**DWG Report to ROS**

**April 2013**

1. DWG members met on March 12, and worked on the topics described below.
2. High Wind Low Load case Flat start effort is underway, and pass zero was reviewed during the March meeting. The first pass is currently being reviewed by the members.
3. AEP gave a presentation on their experience with use of a new WECC/ PSSE load model in dynamic simulations.
4. DWG members shared experience on the FERC Order 754 efforts.
5. DWG will switch to PSSE version 33 in August 2013.
6. Voltage Reduction Task Force chair gave a presentation on voltage reduction efforts and ideas for the DWG to provide opinion related to the impact of voltage reduction for EEA2 on motor stalling and system stability. DWG concluded the following:

### EEA Voltage Reduction may be a good idea for EEA2.

### There might be motor stalling risks but we can’t quantify the risk level without a study.

### DWG will develop methodology to do a study for voltage reduction for the next meeting in June 2013.

1. DWG members discussed the ROS assignments on OPSTF question on generation voltage regulation point. Please see below for the DWG recommendation.

**OPSTF Generation Voltage Regulation Point Question:**

Issue 12 (a): Model generator-step-up transformer voltage regulation at the actual reference point (typically the generator bus).

Transmission planners generally model regulation at the hi-side POI as required by the Protocols and Stability Studies. But real-world generation sometimes regulates the low-side with the result that during contingencies actual gen voltage support is less than what planners see in their models. The RARF contains a field that designates where the location of the voltage regulation is (on high or low side). OPSTF recommends that ROS direct DWG to look into this issue with respect to operations and planning and make recommendations to ROS.

*DWG RECOMMENDATION:*

DWG recommends maintaining the current method of modeling conventional generation voltage regulation points in the RTCA, SSWG and DWG cases. The following includes the reasoning:

In general, the generation voltage regulation points for generators that provide dynamic reactive support are modeled at the GSUs’ high side buses. The generation voltage regulation points for the generators that do not provide dynamic reactive support are modeled at the GSUs’ low side buses.

In the steady state timeframe, for the generators providing reactive support, the reactive outputs are adjusted based on monitoring of the transmission (high side) bus voltage. Therefore, in a steady state timeframe the voltage regulation points are indeed the high side of the GSUs.

Dynamic simulations use the steady state simulations results only as the initial state of the system. During a disturbance, dynamic simulations do not make use of designated voltage regulation points specified in the power flow model. During a disturbance, the dynamic voltage response of the system in a transient timeframe is controlled by the excitation systems. The excitation systems control the generators’ terminals, i.e., the low side bus. Whether the voltage regulation point is modeled on the low side or high side in the power flow model does not affect a dynamic simulation in a transient timeframe.

It is possible that in some instances the excitation system indeed controls a different bus, or to some point into the GSU, rather than the generator’s terminal. In that case a “load compensation” or “line drop compensation” model should be provided to account for that adjustment in dynamic simulations. So far as DWG members know, only a few of the ERCOT generators employ load compensation in their AVR loop.

In summary, changing the voltage regulation points to the low side bus makes the RTCA and steady states models inaccurate for steady state simulations, and does not affect dynamic stability simulation in a transient timeframe.