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**BEFORE THE  
NOVA SCOTIA UTILITY AND REVIEW BOARD  
OF THE PROVINCE OF NOVA SCOTIA**

**NORTH AMERICAN ELECTRIC        )  
RELIABILITY CORPORATION        )**

**FOURTH QUARTER 2012 APPLICATION  
FOR APPROVAL OF RELIABILITY STANDARDS OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION**

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February 26, 2013

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**TABLE OF CONTENTS**

**I. NOTICES AND COMMUNICATIONS** ..... 2

**II. REQUEST FOR APPROVAL OF RELIABILITY STANDARDS**..... 2

**III. CONCLUSION**.....7

**EXHIBITS**

**Exhibit A** – List of Currently Effective NERC Reliability Standards

**Exhibit B** –

- 1.) NERC Reliability Standards Applicable to Nova Scotia, Approved by FERC in Fourth Quarter 2012
- 2.) PDF Copies of Reliability Standards being filed for approval; and
- 3.) Updated NERC Glossary of Terms for approval

**Exhibit C** – Informational Summary of Each Reliability Standard Applicable to Nova Scotia, Approved by FERC in Fourth Quarter 2012

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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION**

The North American Electric Reliability Corporation (“NERC”) hereby submits to the Nova Scotia Utility and Review Board (“NSUARB”) an application for approval of the NERC Reliability Standards and an updated NERC Glossary of Terms approved by the United States Federal Energy Regulatory Commission (“FERC” or the “Commission”). This filing covers the time period from October 1, 2012, through December 31, 2012 and NERC requests that the Reliability Standards and updated NERC Glossary of Terms be made mandatory and enforceable for users, owners, and operators of the bulk-power system within the Province of Nova Scotia.

In support of this request for approval of the proposed Reliability Standards, NERC submits the following information: (1) an updated list of the currently-effective Reliability Standards as approved by FERC (*see Exhibit A*); (2) Reliability Standards approved by FERC in the fourth quarter of 2012 and the associated updated NERC Glossary of Terms (*see Exhibit B*); and (3) an informational summary for each Reliability Standard approved by FERC in the fourth quarter of 2012, including each Standard’s purpose, applicability, and ballot body approval percentages (*see Exhibit C*).

## **I. NOTICES AND COMMUNICATIONS**

Notices and communications regarding this Application may be addressed to:

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## **II. REQUEST FOR APPROVAL OF RELIABILITY STANDARDS**

### **A. Background: NERC Quarterly Filing of Proposed Reliability Standards**

On July 20, 2011, NSUARB issued a decision approving the Reliability Standards and NERC Glossary of Terms that NERC submitted to NSUARB on June 30, 2010, and accepted as guidance the Violation Risk Factors (“VRF”) and Violation Severity Levels (“VSL”) associated with the currently-effective Reliability Standards.<sup>1</sup>

NERC has been certified as the Electric Reliability Organization (“ERO”)<sup>2</sup> in the United States under Section 215 of the Federal Power Act.<sup>3</sup> The Reliability Standards

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<sup>1</sup> *In the Matter of an Application by North American Electric Reliability Corporation for Approval of its Reliability Standards, and an application by Northeast Power Coordinating Council, Inc. for Approval of its Regional Reliability Criteria*, NSUARB-NERC-R-10 (July 20, 2011) (“NSUARB Decision”).

<sup>2</sup> Through enactment of the Energy Policy Act of 2005, the U.S. Congress entrusted FERC with the duties of approving and enforcing rules in the U.S. to ensure the reliability of the Nation’s bulk power system, and with the duties of certifying an ERO. On July 20, 2006, FERC certified NERC as the ERO, charged with

contained in **Exhibit B** have been approved as mandatory and enforceable for users, owners, and operators within the United States by FERC.<sup>4</sup> Some or all of NERC's Reliability Standards are now mandatory in the Canadian Provinces of Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Québec, and Saskatchewan.

NERC entered into a Memorandum of Understanding ("MOU") with the NSUARB<sup>5</sup> and a separate MOU with Nova Scotia Power Incorporated ("NSPI"), and the Northeast Power Coordinating Council, Inc. ("NPCC"),<sup>6</sup> which became effective on December 22, 2006 and May 11, 2010, respectively. The May 11, 2010 MOU sets forth the mutual understandings of NERC, NSPI, and NPCC regarding the approval and implementation of NERC Reliability Standards and NPCC Regional Reliability Criteria in Nova Scotia and other related matters.

In addition, the NSUARB Decision approved a "quarterly review" process for considering new and amended NERC standards and criteria.<sup>7</sup> On September 2, 2011, NERC submitted its Second Quarter 2011 application filing to NSUARB, in which NERC committed to file a quarterly application with the NSUARB within sixty days after the end of each quarter for approval of all NERC Reliability Standards and updated Glossary of Terms approved by FERC during that quarter.

The NSUARB Decision also determined that quarterly "applications will not be processed by the Board until [FERC] has approved or remanded the standards in the

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developing mandatory and enforceable Reliability Standards, which are subject to FERC review and approval.

3 16 U.S.C. § 824o(f) (2006).

<sup>4</sup> Those standards marked with an asterisk are not yet effective, but have been approved by FERC.

<sup>5</sup> See Memorandum of Understanding between Nova Scotia Utility and Review Board and North American Electric Reliability Corporation (signed December 22, 2006).

<sup>6</sup> See Memorandum of Understanding between Nova Scotia Power Incorporated and the Northeast Power Coordinating Council, Inc. and the North American Electric Reliability Corporation (signed May 11, 2010).

<sup>7</sup> NSUARB Decision at P 30.

United States.”<sup>8</sup> Therefore, NERC is only requesting NSUARB approval for those Reliability Standards approved by FERC.

The NSUARB Decision also concluded that NSUARB approval is not required for VRFs and VSLs associated with proposed Reliability Standards.<sup>9</sup> Thus, NERC does not seek formal approval of VRFs and VSLs associated with the Reliability Standards submitted in this quarterly application. However, because the NSUARB has determined that it will accept the VRFs and VSLs as guidance, NERC is providing a link to the associated FERC-approved VRFs and VSLs for the Reliability Standards for informational purposes.<sup>10</sup>

NERC has not included in this filing the full developmental record for the standards, which consists of the draft standards, comments received, responses to the comments by the drafting teams, and the full voting record, because the record for each standard may consist of several thousand pages. NERC will make the full developmental record available to the NSUARB or other interested parties upon request.

## **B. Overview of NERC Reliability Standards Development Process**

NERC Reliability Standards define the requirements for reliably planning and operating the North American bulk-power system. These standards are developed by industry stakeholders using a balanced, open, fair and inclusive process managed by the NERC Standards Committee. The Standards Committee is facilitated by NERC staff and comprised of representatives from ten electricity stakeholder segments. Stakeholders,

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<sup>8</sup> NSUARB Decision at P 30.

<sup>9</sup> *Id.* at P 33.

<sup>10</sup> NERC’s VRF and VSL matrices can be found at: <http://www.nerc.com/page.php?cid=2|20>. See left-hand side of webpage for downloadable documents.

through the balloting process, and the NERC Board of Trustees have approved the standards provided in **Exhibit B**.

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) and Appendix 3A (Standards Processes Manual) of its Rules of Procedure.<sup>11</sup> NERC's Reliability Standards development process has been approved by the American National Standards Institute as being open, inclusive, balanced, and fair. The NERC Glossary of Terms used in Reliability Standards – most recently updated February 11, 2013 – lists each term that is defined for use in one or more of NERC's continent-wide or Regional Reliability Standards approved by the NERC Board of Trustees.

### **C. Description of Proposed Reliability Standards, Fourth Quarter 2012**

As explained below, two FERC orders were issued in the fourth quarter of 2012 approving NERC Reliability Standards and related Glossary terms: (1) an order approving an interpretation of Reliability Standard CIP-004; and (2) an order approving a revised definition of “bulk electric system.”

#### **1. Interpretation of CIP-004**

An interpretation of Requirements R2, R3, and R4 of Reliability Standard CIP-004 was approved by FERC on December 12, 2012.<sup>12</sup> Interpretations do not change the substance or intent of the standard and provide clarification on the intent of a

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<sup>11</sup> NERC's Rules of Procedure are available at: <http://www.nerc.com/page.php?cid=1|8|169>.

<sup>12</sup> *North American Electric Reliability Corporation*, Docket No. RD12-6-000 (December 12, 2012)(unpublished letter order).

requirement. A detailed overview of the Reliability Standards development process was provided in NERC’s August 1, 2012 FERC application.<sup>13</sup>

Reliability Standard	Effective Date
Critical Infrastructure Protection (CIP) Standards	
CIP-004-3a	12/12/2012
CIP-004-4a*	04/01/2014

\* At the time of this filing, all standards marked with an asterisk are not yet effective, but have been approved by FERC and have a future mandatory effective date.

