ieso
Power to Ontario.
On Demand.

November 16 High Price Event

IJT June 2, 2010

Agenda

- Background – how the tools work
- November 16, 2009
- Comparison from December 18, 2008
- Recommendations

Background – how the tools work

- Constraint violations are priced in the DSO so that the DSO can yield an economic solution
- These values are in place to help reduce manual overrides by operators in real-time
- Values reflect relative priority of meeting various physical constraints (Board approved at market opening)
- NISL and scheduling limit violations are both priced at $40,000 while security limits are priced at $60,000 and a 10-minute operating reserve shortage is priced at $10,000

Background – how the tools work

- Looking at the unconstrained sequence without congestion, all nodal prices would equal the reference bus price because there are no losses
- If there was a NISL violation on the import side, all nodes external to Ontario will be less than the reference bus price
  - Without congestion, with a $40,000 penalty, all external nodal prices will be the reference bus price reduced by the penalty (i.e. $2.05 - $40,000 = -$39,997.95)
  - This represents the price of an Ontario supplied MW in an external zone or the zonal price (for example, the MBSI price on November 16)

Background – how the tools work

- Let's say there is a NISL violation and scheduling limit congestion
  - As before, the MBSI zonal price is -$39,997.95 (with no congestion)
  - All imports and exports are competing against this price
  - The nodal price, by definition, is the price that an additional MW of non-dispatchable load in MBSI would pay
    - Conceptually, this additional MW would be supplied by ONZN because MBSI generation is too expensive, therefore an export MW supplying dispatchable load would have to be cut to supply the NDL because the export limit is binding (we cannot schedule more exports)
    - The nodal price then is then set from the export that would supply the MW or the least economic export (On November 16 this was –$1,404.08)

Background – how the tools work Outside of the DSO

- The net cost of export congestion (or the marginal price of export constraint) is the difference between what we would get paid and what it would cost the market to export 1 additional MW: -$1,404.08 – (-$39,997.95) = $38,593.87 (calculated within the DSO)
- Outside of the DSO, for published values and settlement purposes, a new PD unconstrained MBSI zonal price is calculated: Ontario Price – net cost of export congestion ($2.05 -- $38,593.87) or $38,595.92
- PD unconstrained MBSI zonal prices is then capped at $2,000
- The published ICP is then equal to the zonal price less the Ontario price – in this case: $2,000 - $2.05 = $1997.95
- Real-time price at the intertie zone will then be the ON MCP + ICP

November 16, 2010

- HE 4 – Planned PA 301 outage
  - Day Ahead at 11:07: input the following limits:
    - NISL from 700 to 500
    - MISI Export from 1430 to 655
    - NYSI Export from 1650 to 0
  - Day Ahead at 20:00: NISL and scheduling limit violations seen in both the PD constrained and unconstrained sequences for HE4

November 16, 2009

- DSO could not solve and violated both the NISL and scheduling limit violations
- IESO implemented a set of more restrictive limits
  - As a result, the 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 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 and subsequently constrained off, resulting in negative CMSC

December 18, 2008

- Compared to December 18:
  - 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 in order to not violate the scheduling limit, resulting in negative CMSC
  - After-the-fact, 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

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. This recommendation is currently underway and will be brought to the September IESO Board meeting.

- Moving forward, prior to large circuit outages, such as PA301 and PA302, where the IESO will be reducing scheduling and NISL limits, the IESO will ramp the scheduling limit down. This recommendation was implemented for the December 19, 2009 PA301 and PA302 outage and there were no violations.