RSSC Members:

Please review the following announcements.

1. IESO Comments on the Definition of Adequate Level of Reliability

NERC recently posted a draft definition of the term "Adequate Level of Reliability" for comments. The summary of the definition is as follows:

The bulk power system ("System") will achieve an adequate level of reliability when it is planned and operated such that:

1. The System remains within acceptable limits;
2. The System performs acceptably after credible contingencies;
3. The System limits instability and cascading outages;
4. The System's facilities are protected from severe damage; and
5. The System's integrity can be restored if it is lost.

The "Definition of Adequate Level of Reliability" document provides additional details on each of the five sentences that comprise the definition. It was derived in part from the draft "Reliability Criteria and Operating Limits Concepts" the NERC Operating Committee and Planning Committee have been working on. IESO comments to NERC (filing) regarding the above draft definition are attached alongside.

2. IESO Certification Forms – Web Re-Posting for finalization

During previous RSSC meetings, the IESO was advised by the RSSC to ensure communication to the committee regarding posting of final version of certification forms after incorporating all the received feedback. In this regard, the following certification forms have been re-posted on the IESO public webpage for your review – these incorporate minor edits and the incorporation of all market participant comments:

IESO Certification Form 1527 – NERC Reliability Standard FAC-003 – Vegetation Contact Incidents.

- http://www.ieso.ca/imoweb/pubs/ircp/IESO_Cert_Form_1527_FAC-003-Vegetation-Contact-Incidents_v3.2.doc

IESO Certification Form 1531 – NERC Reliability Standard PRC-016 – Special Protection System Operation Performance.

- http://www.ieso.ca/imoweb/pubs/ircp/IESO_Cert_Form_1531-Std_PRC-016-v3.1.doc

IESO Certification Form 1522 – NERC Reliability Standard PRC-004 –Protection System Performance.

- http://www.ieso.ca/imoweb/pubs/ircp/IESO-certification_form_1522-NERC-PRC-004_v3.4_RedLine.doc

IESO Certification Form 1623 – NERC Reliability Standard FAC-008 – Facility Ratings Methodology.

- http://www.ieso.ca/imoweb/pubs/ircp/IESO-certification_form_1623-NERC-FAC-008.doc

Please note that these would be considered as the final version of the certification forms if no additional comments are received from you by **Nov 8th**.

3. IESO Response to Sithe Global regarding NERC Standard MOD-024

The IESO has posted its response to comments received from Sithe Global regarding the NERC Reliability Standard MOD-024 – Verification of Generator Gross and Net Real Power Capability. The document is located at:
http://www.ieso.ca/imoweb/pubs/ircp/IESO_Cert_Form_1635-MOD-024-Gen_MW-Cap-Verification-Comments_SitheGlobal.pdf
Please review the document and let us know if there are additional concerns or comments, by **Nov 8th**.

We thank you for your time and invaluable inputs.

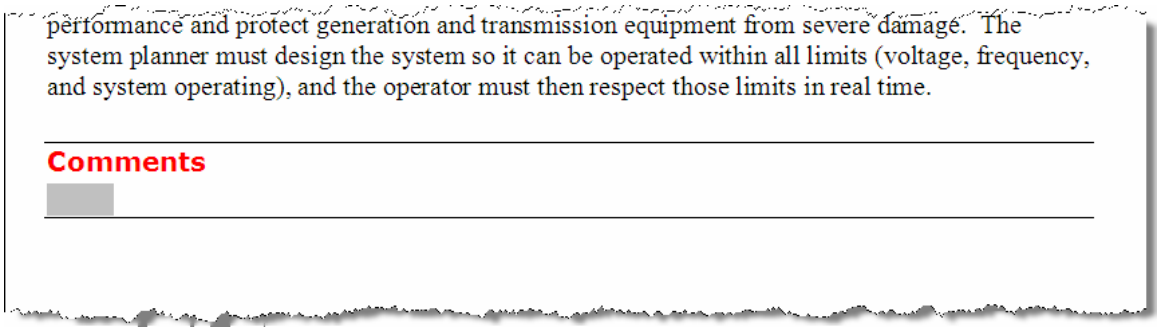
NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

