NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

September 28, 2004

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William J. Museler, Chairman

Ladies and Gentlemen:

Transmission Issues Subcommittee Survey
Reactive Power and Voltage Control Practices

The Planning Committee (PC) is tasked with the follow-up to NERC Blackout Recommendation 7a, "*The Planning Committee shall reevaluate within one year the effectiveness of the existing reactive power and voltage control standards and how they are being implemented in practice in the ten NERC regions. Based on this evaluation, the Planning Committee shall recommend revisions to standards or process improvements to ensure voltage control and stability issues are adequately addressed*."

The PC assigned this follow-up activity to the Transmission Issues Subcommittee (TIS). TIS's first step in this evaluation will be to assemble the current reactive power and voltage control procedures that each regional reliability council (region) follows. We request that each region respond to the attached *Transmission Issues Subcommittee Survey* no later than November 5, 2004. Respondents are urged to be as expansive as possible and to provide sufficient information or references to allow TIS to gain a full understanding of all aspects of reactive power and voltage control planning in your region. The requested information should be sent to the NERC office in Princeton, or electronically to John Twitchell, staff support for TIS (john.twitchell@nerc.net). TIS will review and evaluate the current regional practices, and report to and provide recommendations to the PC.

Prior to reporting to the PC, TIS may also ask representative(s) from each region to meet with them to further clarify and explain the region's practices and standards. This review will be scheduled, if necessary, after TIS has had an opportunity to review the survey responses. We appreciate your cooperation in assisting the PC and TIS in addressing an important blackout related follow-up issue.

If you have any questions, please feel free to consult with the TIS member who represents your region. A TIS roster is attached for your reference.

Sincerely,

Glenn B. Ross

Chairman
NERC Planning Committee

JRT:an
Attachments

cc: Planning Committee
Technical Steering Committee
Transmission Issues Subcommittee

TRANSMISSION ISSUES SUBCOMMITTEE SURVEY

REACTIVE POWER AND VOLTAGE CONTROL PRACTICES

(September 24, 2004)

One of the tasks assigned to the Transmission Issues Subcommittee (TIS) is NERC Blackout Recommendation 7a:

> ***"Recommendation 7a - Evaluate Reactive Power and Voltage Control Practices: The Planning Committee shall reevaluate within one year the effectiveness of the existing reactive power and voltage control standards and how they are being implemented in practice in the ten NERC regions. Based on this evaluation, the Planning Committee shall recommend revisions to standards or process improvements to ensure voltage control and stability issues are adequately addressed."***

In order to "reevaluate" the "effectiveness" of the existing planning practices in the ten NERC regions, it is necessary to first understand what the existing planning practices are and how they are implemented. The information requested below from the regions is intended to provide such understanding. Based on the information received, standards/criteria/policies/processes/ procedures will be identified, evaluated and recommended so as to ensure voltage control and voltage stability issues are adequately addressed.

Information provided in response to this survey is to be coordinated and assembled by the regions.

Responses to the information requested below are to be provided to the NERC office, or electronically to John Twitchell (john.twitchell@nerc.net) no later than November 5, 2004.

Information Request:

1. Please provide any regional standards/criteria/policies/processes/procedures that are specific to voltage control and reactive power planning assessments. The region should also survey the ISOs/RTOs and member transmission providers/owners in their respective region for standards/criteria/policies/processes/procedures specific to their system, and include such information if it substantially differs or supplements that of the region. The response should address the following specific items:

    a. Table 1 of NERC Planning Standard 1.A requires evaluation of Categories A, B, and C contingencies to be within applicable ratings and applicable voltage limits. Describe the methodologies used for determining these applicable voltage limits, e.g. PV, QV, or other analysis;

    b. Whether in planning assessments, voltage control or reactive power system limitations are determined on a region- or ISO/RTO-wide basis, for specific load/generation pockets, and/or by transmission provider/owner, and what factor(s) are used to make such determination;

c. Whether sensitivities of the planning assessments are performed assuming one or more generation/transmission facilities are unavailable, and/or different load levels, and the general criteria used for determining the sensitivities to be assessed;

d. The type(s) of load model used in the planning assessments specific to voltage control and reactive power limitations (i.e., constant power, constant impedance etc.);

e. The basis and verification process used for establishing load power factor in the system models;

f. The time frames modeled in the planning assessments specific to voltage control and reactive power limitations (e.g., short-term dynamics, mid-term 3–60 seconds, load flow) and generally, how the results of the time frame(s) studied are used in the assessment;

g. The periodicity and horizon of the assessments specific to voltage control and reactive power planning;

h. How reactive power resources are planned to ensure an appropriate balance between static and dynamic characteristics and that the resources are appropriately distributed; and

i. What generation equipment testing is performed to verify that data submitted for steady state and dynamics modeling in planning (one year or more) and operating studies (less than one year) are consistent with the actual physical characteristics of the equipment. This data includes, but is not limited to, gross and net generator MW dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.

2. Please provide any additional information as well as other types of planning assessments performed in the region and considered useful to ensure that voltage control and stability issues are adequately addressed.

3. Does your Region have undervoltage load shedding programs?

Transmission Issues Subcommittee (tis-pc@nerc.com)

(September 28, 2004)

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