## 2. Definition of Bulk Electric System

On December 20, 2012, FERC approved modifications to the definition of “bulk electric system”<sup>14</sup> which is included in the NERC Glossary of Terms. These modifications are reflected in **Exhibit B**. A detailed overview of the Reliability Standards development process was provided in NERC’s January 25, 2012 FERC application.<sup>15</sup>

<sup>13</sup> NERC August 1, 2012 Application at p. 4 and Exhibit D, Docket No. RD12-6-000. Available here: [http://www.nerc.com/files/Final\\_Final\\_CIP-002-4a\\_Interpretation\\_complete.pdf](http://www.nerc.com/files/Final_Final_CIP-002-4a_Interpretation_complete.pdf). Note an errata was submitted on August 20, 2012.

<sup>14</sup> *Revisions to Electric Reliability Organization Definition of Bulk Electric System and Rules of Procedure*, Order No. 773, 141 FERC ¶ 61,236 (2012).

<sup>15</sup> NERC January 25, 2012 FERC Application at 44-56, Docket Nos. RM12-6-000 and RM12-7-000. Available here: [http://www.nerc.com/files/Petition\\_Rev\\_Def\\_BES\\_20120125.pdf](http://www.nerc.com/files/Petition_Rev_Def_BES_20120125.pdf).



### **III. CONCLUSION**

NERC respectfully requests that the NSUARB approve the Reliability Standards and updated NERC Glossary of Terms Used in Reliability Standards, as set forth in

#### **Exhibit B.**

Respectfully submitted,

*/s/ Stacey Tyrewala*

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**Exhibit A**

**List of Currently Effective NERC Reliability Standards**

Fourth Quarter 2012

<b>Resource and Demand Balancing (BAL) Standards</b>
BAL-001-0.1a
BAL-002-1
BAL-003-0.1b
BAL-004-0
BAL-004-WECC-01
BAL-005-0.2b
BAL-006-2
BAL-STD-002-0
BAL-502-RFC-02
<b>Critical Infrastructure Protection (CIP) Standards</b>
CIP-001-2a
CIP-002-3
CIP-003-3
CIP-004-3a
CIP-005-3a
CIP-006-3c
CIP-007-3
CIP-008-3
CIP-009-3
<b>Communications (COM) Standards</b>
COM-001-1.1
COM-002-2
<b>Emergency Preparedness and Operations (EOP) Standards</b>
EOP-001-0.1b
EOP-002-3.1
EOP-003-1
EOP-004-1
EOP-005-1
EOP-006-1
EOP-008-0
EOP-009-0
<b>Facilities Design, Connections, and Maintenance (FAC) Standards</b>
FAC-001-0
FAC-002-1
FAC-003-1
FAC-008-3
FAC-010-2.1
FAC-011-2
FAC-013-1
FAC-014-2
FAC-501-WECC-1

## Fourth Quarter 2012

<b>Standards Interchange Scheduling and Coordination (INT)</b>
INT-001-3
INT-003-3
INT-004-2
INT-005-3
INT-006-3
INT-007-1
INT-008-3
INT-009-1
INT-010-1
<b>Interconnection Reliability Operations and Coordination (IRO)</b>
IRO-001-1.1
IRO-002-2
IRO-003-2
IRO-004-2
IRO-005-3.1a
IRO-006-5
IRO-008-1
IRO-009-1
IRO-010-1a
IRO-014-1
IRO-015-1
IRO-016-1
IRO-006-EAST-1
IRO-006-WECC-1
IRO-006-TRE-1
<b>Modeling, Data, and Analysis (MOD) Standards</b>
MOD-001-1a
MOD-004-1
MOD-008-1
MOD-010-0
MOD-012-0
MOD-016-1.1
MOD-017-0.1
MOD-018-0
MOD-019-0.1
MOD-020-0
MOD-021-1
MOD-028-1
MOD-029-1a
MOD-030-2
<b>Nuclear (NUC) Standards</b>
NUC-001-2
<b>Personnel Performance, Training, and Qualification (PER) Standards</b>

Fourth Quarter 2012

PER-001-0.2
PER-002-0
PER-003-1
PER-004-1
PER-004-2
PER-005-1
<b>Protection and Control (PRC) Standards</b>
PRC-001-1
PRC-002-NPCC-01
PRC-004-2a
PRC-004-WECC-1
PRC-005-1b
PRC-007-0
PRC-008-0
PRC-009-0
PRC-010-0
PRC-011-0
PRC-015-0
PRC-016-0.1
PRC-017-0
PRC-018-1
PRC-021-1
PRC-022-1
PRC-023-1
PRC-023-2
<b>Transmission Operations (TOP) Standards</b>
TOP-001-1a
TOP-002-2.1b
TOP-003-1
TOP-004-2
TOP-005-2a
TOP-006-2
TOP-007-0
TOP-008-1
TOP-007-WECC-1
<b>Transmission Planning (TPL) Standards</b>
TPL-001-0.1
TPL-002-0b
TPL-003-0a
TPL-004-0
<b>Voltage and Reactive (VAR) Standards</b>
VAR-001-2
VAR-002-1.1b
VAR-002-WECC-1



## **Exhibit B**

- 1.) NERC Reliability Standards Applicable to Nova Scotia, Approved by FERC in Fourth Quarter 2012**
- 2.) PDF Copies of Reliability Standards Submitted for Approval; and**
- 3.) Updated NERC Glossary of Terms for Approval**

**EXHIBIT B(1): NERC Reliability Standards Applicable to Nova Scotia,  
Approved by FERC in Fourth Quarter 2012**

<b>Reliability Standard</b>	<b>Effective Date</b>
Critical Infrastructure Protection (CIP) Standards	
CIP-004-3a	12/12/2012
CIP-004-4a*	04/01/2014

**\*At the time of this filing, all standards marked with an asterisk are not yet effective, but have been approved by FERC and have a future mandatory effective date.**



## A. Introduction

1. **Title:** Cyber Security — Personnel & Training
2. **Number:** CIP-004-3a
3. **Purpose:** Standard CIP-004-3 requires that personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness. Standard CIP-004-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
  - 4.1. Within the text of Standard CIP-004-3, “Responsible Entity” shall mean:
    - 4.1.1 Reliability Coordinator.
    - 4.1.2 Balancing Authority.
    - 4.1.3 Interchange Authority.
    - 4.1.4 Transmission Service Provider.
    - 4.1.5 Transmission Owner.
    - 4.1.6 Transmission Operator.
    - 4.1.7 Generator Owner.
    - 4.1.8 Generator Operator.
    - 4.1.9 Load Serving Entity.
    - 4.1.10 NERC.
    - 4.1.11 Regional Entity.
  - 4.2. The following are exempt from Standard CIP-004-3:
    - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
    - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
    - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

## B. Requirements

- R1. Awareness — The Responsible Entity shall establish, document, implement, and maintain a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices. The program shall include security awareness reinforcement on at least a quarterly basis using mechanisms such as:
  - Direct communications (e.g., emails, memos, computer based training, etc.);

- Indirect communications (e.g., posters, intranet, brochures, etc.);
  - Management support and reinforcement (e.g., presentations, meetings, etc.).
- R2.** Training — The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. The cyber security training program shall be reviewed annually, at a minimum, and shall be updated whenever necessary.
- R2.1.** This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained prior to their being granted such access except in specified circumstances such as an emergency.
- R2.2.** Training shall cover the policies, access controls, and procedures as developed for the Critical Cyber Assets covered by CIP-004-3, and include, at a minimum, the following required items appropriate to personnel roles and responsibilities:
- R2.2.1.** The proper use of Critical Cyber Assets;
  - R2.2.2.** Physical and electronic access controls to Critical Cyber Assets;
  - R2.2.3.** The proper handling of Critical Cyber Asset information; and,
  - R2.2.4.** Action plans and procedures to recover or re-establish Critical Cyber Assets and access thereto following a Cyber Security Incident.
- R2.3.** The Responsible Entity shall maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.
- R3.** Personnel Risk Assessment — The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. A personnel risk assessment shall be conducted pursuant to that program prior to such personnel being granted such access except in specified circumstances such as an emergency.
- The personnel risk assessment program shall at a minimum include:
- R3.1.** The Responsible Entity shall ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check. The Responsible Entity may conduct more detailed reviews, as permitted by law and subject to existing collective bargaining unit agreements, depending upon the criticality of the position.
  - R3.2.** The Responsible Entity shall update each personnel risk assessment at least every seven years after the initial personnel risk assessment or for cause.
  - R3.3.** The Responsible Entity shall document the results of personnel risk assessments of its personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and that personnel risk assessments of contractor and service vendor personnel with such access are conducted pursuant to Standard CIP-004-3.
- R4.** Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.
- R4.1.** The Responsible Entity shall review the list(s) of its personnel who have such access to Critical Cyber Assets quarterly, and update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, or any change in the

access rights of such personnel. The Responsible Entity shall ensure access list(s) for contractors and service vendors are properly maintained.