For comment.
Comments due October 31, 2007

Definition of "Adequate Level of Reliability"

Commenting Instructions

Please type your comments into the comment areas we provided throughout this document (see example below). Please do not mark up the text.


performance and protect generation and transmission equipment from severe damage. The system planner must design the system so it can be operated within all limits (voltage, frequency, and system operating), and the operator must then respect those limits in real time.

Comments

Then attach this document to an e-mail and return to alr@nerc.net

Thanks.

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Preface

In its January 18, 2007 Order on Compliance Filing, the Federal Energy Regulatory Commission directed NERC to file a plan for defining the term "adequate level of reliability." The Commission explained that it intended to use this definition when judging the merits of NERC's reliability standards against the requirements of Section 215 (c) of the Federal Power Act. The Act requires reliability standards "that provide for an adequate level of reliability of the bulk power system." [1]

The Commission required NERC's plan to include two broad objectives and address several questions:

- First, the plan needed to develop a definition of adequate level of reliability using a stakeholder process. The Commission asked whether the proposed definition be applied to all reliability standards, certain sets of standards, or, in some cases, be tailored for each standard. The Commission also asked NERC to consider opportunities to develop and apply metrics that can form the basis for broadly defining an adequate level of reliability.
- Second, the plan needed to "propose a continuing improvement process to consider 'adequate level of reliability' when developing new or modified reliability standards."

In its March 19 response to the order, NERC explained that it directed its Operating Committee and Planning Committee to develop the definition of adequate level of reliability through a stakeholder process. NERC would then file the definition with the Commission and applicable regulatory authorities in Canada in February 2008. NERC also explained that it would "integrate the approved definition into its three-year standards work plan and standards development process, as well as its compliance monitoring and enforcement program as appropriate."

This document, prepared by the NERC Operating Committee and Planning Committee, fulfills NERC's commitment to provide a definition of adequate level of reliability to the Commission. The NERC Standards Committee will provide the Commission with the plan for integrating this definition into NERC's three-year standards work plan.

Comments

None

[1] The definition of bulk power system, as it appears in Section 215(a)(1) is: "the facilities and control systems necessary for operating an interconnected electric energy transmission network or any portion thereof; and the electric energy from generation facilities needed to maintain transmission system reliability."

Introduction

NERC prepared this document to define the term adequate level of reliability as requested by the Federal Energy Regulatory Commission. While the definition itself is succinct, the fundamental concepts from which NERC derived the definition are complex and deserve discussion, which we have provided in this document.

The document begins by discussing the term "reliability" that NERC has used it since its creation in 1968. It then explains how the Federal Power Act's definition of "reliability" as it pertains to NERC's standards differs from NERC's broader, traditional definition.

The definition of adequate level of reliability follows. Then the document explains the concepts behind each statement in the definition.

Comments

None

Definition of "Reliability"

NERC's traditional definition of "reliability" was ubiquitous throughout the electric utility industry, and consists of two fundamental concepts—adequacy and operating reliability:

> **Adequacy** is the ability of the Bulk-Power System to supply the aggregate electric power and energy requirements of the electricity consumers at all times, taking into account planned and unplanned outages of system components.
>
> **Operating reliability**[2] is the ability of the Bulk-Power system to withstand sudden disturbances such as electric short circuits or unanticipated loss of system components.

The NERC Operating Policies and Planning Standards were based on this definition, and most of those policies and standards were translated into NERC's Reliability Standards.

