

ISSUE 11: COMPARING TREATMENT OF SELF-SCHEDULING RESOURCES IN PRE-DISPATCH AND REAL-TIME

Date Raised

June 2004

Description

Units that are registered as Self-Scheduling Generators (SSG) don't receive dispatch instructions and are not allowed to offer operating reserve. They must submit a schedule that includes the expected level of generation in each hour and the Market Clearing Price below which they will stop generating. Outages to these units are reported to the IMO and are factored into the expected generation from them.

The pre-dispatch sequences use the submitted schedules and the real time sequences use the actual (or a forecast of the) output. The different assumptions made about the SSG unit outputs may not be correct and may create inconsistencies between the real time and the pre-dispatch sequences.

Background

The pre-dispatch Dispatch Scheduler and Optimisation (DSO) program converts the submitted SSG schedule into a single P-Q pair. The Q of the P-Q pair is set equal to the submitted schedule MW and the P is set to the minimum price specified in the schedule. Applicable outages are applied to the scheduled generation. The DSO then dispatches the SSG units in the same way other generators are dispatched. They are allowed to set the pre-dispatch energy Market Clearing Price. When the concept of SSG units was introduced in the Market Rules, it was assumed that it will apply to very small generators whose output will not impact the reliable operation of the power system. Deviation from the submitted schedule will not cause security or adequacy concerns. As it turned out, large generators and more of them were registered as SSG units. Deviation from their schedule became a concern especially in transmission limited areas like the Northwest and Northeast. Consequently, any inaccuracies in the submitted schedules and/or real-time changes in output by self-scheduling generators can be a more significant factor in the reliable operation of the power system.

The treatment of SSG units in the real time DSO program was changed to use their actual metered output in addition to the submitted schedule. The unconstrained sequence is run at the end of the interval and uses a snap shot of the power system taken at that time. The actual output of these units is known. The SSG units are set to their actual output at the end of the interval. The

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constrained sequence runs 10 minutes before the end of the interval and uses a snap shot taken at that time. It uses a forecast of the expected output of these units. This forecast is based on the unit's actual output from the snap shot and its submitted schedule. Since the output of these units is a fixed input quantity (to actual or forecast values) in the dispatch algorithm, they are not allowed to set the price.

Why a Pricing Issue

The schedules provided by the SSG units (used in pre-dispatch) and the forecasted output (used in the real time constrained) may not be correct. If this is the case, the amount of resources dispatched from the other units will not be correct. This will affect the amount of generation dispatched from other resources (system reliability) and the calculated prices for energy and reserve.

The real time and the pre-dispatch sequences treat SSG units differently. The pre-dispatch sequences use the submitted schedules and the real time sequences use the actual (or a forecast of the) output. This may create inconsistencies between the real time and the pre-dispatch sequences and consequently the prices as well.

Impacts of Issue

Market Impact

The assumptions made about how much energy the SSG units will produce affect the amount of energy dispatched from the other resources. This may create inconsistencies between the real time and the pre-dispatch sequences and may potentially impact the system reliability.

Participant Impact

[To be developed]

IMO Processes and Procedures Impact

Changes to the Market Rules and the DSO may be required if the currently used assumptions or processing is changed.

Related Issues