to reliability considerations associated with unit minimum generation levels.*

 - *RTD would be capable of scheduling of eligible 10-minute units, only when economic and necessary to meet load, in both the RTM physical and pricing dispatches. ISO Operations, however, would make the final determination whether to actually commit the 10-minute unit(s) scheduled by RTD.*

Proposed Corrective Measure

- A key element identified in the Concept of Operations document is the application of a zero downward ramp rate for the eligible 10-minute units. This means that if an eligible unit is dispatched up in a particular time step of the RTD run it cannot be reduced below that level in later time steps.
- The effect of this change is that RTD will honor the minimum run time of the resource. The resulting impact on unit schedules and RTM clearing prices is that the eligible unit(s) will only be dispatched in the first time step if it is a lower cost option over the remainder of the optimization horizon.
- Power System Operations staff will only commit eligible unit(s) if they are fully scheduled for all RTD intervals (of a RTD run) and are economic to meet load for the first three intervals of the RTD run.

Summary

- **This proposal has been reviewed and modified appropriately with stakeholder input at the Market Structure Working Group meetings.**
- **Providing RTD with this capability will require software modifications as well as tariff changes.**
- **The ISO believes the proposed measure should be implemented as soon as possible in order to correct the current inefficient Real-Time Market outcomes.**