

# Industry Advisory

## Eastern Interconnection Powerflow and Dynamics Modeling

Initial Distribution: July 28, 2009

**Errors exist in Eastern Interconnection powerflow and dynamics models.**

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Status: No Reporting Required – For Information Only



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### Distribution:

**Primary Distribution: Primary Compliance Contacts**

Planning Authorities, Transmission Owners, Transmission Operators, Reliability Coordinators, Regional Entities, and Balancing Authorities

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### Primary Interest Groups:

Eastern Interconnection Planning Engineers, Operations Engineers, Modeling Engineers, System Operators, and Market Operators

### Advisory:

Eastern Interconnection entities using the powerflow and dynamics cases from the Eastern Interconnection Reliability Assessment Group Multi-Regional Modeling Working Group (ERAG MMWG) 2008 case series are advised that the cases may include up to three erroneous zero-impedance transmission lines in Southern Minnesota and an outdated version of the dynamics models on two significant generators in Tennessee.

All Eastern Interconnection 2008 series cases contain the zero-impedance errors on two lines, including a 345-kV circuit, as well as the generator dynamics modeling errors.

**Advisory:**  
(continued)

The following cases contain the zero-impedance errors on a third line (69-kV):

- 2009 Fall
- 2010 Fall
- 2010 Spring

Users of those cases should consult with their Regional Entity or ERAG MMWG regional representative for appropriate corrections.

**Background:**

The NERC Planning Committee charged the NERC Transmission Issues Subcommittee (TIS) with reviewing the powerflow and dynamics cases of the Eastern Interconnection Reliability Assessment Group (ERAG) for quality control when responsibility for case creation and maintenance was transferred to ERAG from the now-defunct NERC Multi-Regional Modeling Working Group (MMWG) in late 2006. The TIS, subsequently, requested NERC Event Analysis staff to perform quality screening of the cases for each of the Interconnections.

During the screening of the 2008 series of cases, NERC staff discovered a 345-kV zero-impedance path while conducting a comparison to an older case that had been quality checked during a 2007 event analysis study. That problem was reported to the MRO region for mitigation. Additional, similar problems were subsequently discovered by MRO. The issue was also reported to the Midwest ISO to assure that the errors had been identified and corrected in the reliability coordinator's operating cases.

Such errors typically occur when a Siemens PSS-E program user utilizes an automated process called an "idev" to modify a circuit parameter (rating, etc.) of a branch that does not exist in a particular case. The program will automatically create the branch and use default values for all fields that are left blank in the "idev." Since the default values for R and X are 0.0 and 0.0001, respectively, zero-impedance branches can be inadvertently created. The software vendor is aware of this issue and has included programmatic methods for making such circuit parameter changes that do not create problems.

The generator dynamics models were not updated when the exciters were replaced and power system stabilizers were added to the units.

Therefore, diligence and multiple layers of data checking should be employed in the base case creation process to screen for such quality control errors.

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