TPL-001-1 and N-1-1 Contingency Analysis: We want to hear from you!

The North American Electrical Reliability Corporation (NERC)\(^1\) reliability standards define the reliability requirements for planning and operating the North American bulk power system. Currently there are fifty-seven (57) NERC reliability standards governing all aspects of power system engineering, such as Resource and Demand Balancing, Protection and Control, and Communications. Compliance with these standards is required by law.

Standard TPL-001-1, Transmission System Planning Performance Requirements, scheduled for approval in mid 2008, will introduce a multiple contingency criteria for transmission planning. The new TPL-001-1 is intended to replace and enhance four existing standards, namely TPL-001-0, TPL-002-0, TPL-003-0, and TPL-004-0. The proposed TPL-001-1 will no longer have Category C and D events (severe events). Instead, TPL-001-1 will require that system planners investigate certain N-1-1 contingencies. An N-1-1 contingency is a two outage contingency. System adjustments may be made between the first and second outage, but the system must be secure after the second outage without adjustment. In some cases non-consequential load loss is allowed; in other cases it is not allowed. The N-1-1 contingency analysis requirements apply to Transmission Planners and Planning Coordinators. The proposed standard may be seen on the NERC web site (www.nerc.com).

PSS®E Rev. 31 supports N-1-1 contingency simulation through a Python-based prototype developed for the New York Independent System Operator. While the prototype proved that our concept for N-1-1 simulation is indeed functional, the analysis requires engineering attention since breaker-to-breaker contingency simulation is achieved through contingency event specification.

With the success of the prototype, our next step is to integrate the solution into PSS®E. We plan to make the analysis more user-friendly, enhance performance and productivity, and provide comprehensive reporting of analysis results suitable for demonstrating compliance with the new N-1-1 contingency provisions of TPL-001-1. We would like to hear from you. As we begin the design of this new feature we want to ensure that we address all of your needs in this area. We invite you to contact us for a demonstration of the prototype and/or to discuss your needs. Please contact Yachi Lin, at yachi.lin@siemens.com or (518)395-5119 with comments or to schedule a demonstration.

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\(^1\) NERC is a self-regulatory organization, subject to oversight by the U.S. Federal Energy Regulatory Commission and governmental authorities in Canada.