- R4.2.** The Responsible Entity shall revoke such access to Critical Cyber Assets within 24 hours for personnel terminated for cause and within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.

### **C. Measures**

- M1.** The Responsible Entity shall make available documentation of its security awareness and reinforcement program as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation of its cyber security training program, review, and records as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation of the personnel risk assessment program and that personnel risk assessments have been applied to all personnel who have authorized cyber or authorized unescorted physical access to Critical Cyber Assets, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation of the list(s), list review and update, and access revocation as needed as specified in Requirement R4.

### **D. Compliance**

#### **1. Compliance Monitoring Process**

##### **1.1. Compliance Enforcement Authority**

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entity.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

##### **1.2. Compliance Monitoring Period and Reset Time Frame**

Not Applicable.

##### **1.3. Compliance Monitoring and Enforcement Processes**

Compliance Audits  
Self-Certifications  
Spot Checking  
Compliance Violation Investigations  
Self-Reporting  
Complaints

##### **1.4. Data Retention**

- 1.4.1** The Responsible Entity shall keep personnel risk assessment documents in accordance with federal, state, provincial, and local laws.
- 1.4.2** The Responsible Entity shall keep all other documentation required by Standard CIP-004-3 from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

**1.4.3** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

**1.5. Additional Compliance Information**

**2. Violation Severity Levels (To be developed later.)**

**E. Regional Variances**

None identified.

**Version History**

Version	Date	Action	Change Tracking
1	01/16/06	D.2.2.4 — Insert the phrase “for cause” as intended. “One instance of personnel termination for cause...”	03/24/06
1	06/01/06	D.2.1.4 — Change “access control rights” to “access rights.”	06/05/06
2		<p>Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Removal of reasonable business judgment.</p> <p>Replaced the RRO with the RE as a responsible entity.</p> <p>Rewording of Effective Date.</p> <p>Reference to emergency situations.</p> <p>Modification to R1 for the Responsible Entity to establish, document, implement, and maintain the awareness program.</p> <p>Modification to R2 for the Responsible Entity to establish, document, implement, and maintain the training program; also stating the requirements for the cyber security training program.</p> <p>Modification to R3 Personnel Risk Assessment to clarify that it pertains to personnel having authorized cyber or authorized unescorted physical access to “Critical Cyber Assets”.</p> <p>Removal of 90 day window to complete training and 30 day window to complete personnel risk assessments.</p> <p>Changed compliance monitor to Compliance Enforcement Authority.</p>	
3		Update version number from -2 to -3	
3	12/16/09	Approved by NERC Board of Trustees	Update

3a	5/24/12	Interpretation of R2, R3, and R4 adopted by NERC Board of Trustees	
3a	12/13/12	Interpretation of R2, R3, and R4 approved by FERC in a Letter Order issued December 12, 2012	

## Appendix 1

Requirement Number and Text of Requirement
<p>R2. Training — The Responsible Entity shall establish, maintain, and document an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and review the program annually and update as necessary.</p> <p style="padding-left: 40px;">R2.1. This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained within ninety calendar days of such authorization.</p> <p>R3. Personnel Risk Assessment —The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access. A personnel risk assessment shall be conducted pursuant to that program within thirty days of such personnel being granted such access. Such program shall at a minimum include:</p> <p>R4. Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.</p>
Question 1
<p>The WECC RC seeks clarification on the definition of “authorized access” as applied to temporary support from vendors.</p> <p>Do the training, risk assessment and access requirements specified in R2, R3, and R4 apply to vendors who are supervised? Assuming that a “supervised” vendor is exempt from CIP-004-1, Requirements R2, R3 and R4, would temporary, indirect and monitored access such as that provided through remote terminal sessions (WebEx, etc.) or escorted physical access be considered supervision?</p>
Response to Question 1
<p>WECC asks three questions, which are listed below. The answer to each question follows the question.</p> <ol style="list-style-type: none"> <li>1. WECC seeks clarification on the definition of “authorized access” as applied to temporary support from vendors.</li> </ol> <p style="padding-left: 40px;">Answer: While the <i>Glossary of Terms used in NERC Reliability Standards</i> does not have a definition of “authorized access,” CIP-004-1, Requirement R4 requires that an entity “shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.” For purposes of CIP-004-1, an individual has “authorized access” if he or she is on that list, and, as a result, is subject to Requirements R2, R3, and R4.</p> <ol style="list-style-type: none"> <li>2. Do the training, risk assessment, and access requirements specified in R2, R3, and R4 apply to vendors who are supervised?</li> </ol>

Answer: As written, all cyber access to Critical Cyber Assets must be authorized, and all authorized access must comply with Requirements R2, R3, and R4.<sup>1</sup> Through the use of the qualifier “unescorted” with regard to physical access, CIP-004-1, Requirement R2, implies the concept of supervision for physical access when an individual is not authorized, and CIP-006 R1.6 also allows for escorted unauthorized physical access via a visitor program. There is no similar qualifier or reference in the requirement that mentions “escorted” or otherwise implies supervision for cyber access within CIP-004. Furthermore, there is no mention of any escorted unauthorized cyber access within CIP-007 similar to the visitor program in CIP-006 R1.6. Compared to “physical access,” the concept or any words relating to “escorting” or “supervision” in the requirement language is absent relative to cyber access.

3. Assuming that a “supervised” vendor is exempt from CIP-004-1, Requirements R2, R3, and R4, would temporary, indirect and monitored access such as that provided through remote terminal sessions (WebEx, etc.) or escorted physical access be considered supervision?

Answer: To the extent a vendor is escorted to physically access a Critical Cyber Asset for purposes other than direct cyber access (e.g., replacing parts on the Critical Cyber Asset), supervision is acceptable (within the context of escorted physical access). If the escorted physical access includes bringing a vendor or other individual to the Critical Cyber Asset to direct someone with authorized access in performing cyber access, such supervision is also acceptable within the language of the requirement, since the vendor or other individual is merely present while an authorized individual conducts the actual cyber access. However, the requirement language does not support the notion of physically escorting a vendor or other individual to a Critical Cyber Asset for the vendor or other individual to perform cyber access, even if supervised. Even if it is possible to provide supervised cyber access to Critical Cyber Assets, there is no basis or contemplation of “escorted” cyber access whatsoever in CIP-004, whether remotely or in person.

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<sup>1</sup> The drafting team also notes that the FAQ referenced in the request for interpretation is not the same as an approved Reliability Standard and is not mandatory and enforceable. The FAQ was not developed or approved through the same standards development process, and cannot be used to substitute for the language in the standard itself. The drafting team also notes that the concept of unsupervised trusted access in the FAQ applies only to Version 1—which contained a 30 and 90 day provision for training and personnel risk assessments for personnel with authorized cyber access and authorized unescorted physical access—and it was not modified to conform to the changes made in subsequent versions.

## A. Introduction

1. **Title:** Cyber Security — Personnel & Training
2. **Number:** CIP-004-4a
3. **Purpose:** Standard CIP-004-4 requires that personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness. Standard CIP-004-4 should be read as part of a group of standards numbered Standards CIP-002-4 through CIP-009-4.
4. **Applicability:**
  - 4.1. Within the text of Standard CIP-004-4, “Responsible Entity” shall mean:
    - 4.1.1 Reliability Coordinator.
    - 4.1.2 Balancing Authority.
    - 4.1.3 Interchange Authority.
    - 4.1.4 Transmission Service Provider.
    - 4.1.5 Transmission Owner.
    - 4.1.6 Transmission Operator.
    - 4.1.7 Generator Owner.
    - 4.1.8 Generator Operator.
    - 4.1.9 Load Serving Entity.
    - 4.1.10 NERC.
    - 4.1.11 Regional Entity.
  - 4.2. The following are exempt from Standard CIP-004-4:
    - 4.2.1 Facilities regulated by the Canadian Nuclear Safety Commission.
    - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
    - 4.2.3 In nuclear plants, the systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F. R. Section 73.54
    - 4.2.4 Responsible Entities that, in compliance with Standard CIP-002-4, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the eighth calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the ninth calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

## B. Requirements

- R1.** Awareness — The Responsible Entity shall establish, document, implement, and maintain a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound



security practices. The program shall include security awareness reinforcement on at least a quarterly basis using mechanisms such as:

- Direct communications (e.g., emails, memos, computer based training, etc.);
- Indirect communications (e.g., posters, intranet, brochures, etc.);
- Management support and reinforcement (e.g., presentations, meetings, etc.).

