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INTEROFFICE MEMORANDUM

SUBJECT: TRANSMISSION LOSS MODELING FOR SCUC, RTC, AND RTD UNDER SMD2 OPERATION

DATE: 11/4/2004

FROM: NYISO MARKET OPERATIONS

DISCUSSION

The treatment of transmission losses in the ISO SMD2 scheduling systems will be improved to support the requirements of real-time dispatch operation, as it is currently employed in the ISO Security Constrained Dispatch (SCD). An additional benefit of refining the treatment of losses will be an improved load forecasting performance in RTS, since the variable component of transmission losses will be removed from the short-term load forecast.

Prior SCD treatment

Under the current SCD treatment, an estimate of transmission losses is derived for each SCD interval using B-coefficients computed from the EDC power system model. The EDC model uses telemetered generation and tie-line flows to compute nine EDC area loads and area loss values. The EDC model also provides penalty factors to account for incremental transmission losses for the dispatch of internal ISO generating units.

A short-term load forecasting function for SCD provides an estimate of the nine EDC area loads for the next SCD interval, less estimated transmission losses. SCD is then used to dispatch ISO generating units to meet the SCD load forecast and the previous interval's estimated loss values. This dispatch is used to derive an updated estimate of the loss values, after which SCD is again used to meet the next interval's forecasted area loads and updated loss values.

SMD2 treatment

The ISO SMD2 scheduling systems - SCUC and RTS - will employ a similar comprehensive treatment of transmission losses.

The iterative solution methodology of the Network Constrained Unit Commitment (NCUC) function lends itself to the incorporation of estimated transmission losses in the unit commitment solution. For each interval of the network powerflow solution (10 intervals for RTC and 5 intervals for RTD, 24 for SCUC), transmission losses can be determined at each of the eleven LBMP zonal levels. No changes to the current calculation of generating unit penalty factors are required and, therefore, the computation of marginal losses remains the same.

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RTS treatment

1. The short-term Real-Time Market load forecast function will provide a forecast of the eleven zonal loads, less zonal transmission losses.
2. The RTS loss estimates for the load zones will be determined from the network powerflow solutions of the corresponding RTC/RTD intervals.
3. The RTS energy requirements will include meeting: (1) the forecast of the zonal loads less zonal loads less transmission losses; and, (2) the RTC/RTD zonal loss determinations.

SCUC treatment

1. The SCUC bid load pass loss estimates for the load zones will be determined from the SCUC bid load pass network powerflow solutions.
2. The SCUC bid load pass requirements will include meeting: (1) the hourly zonal bid load demand; and, (2) the hourly zonal loss determinations from the SCUC bid load pass network powerflow solutions.
3. The Day-Ahead Market load forecast function will provide a forecast of the eleven zonal loads less zonal transmission losses.
4. The SCUC forecast load pass loss estimates for the load zones will be determined from the SCUC forecast load pass network powerflow solutions.
5. The SCUC forecast load pass requirements will include meeting: (1) the Day-Ahead Market forecast of the eleven zonal loads less zonal transmission losses; and, (2) the zonal loss determinations from the SCUC forecast load pass network powerflow solutions.