

Subject: Multi-Pass Methodology of Security Constrained Unit Commitment

Security Constrained Unit Commitment (SCUC) creates the NYISO Day-Ahead Market by performing three commitment runs and two dispatch runs in sequence.

Details:

Pass #1 – Bid Load Commitment

The first pass of SCUC solves for supplying the Bid Load and securing against the normal NYISO bulk power system contingency and monitored facilities. Once this commitment run has converged, the market power mitigation evaluation is performed for the energy price caps, including a recommitment/redispach. This commitment/dispatch is evaluated by security analysis. Additional iterations of unit commitment (with market power mitigation price caps) and security analysis are performed until convergence is again achieved.

Pass #2 – Bulk Power System Forecast Load Commitment

The next pass solves for supplying the forecast load. At the beginning of this pass, generator limits and commitment statuses are modified to ensure that the units selected in the bid load pass will not be decommitted or dispatched below their pass #1 value. Units selected in the bid load pass can be dispatched higher, and additional units can be committed and dispatched. This pass evaluates for capacity, and therefore uses incremental uplift costs and does not use energy costs. This second commitment supplies the forecast load and secures against the bulk power system contingencies and monitored facilities.

Pass #3 – Local Reliability Rules Forecast Load Commitment

The final commitment is performed in this pass as an extension of the pass #2. The program secures for the Local Reliability Rules contingency and monitored facilities.

Pass #4 – Forecast Load Redispatch

In pass #4, the set of generators from the final commitment is dispatched using the original energy bids. The dispatch supplies the forecast load and is limited by the bulk power system constraint set produced in the pass #2 commitment. The unit capacities (energy + 30 minute reserve + regulation) from this dispatch are used to calculate the forecast reserve for economic dispatch. The power flows are created for the transmission providers' review and the interface transfer flows to be evaluated in the non-firm transaction selector.

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Pass #5 – Bid Load Redispatch:

In this pass, the final dispatch is to supply the bid load and is limited by the bid constraint set produced in the pass #1 commitment. The quick start units selected in either of the forecast runs will not be dispatched. After this dispatch, the market power mitigation process is run to evaluate reserve price caps.

