

Background

On November 16, 2009 beginning in HE 4, a planned outage to PA301 took place. The scheduling limits at New York and Michigan as well as the Net Interchange Scheduling Limit (NISL) were adjusted accordingly.

The IESO saw NISL and scheduling limit violations in the unconstrained and constrained sequences beginning around 20:00 on November 15, 2009 for HE4. As a result, the IESO put in a set of more restrictive limits for the hours leading up to HE4. This effectively ramped in the scheduling limit change and the DSO was able to solve for HE4, removing the violations in the constrained sequence.

As the implementation of more restrictive limits is only in the constrained sequence, there were still violations in the predispatch unconstrained sequence for HE4.

Explanation

The DSO tries to find the most economic solution for the market. Each violation has an associated fixed cost to it that the DSO uses to calculate the most economic solution. A scheduling limit and a NISL violation have the same cost.

On November 16, the DSO had a NISL violation in the predispatch unconstrained sequence and, as part of the co-optimization, it tried to solve this NISL violation. As a result, the DSO scheduled uneconomic exports which in turn violated the scheduling limit at Michigan and Minnesota. With the violation costs in the DSO, it solved for the most economic solution – a NISL violation and a scheduling limit violation on Michigan and Minnesota. What the IESO would have preferred is a NISL violation with no scheduling limit violations.

On November 16, 2009, the following occurred:

- DSO could not solve and violated both the NISL and scheduling limit violations.
- IESO implemented a set of more restrictive limits.
- DSO automatically constrained off transactions (imports and exports) that resulted in negative CMSC.
- After-the-fact, in order to be consistent with actions taken for December 18, 2008 (described below) and in order to not have a scheduling limit violation in the market schedule, the IESO zeroed out the market schedule for those exports that were scheduled above the scheduling limit that were subsequently constrained off, resulting in negative CMSC.

A similar event occurred on December 18, 2008:

- The DSO was able to solve by violating a scheduling limit but not violating the NISL by scheduling uneconomic transactions above the scheduling limit.

- The IESO manually constrained off transactions (exports) that were scheduled above the scheduling limit, resulting in negative CMSC.
- The IESO changed the market schedule of those transactions that were uneconomically scheduled above the scheduling limit and then constrained off. This removed the negative CMSC for these transactions.

What the Market Saw

The unconstrained predispatch market price for MISO was showing \$2,000 prices from 21:11 on November 15. Furthermore, the constrained price at Calvertcliff and Sevensisters shows \$40,000 in the predispatch shadow price report. This price is only seen for a few hours as there is no violation after the set of more restrictive limits were enabled (only in the constrained sequence).

The NISL shadow price report was showing a binding NISL in the constrained and unconstrained sequences from 20:13 on November 15. In most hours, the NISL price was \$40,000, indicating the DSO could not solve the violation. The constrained NISL violation is solved in the early hours of November 16 (as the IESO control room increased the NISL limit) however, there was still a \$40,000 violation seen in the unconstrained sequence.

Finally, export congestion at MISO can be seen from 21:13 on November 15 at an ICP of \$2,000 or just under (depending on the timing of the report).

Conclusion

Even though the market place had sufficient information available and sufficient time to revise their bids and offers, we did not see a great market response. Furthermore, the negative CMSC was inappropriate as a result of respecting NISL and allowing the DSO to schedule over the scheduling limit in the unconstrained schedule.

Recommendations

- In order for the DSO to be able to prioritize a NISL violation and a scheduling limit violation appropriately, it is recommended that the penalty value be revised so that the DSO will violate NISL before violating a scheduling limit. The DSO should have never violated the scheduling limit and, therefore, the more restrictive limits would not have been input for this reason. For this reason, the negative CMSC is inappropriate for those transactions scheduled above the scheduling limit. This recommendation is currently underway.
- Moving forward, prior to large circuit outages, such as PA301 and PA302, where the IESO will be reducing scheduling and NISL limits, the IESO should ramp the scheduling limit down. This will mitigate the impacts of large changes to limits that may result in the violations seen on November 16. This recommendation was implemented for the December 19, 2009 PA301 and PA302 outage.