**R2.** Training — The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. The cyber security training program shall be reviewed annually, at a minimum, and shall be updated whenever necessary.

**R2.1.** This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained prior to their being granted such access except in specified circumstances such as an emergency.

**R2.2.** Training shall cover the policies, access controls, and procedures as developed for the Critical Cyber Assets covered by CIP-004-4, and include, at a minimum, the following required items appropriate to personnel roles and responsibilities:

**R2.2.1.** The proper use of Critical Cyber Assets;

**R2.2.2.** Physical and electronic access controls to Critical Cyber Assets;

**R2.2.3.** The proper handling of Critical Cyber Asset information; and,

**R2.2.4.** Action plans and procedures to recover or re-establish Critical Cyber Assets and access thereto following a Cyber Security Incident.

**R2.3.** The Responsible Entity shall maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.

**R3.** Personnel Risk Assessment — The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. A personnel risk assessment shall be conducted pursuant to that program prior to such personnel being granted such access except in specified circumstances such as an emergency.

The personnel risk assessment program shall at a minimum include:

**R3.1.** The Responsible Entity shall ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check. The Responsible Entity may conduct more detailed reviews, as permitted by law and subject to existing collective bargaining unit agreements, depending upon the criticality of the position.

**R3.2.** The Responsible Entity shall update each personnel risk assessment at least every seven years after the initial personnel risk assessment or for cause.

**R3.3.** The Responsible Entity shall document the results of personnel risk assessments of its personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and that personnel risk assessments of contractor and service vendor personnel with such access are conducted pursuant to Standard CIP-004-4.

**R4.** Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.

- R4.1.** The Responsible Entity shall review the list(s) of its personnel who have such access to Critical Cyber Assets quarterly, and update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, or any change in the access rights of such personnel. The Responsible Entity shall ensure access list(s) for contractors and service vendors are properly maintained.
- R4.2.** The Responsible Entity shall revoke such access to Critical Cyber Assets within 24 hours for personnel terminated for cause and within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.

**C. Measures**

- M1.** The Responsible Entity shall make available documentation of its security awareness and reinforcement program as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation of its cyber security training program, review, and records as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation of the personnel risk assessment program and that personnel risk assessments have been applied to all personnel who have authorized cyber or authorized unescorted physical access to Critical Cyber Assets, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation of the list(s), list review and update, and access revocation as needed as specified in Requirement R4.

## **D. Compliance**

### **1. Compliance Monitoring Process**

#### **1.1. Compliance Enforcement Authority**

#### **1.2. The RE shall serve as the CEA with the following exceptions:**

- 1.2.1** For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.
- 1.2.2** For Reliability Coordinators and other functional entities that work for their Regional Entity, the ERO shall serve as the Compliance Enforcement Authority.
- 1.2.3** For Responsible Entities that are also Regional Entities, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.
- 1.2.4** For the ERO, a third-party monitor without vested interest in the outcome for the ERO shall serve as the Compliance Enforcement Authority.

#### **1.3. Compliance Monitoring and Enforcement Processes**

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

#### **1.4. Data Retention**

- 1.4.1** The Responsible Entity shall keep personnel risk assessment documents in accordance with federal, state, provincial, and local laws.
- 1.4.2** The Responsible Entity shall keep all other documentation required by Standard CIP-004-4 from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.3** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

#### **1.5. Additional Compliance Information**

### **2. Violation Severity Levels**

Requirement	VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	LOWER	The Responsible Entity established, implemented, and maintained but did not document a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive ongoing reinforcement in sound security practices.	The Responsibility Entity did not provide security awareness reinforcement on at least a quarterly basis.	The Responsible Entity did document but did not establish, implement, nor maintain a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices.	The Responsible Entity did not establish, implement, maintain, nor document a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices.
R2.	LOWER	The Responsible Entity established, implemented, and maintained but did not document an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets.	The Responsibility Entity did not review the training program on an annual basis.	The Responsible Entity did document but did not establish, implement, nor maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets.	The Responsible Entity did not establish, document, implement, nor maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets.
R2.1.	MEDIUM	At least one individual but less than 5% of personnel having authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors, were not trained prior to their being granted such access except in specified circumstances such as an emergency.	At least 5% but less than 10% of all personnel having authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors, were not trained prior to their being granted such access except in specified circumstances such as an emergency.	At least 10% but less than 15% of all personnel having authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors, were not trained prior to their being granted such access except in specified circumstances such as an emergency.	15% or more of all personnel having authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors, were not trained prior to their being granted such access except in specified circumstances such as an emergency.

Requirement	VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
R2.2.	MEDIUM	N/A	The training does not include one of the minimum topics as detailed in R2.2.1, R2.2.2, R2.2.3, R2.2.4.	The training does not include two of the minimum topics as detailed in R2.2.1, R2.2.2, R2.2.3, R2.2.4.	The training does not include three or more of the minimum topics as detailed in R2.2.1, R2.2.2, R2.2.3, R2.2.4.
R2.2.1.	LOWER	N/A	N/A	N/A	N/A
R2.2.2.	LOWER	N/A	N/A	N/A	N/A
R2.2.3.	LOWER	N/A	N/A	N/A	N/A
R2.2.4.	LOWER	N/A	N/A	N/A	N/A
R2.3.	LOWER	N/A	N/A	The Responsible Entity did maintain documentation that training is conducted at least annually, but did not include either the date the training was completed or attendance records.	The Responsible Entity did not maintain documentation that training is conducted at least annually, including the date the training was completed or attendance records.
R3.	MEDIUM	N/A	The Responsible Entity has a personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access, but the program is not documented.	The Responsible Entity has a personnel risk assessment program as stated in R3, but conducted the personnel risk assessment pursuant to that program after such personnel were granted such access except in specified circumstances such as an emergency.	The Responsible Entity does not have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access.  OR  The Responsible Entity did not conduct the personnel risk assessment pursuant to that program for personnel granted such access except in specified circumstances such as an emergency.
R3.1.	LOWER	N/A	N/A	The Responsible Entity did not ensure that an assessment conducted included an identity verification (e.g., Social Security Number verification in the U.S.) or a seven-year criminal check.	The Responsible Entity did not ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check.

Requirement	VRF	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.2.	LOWER	N/A	The Responsible Entity did not update each personnel risk assessment at least every seven years after the initial personnel risk assessment but did update it for cause when applicable.	The Responsible Entity did not update each personnel risk assessment for cause (when applicable) but did at least updated it every seven years after the initial personnel risk assessment.	The Responsible Entity did not update each personnel risk assessment at least every seven years after the initial personnel risk assessment nor was it updated for cause when applicable.
R3.3.	LOWER	The Responsible Entity did not document the results of personnel risk assessments for at least one individual but less than 5% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004-4.	The Responsible Entity did not document the results of personnel risk assessments for 5% or more but less than 10% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004-4.	The Responsible Entity did not document the results of personnel risk assessments for 10% or more but less than 15% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004-4.	The Responsible Entity did not document the results of personnel risk assessments for 15% or more of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004-4.
R4.	LOWER	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing at least one individual but less than 5% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 5% or more but less than 10% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 10% or more but less than 15% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 15% or more of the authorized personnel.
R4.1.	LOWER	N/A	The Responsible Entity did not review the list(s) of its personnel who have access to Critical Cyber Assets quarterly.	The Responsible Entity did not update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, nor any change in the access rights of such personnel.	The Responsible Entity did not review the list(s) of all personnel who have access to Critical Cyber Assets quarterly, nor update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, nor any change in the access rights of such personnel.
R4.2.	MEDIUM	N/A	The Responsible Entity did not revoke access within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.	The Responsible Entity did not revoke access to Critical Cyber Assets within 24 hours for personnel terminated for cause.	The Responsible Entity did not revoke access to Critical Cyber Assets within 24 hours for personnel terminated for cause nor within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.

**E. Regional Variances**

None identified.

