

Georgia Transmission Corporation (GTC)

Power System Stabilizer Policy for Generating Facilities Interconnecting to the Georgia Integrated Transmission System (ITS)

Background

A Power System Stabilizer (PSS) is an electronic feedback control that is a part of the excitation system control for generating units. The PSS acts to modulate the generator field voltage to dampen power system oscillations. Under certain system conditions and contingencies, PSS control is needed to improve damping performance on the Georgia Integrated Transmission System (ITS) and to mitigate the potential for power system oscillations. Bulk Planning has observed in stability studies that while the first generator in an area may not initially result in a power oscillation problem, the subsequent addition of generation in the area or other system changes often results in a reliability need for all generation in the area to have PSS. Proactively installing PSS during generator commissioning is easier and much less expensive than adding it at a later date, and provides for additional damping to be added in a timely manner as system need require.

Policy

GTC requires that all new synchronous generating facilities interconnecting to the ITS (at 40 kV and above) shall have a PSS installed on each unit. However, if the interconnection studies indicate that generating facilities rated less than twenty (20) MW do not cause or contribute to a power oscillation problem, such generating facilities will not be required to install a PSS.

The recommended PSS type is a delta-P-omega type stabilizer (also known as integral of accelerating power type). Other types which are functionally equivalent to the delta-P-omega type may be accepted on a case-by-case basis. Special studies and field tests are required to tune PSS and to establish their settings. These studies and field tests will be the responsibility of the Interconnection Customer prior to commercial operation. It is anticipated that most of the time, the generator equipment vendor can be retained to perform the studies and tests. GTC will perform other relevant studies at Interconnection Customer's cost, and will coordinate with the Interconnection Customer and the equipment vendor (or consultant) to establish a reliable setting for the PSS gain. GTC also requires that the PSS tuning test documentation (which shall include the PSS dynamic model, final settings, and on-line step-in voltage with and without PSS in service) be provided by the Interconnection Customer within thirty (30) days of the completion of the testing and at least seven (7) days prior to the Commercial Operation Date.

The PSS policy requires that the PSS shall be appropriately tuned and operational. Whenever a unit with PSS is on-line, the PSS should be in service. If the PSS must be taken out of service because of equipment problems or for maintenance, GTC must be notified immediately. The status of the PSS shall be provided to Georgia Systems Operation Corporation and the Georgia Control Center on a continuous basis. The PSS must be properly tuned when it is commissioned. If on-going system studies show a need for a change in the tuning, the Transmission Provider may require the Interconnection Customer to re-evaluate the tuning and, if possible, reset the PSS parameters to more appropriate settings to preserve the overall reliability of the grid. No setting of the PSS should be changed without the prior approval of GTC. The Interconnection Customer shall provide the final PSS test report to GTC within thirty (30) days after the Commercial Operation Date.

The PSS requirement applies to synchronous generators only. However, if studies indicate that solar or wind generation facilities cause or contribute to a power oscillation problem, such generating facilities will be required to provide a damping function specified by Bulk System Planning.