More recently, the term *adequacy* has prompted considerable discussion among NERC members. Changes to the Federal Power Act promulgated by the Energy Policy Act of 2005 preclude NERC from developing standards that require a certain level of adequacy that would then compel a user, owner, or operator to construct generation or transmission facilities. On the other hand, the Act requires NERC to *assess* the future adequacy and reliability of the bulk power system. NERC's definition of adequate level of reliability is not a definition of adequacy.

NERC continues to believe the term *reliability* embodies the concept of adequacy in the general sense, but understands that NERC's standards cannot establish adequacy limits that would, in turn, compel a user, owner, or operator to add generation or transmission equipment to its system. That said, NERC developed this definition of adequate level of reliability for the Commission based on the traditional definition of "operating reliability."

Comments

None

[2] NERC had used the term "security" until September 2001 when security became synonymous with homeland protection in general and critical infrastructure protection in particular. To remedy the increasing confusion over what we meant by security, NERC replaced that term with "operating reliability."

Definition of "Adequate Level of Reliability"

The bulk power system ("System") will achieve an adequate level of reliability when it is planned and operated such that:

1. The System remains within acceptable limits;
2. The System performs acceptably after credible contingencies;
3. The System limits instability and cascading outages;
4. The System's facilities are protected from severe damage; and
5. The System's integrity can be restored if it is lost.

Comments

We generally agree with these principles. We understand the principles were purposefully silent on reliability to loads and loss of loads. We hold the position that the expected or planned loss of load is acceptable either as a direct consequence of a recognized credible contingency on the system or during the time when operators are re-preparing the system for it to respect system limits in the eventuality of occurrence of the next recognized credible contingency (N-1-1). We therefore would support a definition that non-consequential loss of load is unacceptable.

The concept of reliability standards regarding severe damage appears to be covered by Principle #1. Please see detailed comments on Technical Discussion #4.

General Discussion

The bulk power system exhibits an adequate level of reliability when it possesses these five characteristics; therefore, each of NERC's standards must support one or more of the characteristics.

Metrics

Furthermore, the definition of adequate level of reliability is broad enough to apply to all NERC standards, and therefore is not based on specific metrics. Indeed, the metrics are more properly embodied in the standards as compliance measures, and in the assessment procedures NERC uses to analyze System performance and reliability improvements over time.

Comments

None

Cost effectiveness

The definition of adequate level of reliability does not mention "cost effectiveness" because costs versus benefits can only be decided by the individual users, owners, and operators. Each

has a different perspective on what is "cost effective" for them, and exercise their judgment by participating in the standards drafting process, and ultimately, when they cast their ballot to approve or reject a standard.

Comments

The IESO agrees that the principles should remain silent on cost issues. It is worth noting that the concept is included in the technical requirements for reliability standards of NERC's Rules of Procedure, Section 302(3) states "Each requirement is not a "lowest common denominator" compromise, but instead achieves an objective that is the best approach for bulk power system reliability, taking account of the costs and benefits of implementing the proposal." We do not support reliability at any cost; however, we need to determine what is an acceptable level of reliability weighing risks against the likely events demonstrated by historical data (operating experience).

Technical Discussion

This section explains each item in the definition list.

1. The System remains within acceptable limits.

Acceptable limits include voltage and frequency limits as well as system operating limits. System operating limits specify the ranges of line flows, system voltages, and generator loading that must be followed to maintain reliability. These operating limits are generally categorized as 1) thermal and voltage steady-state limits, and 2) voltage and dynamic stability limits. The system operating limits are calculated to ensure that credible contingencies result in acceptable performance and protect generation and transmission equipment from severe damage. The system planner must design the system so it can be operated within all limits (voltage, frequency, and system operating), and the operator must then respect those limits in real time.

Comments

The language segregating planners and operators is unnecessary and adds complexity. The concepts can always be restated in a way that is more clear. We suggest the last sentence be replaced with "The system must be designed to be operable and operated within limits at all times".