**Version History**

Version	Date	Action	Change Tracking
1	01/16/06	D.2.2.4 — Insert the phrase “for cause” as intended. “One instance of personnel termination for cause...”	03/24/06
1	06/01/06	D.2.1.4 — Change “access control rights” to “access rights.”	06/05/06
2		<p>Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Removal of reasonable business judgment.</p> <p>Replaced the RRO with the RE as a responsible entity.</p> <p>Rewording of Effective Date.</p> <p>Reference to emergency situations.</p> <p>Modification to R1 for the Responsible Entity to establish, document, implement, and maintain the awareness program.</p> <p>Modification to R2 for the Responsible Entity to establish, document, implement, and maintain the training program; also stating the requirements for the cyber security training program.</p> <p>Modification to R3 Personnel Risk Assessment to clarify that it pertains to personnel having authorized cyber or authorized unescorted physical access to “Critical Cyber Assets”.</p> <p>Removal of 90 day window to complete training and 30 day window to complete personnel risk assessments.</p> <p>Changed compliance monitor to Compliance Enforcement Authority.</p>	
3		Update version number from -2 to -3	
3	12/16/09	Approved by NERC Board of Trustees	Update
4	Board approved 01/24/2011	Update version number from “3” to “4”	Update to conform to changes to CIP-002-4 (Project 2008-06)
4	4/19/12	<p>FERC Order issued approving CIP-004-4 (approval becomes effective June 25, 2012)</p> <p>Added approved VRF/VSL table to section D.2.</p>	

3a/4a	5/24/12	Interpretation of R2, R3, and R4 adopted by NERC Board of Trustees	
3a/4a	12/13/12	Interpretation of R2, R3, and R4 approved by FERC in a Letter Order issued December 12, 2012	



## Appendix 1

<b>Requirement Number and Text of Requirement</b>
<p>R2. Training — The Responsible Entity shall establish, maintain, and document an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and review the program annually and update as necessary.</p> <p style="padding-left: 40px;">R2.1. This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained within ninety calendar days of such authorization.</p> <p>R3. Personnel Risk Assessment —The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access. A personnel risk assessment shall be conducted pursuant to that program within thirty days of such personnel being granted such access. Such program shall at a minimum include:</p> <p>R4. Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.</p>
<b>Question 1</b>
<p>The WECC RC seeks clarification on the definition of “authorized access” as applied to temporary support from vendors.</p> <p>Do the training, risk assessment and access requirements specified in R2, R3, and R4 apply to vendors who are supervised? Assuming that a “supervised” vendor is exempt from CIP-004-1, Requirements R2, R3 and R4, would temporary, indirect and monitored access such as that provided through remote terminal sessions (WebEx, etc.) or escorted physical access be considered supervision?</p>
<b>Response to Question 1</b>
<p>WECC asks three questions, which are listed below. The answer to each question follows the question.</p> <ol style="list-style-type: none"> <li>1. WECC seeks clarification on the definition of “authorized access” as applied to temporary support from vendors.</li> </ol> <p style="padding-left: 20px;">Answer: While the <i>Glossary of Terms used in NERC Reliability Standards</i> does not have a definition of “authorized access,” CIP-004-1, Requirement R4 requires that an entity “shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.” For purposes of CIP-004-1, an individual has “authorized access” if he or she is on that list, and, as a result, is subject to Requirements R2, R3, and R4.</p> <ol style="list-style-type: none"> <li>2. Do the training, risk assessment, and access requirements specified in R2, R3, and R4 apply to vendors who are supervised?</li> </ol>

Answer: As written, all cyber access to Critical Cyber Assets must be authorized, and all authorized access must comply with Requirements R2, R3, and R4.<sup>1</sup> Through the use of the qualifier “unescorted” with regard to physical access, CIP-004-1, Requirement R2, implies the concept of supervision for physical access when an individual is not authorized, and CIP-006 R1.6 also allows for escorted unauthorized physical access via a visitor program. There is no similar qualifier or reference in the requirement that mentions “escorted” or otherwise implies supervision for cyber access within CIP-004. Furthermore, there is no mention of any escorted unauthorized cyber access within CIP-007 similar to the visitor program in CIP-006 R1.6. Compared to “physical access,” the concept or any words relating to “escorting” or “supervision” in the requirement language is absent relative to cyber access.

3. Assuming that a “supervised” vendor is exempt from CIP-004-1, Requirements R2, R3, and R4, would temporary, indirect and monitored access such as that provided through remote terminal sessions (WebEx, etc.) or escorted physical access be considered supervision?

Answer: To the extent a vendor is escorted to physically access a Critical Cyber Asset for purposes other than direct cyber access (e.g., replacing parts on the Critical Cyber Asset), supervision is acceptable (within the context of escorted physical access). If the escorted physical access includes bringing a vendor or other individual to the Critical Cyber Asset to direct someone with authorized access in performing cyber access, such supervision is also acceptable within the language of the requirement, since the vendor or other individual is merely present while an authorized individual conducts the actual cyber access. However, the requirement language does not support the notion of physically escorting a vendor or other individual to a Critical Cyber Asset for the vendor or other individual to perform cyber access, even if supervised. Even if it is possible to provide supervised cyber access to Critical Cyber Assets, there is no basis or contemplation of “escorted” cyber access whatsoever in CIP-004, whether remotely or in person.

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<sup>1</sup> The drafting team also notes that the FAQ referenced in the request for interpretation is not the same as an approved Reliability Standard and is not mandatory and enforceable. The FAQ was not developed or approved through the same standards development process, and cannot be used to substitute for the language in the standard itself. The drafting team also notes that the concept of unsupervised trusted access in the FAQ applies only to Version 1—which contained a 30 and 90 day provision for training and personnel risk assessments for personnel with authorized cyber access and authorized unescorted physical access—and it was not modified to conform to the changes made in subsequent versions.

# Glossary of Terms Used in NERC Reliability Standards

Updated February 11, 2013

## Introduction:

This Glossary lists each term that was defined for use in one or more of NERC's continent-wide or Regional Reliability Standards and adopted by the NERC Board of Trustees from February 8, 2005 through February 11, 2013.

This reference is divided into two sections, and each section is organized in alphabetical order. The first section identifies all terms that have been adopted by the NERC Board of Trustees for use in continent-wide standards; the second section identifies all terms that have been adopted by the NERC Board of Trustees for use in regional standards. (WECC, NPCC and *ReliabilityFirst* are the only Regions that have definitions approved by the NERC Board of Trustees. If other Regions develop definitions for approved Regional Standards using a NERC-approved standards development process, those definitions will be added to the Regional Definitions section of this glossary.)

Most of the terms identified in this glossary were adopted as part of the development of NERC's initial set of reliability standards, called the "Version 0" standards. Subsequent to the development of Version 0 standards, new definitions have been developed and approved following NERC's Reliability Standards Development Process, and added to this glossary following board adoption, with the "FERC approved" date added following a final Order approving the definition.

Immediately under each term is a link to the archive for the development of that term.

Definitions that have been adopted by the NERC Board of Trustees but have not been approved by FERC, or FERC has not approved but has directed be modified, are shaded in blue. Definitions that have been remanded or retired are shaded in orange.

Any comments regarding this glossary should be reported to the following:  
[sarcomm@nerc.com](mailto:sarcomm@nerc.com) with "Glossary Comment" in the subject line.

**Continent-wide Definitions:**

A.....	4
B.....	8
C.....	17
D.....	22
E.....	25
F.....	28
G.....	32
H.....	33
I.....	34
J.....	37
L.....	38
M.....	38
N.....	40
O.....	43
P.....	47
R.....	52
S.....	58
T.....	61
V.....	65
W.....	65
Y.....	65

**Regional Definitions:**

Reliability*First* Regional Definitions..... 66

NPCC Regional Definitions ..... 67

WECC Regional Definitions..... 68

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Adequacy <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.
Adjacent Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A Balancing Authority Area that is interconnected another Balancing Authority Area either directly or via a multi-party agreement or transmission tariff.
Adverse Reliability Impact <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The impact of an event that results in frequency-related instability; unplanned tripping of load or generation; or uncontrolled separation or cascading outages that affects a widespread area of the Interconnection.
Adverse Reliability Impact <a href="#">[Archive]</a>		8/4/2011		The impact of an event that results in Bulk Electric System instability or Cascading.
After the Fact <a href="#">[Archive]</a>	ATF	10/29/2008	12/17/2009	A time classification assigned to an RFI when the submittal time is greater than one hour after the start time of the RFI.
Agreement <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A contract or arrangement, either written or verbal and sometimes enforceable by law.
Alternative Interpersonal Communication <a href="#">[Archive]</a>		11/7/2012		Any Interpersonal Communication that is able to serve as a substitute for, and does not utilize the same infrastructure (medium) as, Interpersonal Communication used for day-to-day operation.

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Altitude Correction Factor <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A multiplier applied to specify distances, which adjusts the distances to account for the change in relative air density (RAD) due to altitude from the RAD used to determine the specified distance. Altitude correction factors apply to both minimum worker approach distances and to minimum vegetation clearance distances.
Ancillary Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Service Provider's transmission system in accordance with good utility practice. <i>(From FERC order 888-A.)</i>
Anti-Aliasing Filter <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An analog filter installed at a metering point to remove the high frequency components of the signal over the AGC sample period.
Area Control Error <a href="#">[Archive]</a>	ACE	2/8/2005	3/16/2007	The instantaneous difference between a Balancing Authority's net actual and scheduled interchange, taking into account the effects of Frequency Bias and correction for meter error.
Area Control Error <a href="#">[Archive]</a>	ACE	12/19/2012		The instantaneous difference between a Balancing Authority's net actual and scheduled interchange, taking into account the effects of Frequency Bias, correction for meter error, and Automatic Time Error Correction (ATEC), if operating in the ATEC mode. ATEC is only applicable to Balancing Authorities in the Western Interconnection.

