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ICS White Paper Outline

EVALUATION OF THE TAN 45 ANCHORING POINT METHOD
FOR DETERMING NYCA IRM REQUIREMENTS

The purpose of this paper is to review the reliability benefits of selecting the TAN 45 point on the Unified Method Curve, as opposed to other points on the curve, for anchoring IRM requirements.

White Paper Premises

1. The TAN 45 Method applies to curves developed using the Unified Method for providing the relationship between IRM and locational capacity.

2. This paper applies to the near term capability periods of 2006-07 and 2007-08.

3. At this time the NYISO has not considered and adopted a market design policy change that could include NYISO procedures for establishing and allocating LSE costs and different IRM requirements for different zones.

Reliability Benefits of the TAN 45 Method

1. The TAN 45 point on the curve is mathematically the most stable on the IRM/LCR curve. Points on either side of the TAN 45 point may create disproportionate changes in LCR and IRM since small changes in LCR can introduce larger changes in IRM requirements and vice versa.

2. Selecting an IRM point on the left portion of the curve, approaching and including the free flow equivalent, wouldresult in non-compliance with the NYSRC Reliability Adequacy Reliability Rule (LOLE Criterion), A-R1. This is because there is insufficient existing and planned locational capacity in Downstate NY and some Upstate Zones to meet the LOLE Criterion at the free flow equivalent IRM or at IRM points on the curve close to the free flow point.

3. As observed on a recent graph showing LOLE vs IRM, at lower IRM points, zones other than the two current localities exhibit much higher LOLEs. This is an indication

   – another observation from the zonal LOLEs as a function of IRM plot is that the downstate zonal LOLE (i.e., the highest zonal LOLE between the downstate zones J and K) crosses the upstate zonal LOLE (i.e., the highest zonal LOLE among the upstate zones A through I) at about 17.75% - 18% IRM which approximates the TAN 45 point. Also, the current LCR vs. IRM curve and related zonal LOLEs do not reflect existing firm contracts.

Improvements

Mathematically determine the best R-squared value using quadratic regression for more than 3 points to determine the best fit curve from which Tan 45 can be determined.

Future areas of study

Evaluation of the existing firm contracts could involve (a) the LCR vs. IRM curve, (b) the zonal LOLEs, and (c) the relationship between zones J and K LCRs and LOLEs.
d) Review capacity under contract and the ability of the transmission system to deliver the capacity through a constrained interface with the system at criteria.[Comment: I actually don't see how any of this paragraph relates to TAN 45 but I support its review.

Additional Localities for NYCA could be considered.

ICS will plot the LCR_IRM curve in terms of MWs to determine if this is a more applicable approach. This work will attempt to reconcile the mathematical meaning to the physical meaning of TAN 45. Where 1 MW of capacity on the Y axis is equivalent, in terms of LOLE benefit, as 1 MW on the X-axis at TAN 45. At TAN 45, does constraints prevent the full utilization of import capacity for any hours (i.e. can 1 MW of statewide capacity reliably serve 1 MW of Zone J or K load at 118% with a corresponding LCR of 80% and 99%- Tan 45 for 2006 and 2007).

Determine the best R-squared value using quadratic regression for more than 3 points to determine the best fit curve from which Tan 45 can be determined.