2. The System performs acceptably after credible contingencies.

System planners and operators cannot prevent contingencies from happening. But they can plan and operate the bulk power system so that when contingencies do occur, their effects are manageable, and the consequences are acceptable. In essence, planners and operators design and operate the bulk power system to minimize the risk that an event will result in unacceptable performance.

The generation and transmission systems are finite and limited and always will be. At some point, the failure of a significant number of transmission lines will cause part of the System to become unstable and lose its integrity[3], regardless of automatic protection systems or system operator actions that attempt to contain the event. While managing (or minimizing) risk is the goal, it is unreasonable to assume that utilities can build or operate the bulk power system to eliminate *all* risks.

It is also unreasonable to assume that every disturbance, event, or equipment failure will result in unacceptable performance. For example, if we know (not simply assume) the failure of a particular transmission element (line, breaker, transformer, etc.) has little or no effect on the integrity of the surrounding transmission network, then the risk if the element fails is acceptable. Likewise, the loss of firm load does not always equate to unacceptable performance. At times, operator must shed firm load to protect the integrity of the System. The measures of acceptable

[3] By "integrity," we mean the synchronous connectivity of the generators and network connectivity of the transmission lines.

performance and categories of credible contingencies, and how they relate to each other, are specified in the reliability standards. The standards development process lets the industry decide what is credible and acceptable and what is not.

Comments

Suggest the second sentence in the first para of the discussion be replaced with "In essence, the bulk power system must be designed and operated to minimize the risk that an event (or "recognized contingencies" to be consistent with the words used in definition) will result in unacceptable performance." (i.e. remove the demarcation between planners and operators).

3. The System limits instability and cascading outages.

System planners design the bulk power system so that events such as transmission line and transformer faults, breaker and switch failures, and generator trips are contained to prevent these events from cascading and causing the system to lose its integrity. For example, substation circuit breaker configurations are designed to isolate transmission equipment failures so their impact is limited and the failures do not cascade into widespread system failures. And under NERC's control standards, frequency deviations and unscheduled interchange are also "limited" within tolerances that are specified in standards.

Comments

We suggest the first sentence be modified to remove system planners such as "The bulk power system is designed so that events" to remove the demarcation between planners and operators.

We also suggest deleting the the last sentence of this section. The sentence is an unneeded example that can result in confusion concerning what is meant by unscheduled interchange. The term "unscheduled interchange" can be misconstrued to mean (a) unscheduled Interchange Schedules (which practically speaking can't happen) or (b) unscheduled flows (which is incorrect). If the sentence is to be retained, then a more accurate substitute would be Area Control Error.

4. The System's facilities are protected from severe damage.

Protecting generation and transmission equipment from severe damage may be obvious because NERC establishes standards on operating within equipment limits. The definition of adequate level of reliability specifically states this important characteristic because failure to protect equipment could result in unacceptable reliability for weeks or months.

Comments

The concept of reliability standards regarding severe equipment damage is already covered in Principle #1. This is reflected in the Technical Discussion on Principle #1 (The system operating limits are calcualted to ensure that ...and protection generation and transmission equipment from severe damage.)

5. The System's integrity can be restored if it is lost.

Finally, the bulk power system must be planned and operated so that it can also be restored, whether after a cascading outage or widespread damage from natural disasters. System planners must include blackstart and synchronizing facilities in their plans. System operators must know from studies, training, and experience the operating limits they need to stay within while restoring the system, and how those limits change thorough the stages of establishing system integrity, and up to normal interconnected operations. And during the restoration process, they must protect generation and transmission system equipment from severe damage and not jeopardize adjacent parts of the transmission system that are operating normally.

Comments

We suggest to replace the second and third sentences with "The system must be planned to include blackstart and synchronizing facilities and operated based on studies, training, and experience....".

Further, the System Planner and the System Operator must also be aware of how their area's restoration objectives/activities could affect a neighbouring jurisdiction and they must ensure proper coordination, protocols, processes and training are in place to handle issues that could develop during restoration events.