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Area Interchange Methodology <a href="#">[Archive]</a>		08/22/2008	11/24/2009	The Area Interchange methodology is characterized by determination of incremental transfer capability via simulation, from which Total Transfer Capability (TTC) can be mathematically derived. Capacity Benefit Margin, Transmission Reliability Margin, and Existing Transmission Commitments are subtracted from the TTC, and Postbacks and counterflows are added, to derive Available Transfer Capability. Under the Area Interchange Methodology, TTC results are generally reported on an area to area basis.
Arranged Interchange <a href="#">[Archive]</a>		5/2/2006	3/16/2007	The state where the Interchange Authority has received the Interchange information (initial or revised).
Automatic Generation Control <a href="#">[Archive]</a>	AGC	2/8/2005	3/16/2007	Equipment that automatically adjusts generation in a Balancing Authority Area from a central location to maintain the Balancing Authority's interchange schedule plus Frequency Bias. AGC may also accommodate automatic inadvertent payback and time error correction.
Available Flowgate Capability <a href="#">[Archive]</a>	AFC	08/22/2008	11/24/2009	A measure of the flow capability remaining on a Flowgate for further commercial activity over and above already committed uses. It is defined as TFC less Existing Transmission Commitments (ETC), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, and plus counterflows.
Available Transfer Capability <a href="#">[Archive]</a>	ATC	2/8/2005	3/16/2007	A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less existing transmission commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin.



Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Available Transfer Capability <a href="#">[Archive]</a>	ATC	08/22/2008	11/24/2009	A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less Existing Transmission Commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, plus counterflows.
Available Transfer Capability Implementation Document <a href="#">[Archive]</a>	ATCID	08/22/2008	11/24/2009	A document that describes the implementation of a methodology for calculating ATC or AFC, and provides information related to a Transmission Service Provider's calculation of ATC or AFC.
ATC Path <a href="#">[Archive]</a>		08/22/2008	Not approved; Modification directed 11/24/09	Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path <sup>1</sup> .

<sup>1</sup> See 18 CFR 37.6(b)(1)

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Balancing Authority <a href="#">[Archive]</a>	BA	2/8/2005	3/16/2007	The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.
Balancing Authority Area <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.
Base Load <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The minimum amount of electric power delivered or required over a given period at a constant rate.
BES Cyber Asset <a href="#">[Archive]</a>		11/26/12		A Cyber Asset that if rendered unavailable, degraded, or misused would, within 15 minutes of its required operation, misoperation, or non-operation, adversely impact one or more Facilities, systems, or equipment, which, if destroyed, degraded, or otherwise rendered unavailable when needed, would affect the reliable operation of the Bulk Electric System. Redundancy of affected Facilities, systems, and equipment shall not be considered when determining adverse impact. Each BES Cyber Asset is included in one or more BES Cyber Systems. (A Cyber Asset is not a BES Cyber Asset if, for 30 consecutive calendar days or less, it is directly connected to a network within an ESP, a Cyber Asset within an ESP, or to a BES Cyber Asset, and it is used for data transfer, vulnerability assessment, maintenance, or troubleshooting purposes.)

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
BES Cyber System <a href="#">[Archive]</a>		11/26/12		One or more BES Cyber Assets logically grouped by a responsible entity to perform one or more reliability tasks for a functional entity.
BES Cyber System Information <a href="#">[Archive]</a>		11/26/12		Information about the BES Cyber System that could be used to gain unauthorized access or pose a security threat to the BES Cyber System. BES Cyber System Information does not include individual pieces of information that by themselves do not pose a threat or could not be used to allow unauthorized access to BES Cyber Systems, such as, but not limited to, device names, individual IP addresses without context, ESP names, or policy statements. Examples of BES Cyber System Information may include, but are not limited to, security procedures or security information about BES Cyber Systems, Physical Access Control Systems, and Electronic Access Control or Monitoring Systems that is not publicly available and could be used to allow unauthorized access or unauthorized distribution; collections of network addresses; and network topology of the BES Cyber System.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Blackstart Capability Plan <a href="#">[Archive]</a>		2/8/2005 Will be retired when EOP-005-2 becomes enforceable on (7/1/13)	3/16/2007	A documented procedure for a generating unit or station to go from a shutdown condition to an operating condition delivering electric power without assistance from the electric system. This procedure is only a portion of an overall system restoration plan.
Blackstart Resource <a href="#">[Archive]</a>		8/5/2009	3/17/11	A generating unit(s) and its associated set of equipment which has the ability to be started without support from the System or is designed to remain energized without connection to the remainder of the System, with the ability to energize a bus, meeting the Transmission Operator's restoration plan needs for real and reactive power capability, frequency and voltage control, and that has been included in the Transmission Operator's restoration plan.
Block Dispatch <a href="#">[Archive]</a>		08/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, the capacity of a given generator is segmented into loadable "blocks," each of which is grouped and ordered relative to other blocks (based on characteristics including, but not limited to, efficiency, run of river or fuel supply considerations, and/or "must-run" status).

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Bulk Electric System <a href="#">[Archive]</a>	BES	2/8/2005	3/16/2007	As defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Bulk Electric System <a href="#">[Archive]</a>	BES	01/18/2012	07/01/2013	Unless modified by the lists shown below, all Transmission Elements operated at 100 kV or higher and Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy. <b>Inclusions:</b> <ul style="list-style-type: none"> <li>• <b>I1</b> - Transformers with the primary terminal and at least one secondary terminal operated at 100 kV or higher unless excluded under Exclusion E1 or E3.</li> <li>• <b>I2</b> - Generating resource(s) with gross individual nameplate rating greater than 20 MVA or gross plant/facility aggregate nameplate rating greater than 75 MVA including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above.</li> <li>• <b>I3</b> - Blackstart Resources identified in the Transmission Operator's restoration plan.</li> <li>• <b>I4</b> - Dispersed power producing resources with aggregate capacity greater than 75 MVA (gross aggregate nameplate rating) utilizing a system designed primarily for aggregating capacity, connected at a common point at a voltage of 100 kV or above.</li> </ul>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Bulk Electric System <b>(Continued)</b>	BES			<p><b>I5</b> –Static or dynamic devices (excluding generators) dedicated to supplying or absorbing Reactive Power that are connected at 100 kV or higher, or through a dedicated transformer with a high-side voltage of 100 kV or higher, or through a transformer that is designated in Inclusion I1.</p> <p><b>Exclusions:</b></p> <ul style="list-style-type: none"> <li>• <b>E1</b> - Radial systems: A group of contiguous transmission Elements that emanates from a single point of connection of 100 kV or higher and:               <ul style="list-style-type: none"> <li>a) Only serves Load. Or,</li> <li>b) Only includes generation resources, not identified in Inclusion I3, with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating). Or,</li> <li>c) Where the radial system serves Load and includes generation resources, not identified in Inclusion I3, with an aggregate capacity of non-retail generation less than or equal to 75 MVA (gross nameplate rating).</li> </ul> </li> </ul> <p>Note – A normally open switching device between radial systems, as depicted on prints or one-line diagrams for example, does not affect this exclusion.</p>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Bulk Electric System <b>(Continued)</b>	BES			<ul style="list-style-type: none"> <li>• <b>E2</b> - A generating unit or multiple generating units on the customer's side of the retail meter that serve all or part of the retail Load with electric energy if: (i) the net capacity provided to the BES does not exceed 75 MVA, and (ii) standby, back-up, and maintenance power services are provided to the generating unit or multiple generating units or to the retail Load by a Balancing Authority, or provided pursuant to a binding obligation with a Generator Owner or Generator Operator, or under terms approved by the applicable regulatory authority.</li> <li>• <b>E3</b> - Local networks (LN): A group of contiguous transmission Elements operated at or above 100 kV but less than 300 kV that distribute power to Load rather than transfer bulk power across the interconnected system. LN's emanate from multiple points of connection at 100 kV or higher to improve the level of service to retail customer Load and not to accommodate bulk power transfer across the interconnected system. The LN is characterized by all of the following:</li> </ul>



