



Sent: Monday, May 09, 2011 11:39 AM
To: RegionalTransmission
Subject: Comments on the draft CAISO Planning Standards

Below are my comments on the CAISO draft planning standards. (I was not able to locate a comment template on the CAISO webpage.)

CAISO Voltage Standard

The upper normal and emergency limits to the voltage standard are quite high. Most transformers are specified at nominal voltage with taps at $2 \times \pm 2.5\%$. (These are not typically LTCs, so that the transformers must be taken out of service to change taps.)

So the 1.1 per unit voltage standard would be a 5% above the upper tap and at the very upper limit for most conventional generators. To avoid over-volting the transformers and low voltage systems, this may incent the use of these higher tap settings. However this would be undesirable for regular operations if the normal voltage is much closer to the nominal voltage.

The proposal may also lead to high voltages at the remote end of open ended transmission lines. I recommend stating that the voltage range be $\pm 5\%$ of the "normal" voltage with the normal voltage being defined for each station (or possible regions of the system). Generation performance during deviations associated with contingencies would be addressed through the LVRT requirements and these normal voltages. (Granted there is no LVRT for conventional generators, so there is a risk there. NERC is working on a technology neutral LVRT, but that has been true for a couple of years.)

Also V_{min} is needed for 500 kV as some generators are connected directly to the 500 kV such that the auxiliary bus voltages are directly impacted by the 500 kV voltages.

SPS

We are seeing greater use of SPS mechanisms for the interconnection of generation. This is generally a good approach to manage the cost of transmission upgrades. However at times the design of the SPS has not taken advantage the full range of design options allowed by WECC. For example, for mitigation of thermal overloads, a response-based system may be much more cost effective than an event-based designed. Instead we are seeing hybrid designed that include both event and response based elements, an expensive option that requires extensive communication systems. This increases the SPS complexity significantly. Greater use of response-based designs would make such system more readily meet the objectives of ISO SPS6. For the CAISO Planning Standards, I recommend the inclusion by reference of the WECC Remedial Action Scheme Design Guide (June 6, 2006 and as may be updated from time to time). Since it is a Guide, it is not part of the WECC Regional Criteria referenced in the Introduction. Also by including the reference to the Guide, there would be a more direct linkage to the design options noted above.

Involuntary Load Interruption Standard

This standard has some subjective load levels whereby loops and back-ties would be required. To better understand potential impact of these standard revisions, it would be helpful to have an inventory of stations that are not in compliance and a rough cost estimate to bring them into compliance. Also it is not clear whether the standard may incent the removal of some existing back ties if it is perceived that they would be too expensive to upgrade.

Regards,

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