

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

Date Raised

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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 IESO 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.

The unconstrained sequence of the DSO is run at the end of the interval and uses a snapshot of the power system taken at that time. The actual output of these units is known when calculating price.

The constrained sequence runs 5 minutes before the dispatch interval and uses a snapshot 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 at the time of the snapshot and is compared with its submitted schedule. If there is no change in the schedule from the previous interval to the next, the DSO will use its actual output when calculating dispatch instructions. If there is a change in the submitted schedule from the current dispatch interval to the next, the output of the unit used to calculate dispatch instructions is assumed to be the scheduled amount. 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

At market opening the schedules of SSG were frequently incorrect. For the first year of market operations the absolute average hourly deviation from their submitted schedule ranged from approximately 5 MW to 12 MW with a mean deviation of 8 MW.

Market Analysis at the IESO has been working with SSG's to assist them to improve their forecasts and updating their submitted schedules. The SSG's have improved their schedules recently. For the market year May 2006 – April 2007 the absolute average hourly deviation ranged from approximately 5 MW to 7 MW with a mean deviation of 6 MW. This trend can be seen in the graph below. Market Analysis continues to work with SSG's in an attempt to refine these deviations further.