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Bulk Electric System <b>(Continued)</b>	BES			<p>a) Limits on connected generation: The LN and its underlying Elements do not include generation resources identified in Inclusion I3 and do not have an aggregate capacity of non-retail generation greater than 75 MVA (gross nameplate rating) ;</p> <p>b) Power flows only into the LN and the LN does not transfer energy originating outside the LN for delivery through the LN; and</p> <p>c) Not part of a Flowgate or transfer path: The LN does not contain a monitored Facility of a permanent Flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection, or a comparable monitored Facility in the ERCOT or Quebec Interconnections, and is not a monitored Facility included in an Interconnection Reliability Operating Limit (IROL).</p> <ul style="list-style-type: none"> <li>• <b>E4</b> – Reactive Power devices owned and operated by the retail customer solely for its own use.</li> </ul> <p>Note - Elements may be included or excluded on a case-by-case basis through the Rules of Procedure exception process.</p>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Burden <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Operation of the Bulk Electric System that violates or is expected to violate a System Operating Limit or Interconnection Reliability Operating Limit in the Interconnection, or that violates any other NERC, Regional Reliability Organization, or local operating reliability standards or criteria.
Business Practices <a href="#">[Archive]</a>		8/22/2008	Not approved; Modification directed 11/24/09	Those business rules contained in the Transmission Service Provider's applicable tariff, rules, or procedures; associated Regional Reliability Organization or regional entity business practices; or NAESB Business Practices.
Bus-tie Breaker <a href="#">[Archive]</a>		8/4/2011		A circuit breaker that is positioned to connect two individual substation bus configurations.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Capacity Benefit Margin <a href="#">[Archive]</a>	CBM	2/8/2005	3/16/2007	The amount of firm transmission transfer capability preserved by the transmission provider for Load-Serving Entities (LSEs), whose loads are located on that Transmission Service Provider's system, to enable access by the LSEs to generation from interconnected systems to meet generation reliability requirements. Preservation of CBM for an LSE allows that entity to reduce its installed generating capacity below that which may otherwise have been necessary without interconnections to meet its generation reliability requirements. The transmission transfer capability preserved as CBM is intended to be used by the LSE only in times of emergency generation deficiencies.
Capacity Benefit Margin Implementation Document <a href="#">[Archive]</a>	CBMID	11/13/2008	11/24/2009	A document that describes the implementation of a Capacity Benefit Margin methodology.
Capacity Emergency <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A capacity emergency exists when a Balancing Authority Area's operating capacity, plus firm purchases from other systems, to the extent available or limited by transfer capability, is inadequate to meet its demand plus its regulating requirements.
Cascading <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The uncontrolled successive loss of system elements triggered by an incident at any location. Cascading results in widespread electric service interruption that cannot be restrained from sequentially spreading beyond an area predetermined by studies.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Cascading Outages <a href="#">[Archive]</a>		11/1/2006 Withdrawn 2/12/2008	FERC Remanded 12/27/2007	<del>The uncontrolled successive loss of Bulk Electric System Facilities triggered by an incident (or condition) at any location resulting in the interruption of electric service that cannot be restrained from spreading beyond a pre-determined area.</del>
CIP Exceptional Circumstance <a href="#">[Archive]</a>		11/26/12		A situation that involves or threatens to involve one or more of the following, or similar, conditions that impact safety or BES reliability: a risk of injury or death; a natural disaster; civil unrest; an imminent or existing hardware, software, or equipment failure; a Cyber Security Incident requiring emergency assistance; a response by emergency services; the enactment of a mutual assistance agreement; or an impediment of large scale workforce availability.
CIP Senior Manager <a href="#">[Archive]</a>		11/26/12		A single senior management official with overall authority and responsibility for leading and managing implementation of and continuing adherence to the requirements within the NERC CIP Standards, CIP-002 through CIP-011.
Clock Hour <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The 60-minute period ending at :00. All surveys, measurements, and reports are based on Clock Hour periods unless specifically noted.
Cogeneration <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Production of electricity from steam, heat, or other forms of energy produced as a by-product of another process.
Compliance Monitor <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The entity that monitors, reviews, and ensures compliance of responsible entities with reliability standards.
Confirmed Interchange <a href="#">[Archive]</a>		5/2/2006	3/16/2007	The state where the Interchange Authority has verified the Arranged Interchange.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Congestion Management Report <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A report that the Interchange Distribution Calculator issues when a Reliability Coordinator initiates the Transmission Loading Relief procedure. This report identifies the transactions and native and network load curtailments that must be initiated to achieve the loading relief requested by the initiating Reliability Coordinator.
Consequential Load Loss <a href="#">[Archive]</a>		8/4/2011		All Load that is no longer served by the Transmission system as a result of Transmission Facilities being removed from service by a Protection System operation designed to isolate the fault.
Constrained Facility <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A transmission facility (line, transformer, breaker, etc.) that is approaching, is at, or is beyond its System Operating Limit or Interconnection Reliability Operating Limit.
Contingency <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element.
Contingency Reserve <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The provision of capacity deployed by the Balancing Authority to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Organization contingency requirements.
Contract Path <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An agreed upon electrical path for the continuous flow of electrical power between the parties of an Interchange Transaction.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Control Center <a href="#">[Archive]</a>		11/26/12		One or more facilities hosting operating personnel that monitor and control the Bulk Electric System (BES) in real-time to perform the reliability tasks, including their associated data centers, of: 1) a Reliability Coordinator, 2) a Balancing Authority, 3) a Transmission Operator for transmission Facilities at two or more locations, or 4) a Generator Operator for generation Facilities at two or more locations.
Control Performance Standard <a href="#">[Archive]</a>	CPS	2/8/2005	3/16/2007	The reliability standard that sets the limits of a Balancing Authority's Area Control Error over a specified time period.
Corrective Action Plan <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A list of actions and an associated timetable for implementation to remedy a specific problem.
Cranking Path <a href="#">[Archive]</a>		5/2/2006	3/16/2007	A portion of the electric system that can be isolated and then energized to deliver electric power from a generation source to enable the startup of one or more other generating units.
Critical Assets <a href="#">[Archive]</a>		5/2/2006	1/18/2008	Facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the Bulk Electric System.
Critical Cyber Assets <a href="#">[Archive]</a>		5/2/2006	1/18/2008	Cyber Assets essential to the reliable operation of Critical Assets.
Curtailment <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A reduction in the scheduled capacity or energy delivery of an Interchange Transaction.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Curtailment Threshold <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The minimum Transfer Distribution Factor which, if exceeded, will subject an Interchange Transaction to curtailment to relieve a transmission facility constraint.
Cyber Assets <a href="#">[Archive]</a>		5/2/2006	1/18/2008	Programmable electronic devices and communication networks including hardware, software, and data.
Cyber Assets <a href="#">[Archive]</a>		11/26/12		Programmable electronic devices, including the hardware, software, and data in those devices.
Cyber Security Incident <a href="#">[Archive]</a>		5/2/2006	1/18/2008	Any malicious act or suspicious event that: <ul style="list-style-type: none"> <li>• Compromises, or was an attempt to compromise, the Electronic Security Perimeter or Physical Security Perimeter of a Critical Cyber Asset, or,</li> <li>• Disrupts, or was an attempt to disrupt, the operation of a Critical Cyber Asset.</li> </ul>
Cyber Security Incident <a href="#">[Archive]</a>		11/26/12		A malicious act or suspicious event that: <ul style="list-style-type: none"> <li>• Compromises, or was an attempt to compromise, the Electronic Security Perimeter or Physical Security Perimeter or,</li> <li>• Disrupts, or was an attempt to disrupt, the operation of a BES Cyber System.</li> </ul>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Delayed Fault Clearing <a href="#">[Archive]</a>		11/1/2006	12/27/2007	Fault clearing consistent with correct operation of a breaker failure protection system and its associated breakers, or of a backup protection system with an intentional time delay.
Demand <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time.</li> <li>2. The rate at which energy is being used by the customer.</li> </ol>
Demand-Side Management <a href="#">[Archive]</a>	DSM	2/8/2005	3/16/2007	The term for all activities or programs undertaken by Load-Serving Entity or its customers to influence the amount or timing of electricity they use.
Dial-up Connectivity <a href="#">[Archive]</a>		11/26/12		A data communication link that is established when the communication equipment dials a phone number and negotiates a connection with the equipment on the other end of the link.
Direct Control Load Management <a href="#">[Archive]</a>	DCLM	2/8/2005	3/16/2007	Demand-Side Management that is under the direct control of the system operator. DCLM may control the electric supply to individual appliances or equipment on customer premises. DCLM as defined here does not include Interruptible Demand.
Dispatch Order <a href="#">[Archive]</a>		08/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, each generator is ranked by priority.



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Dispersed Load by Substations <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Substation load information configured to represent a system for power flow or system dynamics modeling purposes, or both.
Distribution Factor <a href="#">[Archive]</a>	DF	2/8/2005	3/16/2007	The portion of an Interchange Transaction, typically expressed in per unit that flows across a transmission facility (Flowgate).
Distribution Provider <a href="#">[Archive]</a>	DP	2/8/2005	3/16/2007	Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the Distribution function at any voltage.
Disturbance <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. An unplanned event that produces an abnormal system condition.</li> <li>2. Any perturbation to the electric system.</li> <li>3. The unexpected change in ACE that is caused by the sudden failure of generation or interruption of load.</li> </ol>
Disturbance Control Standard <a href="#">[Archive]</a>	DCS	2/8/2005	3/16/2007	The reliability standard that sets the time limit following a Disturbance within which a Balancing Authority must return its Area Control Error to within a specified range.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Disturbance Monitoring Equipment <a href="#">[Archive]</a>	DME	8/2/2006	3/16/2007	<p>Devices capable of monitoring and recording system data pertaining to a Disturbance. Such devices include the following categories of recorders<sup>2</sup>:</p> <ul style="list-style-type: none"> <li>• Sequence of event recorders which record equipment response to the event</li> <li>• Fault recorders, which record actual waveform data replicating the system primary voltages and currents. This may include protective relays.</li> <li>• Dynamic Disturbance Recorders (DDRs), which record incidents that portray power system behavior during dynamic events such as low-frequency (0.1 Hz – 3 Hz) oscillations and abnormal frequency or voltage excursions</li> </ul>
Dynamic Interchange Schedule or Dynamic Schedule <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A telemetered reading or value that is updated in real time and used as a schedule in the AGC/ACE equation and the integrated value of which is treated as a schedule for interchange accounting purposes. Commonly used for scheduling jointly owned generation to or from another Balancing Authority Area.
Dynamic Transfer <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The provision of the real-time monitoring, telemetering, computer software, hardware, communications, engineering, energy accounting (including inadvertent interchange), and administration required to electronically move all or a portion of the real energy services associated with a generator or load out of one Balancing Authority Area into another.

<sup>2</sup> Phasor Measurement Units and any other equipment that meets the functional requirements of DMEs may qualify as DMEs.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Economic Dispatch <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The allocation of demand to individual generating units on line to effect the most economical production of electricity.
Electronic Access Control or Monitoring Systems <a href="#">[Archive]</a>	EACMS	11/26/12		Cyber Assets that perform electronic access control or electronic access monitoring of the Electronic Security Perimeter(s) or BES Cyber Systems. This includes Intermediate Devices.
Electronic Access Point <a href="#">[Archive]</a>	EAP	11/26/12		A Cyber Asset interface on an Electronic Security Perimeter that allows routable communication between Cyber Assets outside an Electronic Security Perimeter and Cyber Assets inside an Electronic Security Perimeter.
Electrical Energy <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The generation or use of electric power by a device over a period of time, expressed in kilowatthours (kWh), megawatthours (MWh), or gigawatthours (GWh).
Electronic Security Perimeter <a href="#">[Archive]</a>	ESP	5/2/2006	1/18/2008	The logical border surrounding a network to which Critical Cyber Assets are connected and for which access is controlled.
Electronic Security Perimeter <a href="#">[Archive]</a>	ESP	11/26/12		The logical border surrounding a network to which BES Cyber Systems are connected using a routable protocol.
Element <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Any electrical device with terminals that may be connected to other electrical devices such as a generator, transformer, circuit breaker, bus section, or transmission line. An element may be comprised of one or more components.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Emergency or BES Emergency <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Any abnormal system condition that requires automatic or immediate manual action to prevent or limit the failure of transmission facilities or generation supply that could adversely affect the reliability of the Bulk Electric System.
Emergency Rating <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The rating as defined by the equipment owner that specifies the level of electrical loading or output, usually expressed in megawatts (MW) or Mvar or other appropriate units, that a system, facility, or element can support, produce, or withstand for a finite period. The rating assumes acceptable loss of equipment life or other physical or safety limitations for the equipment involved.
Emergency Request for Interchange <a href="#">[Archive]</a>	Emergency RFI	10/29/2008	12/17/2009	Request for Interchange to be initiated for Emergency or Energy Emergency conditions.
Energy Emergency <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A condition when a Load-Serving Entity has exhausted all other options and can no longer provide its customers' expected energy requirements.
Equipment Rating <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The maximum and minimum voltage, current, frequency, real and reactive power flows on individual equipment under steady state, short-circuit and transient conditions, as permitted or assigned by the equipment owner.
External Routable Connectivity <a href="#">[Archive]</a>		11/26/12		The ability to access a BES Cyber System from a Cyber Asset that is outside of its associated Electronic Security Perimeter via a bi-directional routable protocol connection.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Existing Transmission Commitments <a href="#">[Archive]</a>	ETC	08/22/2008	11/24/2009	Committed uses of a Transmission Service Provider's Transmission system considered when determining ATC or AFC.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Facility <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)
Facility Rating <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility.
Fault <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An event occurring on an electric system such as a short circuit, a broken wire, or an intermittent connection.
Fire Risk <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The likelihood that a fire will ignite or spread in a particular geographic area.
Firm Demand <a href="#">[Archive]</a>		2/8/2005	3/16/2007	That portion of the Demand that a power supplier is obligated to provide except when system reliability is threatened or during emergency conditions.
Firm Transmission Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The highest quality (priority) service offered to customers under a filed rate schedule that anticipates no planned interruption.
Flashover <a href="#">[Archive]</a>		2/7/2006	3/16/2007	An electrical discharge through air around or over the surface of insulation, between objects of different potential, caused by placing a voltage across the air space that results in the ionization of the air space.
Flowgate <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A designated point on the transmission system through which the Interchange Distribution Calculator calculates the power flow from Interchange Transactions.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Flowgate <a href="#">[Archive]</a>		08/22/2008	11/24/2009	<p>1.) A portion of the Transmission system through which the Interchange Distribution Calculator calculates the power flow from Interchange Transactions.</p> <p>2.) A mathematical construct, comprised of one or more monitored transmission Facilities and optionally one or more contingency Facilities, used to analyze the impact of power flows upon the Bulk Electric System.</p>
Flowgate Methodology <a href="#">[Archive]</a>		08/22/2008	11/24/2009	The Flowgate methodology is characterized by identification of key Facilities as Flowgates. Total Flowgate Capabilities are determined based on Facility Ratings and voltage and stability limits. The impacts of Existing Transmission Commitments (ETCs) are determined by simulation. The impacts of ETC, Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) are subtracted from the Total Flowgate Capability, and Postbacks and counterflows are added, to determine the Available Flowgate Capability (AFC) value for that Flowgate. AFCs can be used to determine Available Transfer Capability (ATC).
Forced Outage <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<p>1. The removal from service availability of a generating unit, transmission line, or other facility for emergency reasons.</p> <p>2. The condition in which the equipment is unavailable due to unanticipated failure.</p>
Frequency Bias <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A value, usually expressed in megawatts per 0.1 Hertz (MW/0.1 Hz), associated with a Balancing Authority Area that approximates the Balancing Authority Area's response to Interconnection frequency error.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Frequency Bias Setting <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A value, usually expressed in MW/0.1 Hz, set into a Balancing Authority ACE algorithm that allows the Balancing Authority to contribute its frequency response to the Interconnection.
Frequency Bias Setting <a href="#">[Archive]</a>		2/7/2013		A number, either fixed or variable, usually expressed in MW/0.1 Hz, included in a Balancing Authority's Area Control Error equation to account for the Balancing Authority's inverse Frequency Response contribution to the Interconnection, and discourage response withdrawal through secondary control systems.
Frequency Deviation <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A change in Interconnection frequency.
Frequency Error <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The difference between the actual and scheduled frequency. ( $F_A - F_S$ )
Frequency Regulation <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The ability of a Balancing Authority to help the Interconnection maintain Scheduled Frequency. This assistance can include both turbine governor response and Automatic Generation Control.
Frequency Response <a href="#">[Archive]</a>		2/8/2005	3/16/2007	(Equipment) The ability of a system or elements of the system to react or respond to a change in system frequency.  (System) The sum of the change in demand, plus the change in generation, divided by the change in frequency, expressed in megawatts per 0.1 Hertz (MW/0.1 Hz).



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Frequency Response Measure <a href="#">[Archive]</a>	FRM	2/7/2013		The median of all the Frequency Response observations reported annually by Balancing Authorities or Frequency Response Sharing Groups for frequency events specified by the ERO. This will be calculated as MW/0.1Hz.
Frequency Response Obligation <a href="#">[Archive]</a>	FRO	2/7/2013		The Balancing Authority's share of the required Frequency Response needed for the reliable operation of an Interconnection. This will be calculated as MW/0.1Hz.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Frequency Response Sharing Group <a href="#">[Archive]</a>	FRSG	2/7/2013		A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating resources required to jointly meet the sum of the Frequency Response Obligations of its members.
Generator Operator <a href="#">[Archive]</a>	GOP	2/8/2005	3/16/2007	The entity that operates generating unit(s) and performs the functions of supplying energy and Interconnected Operations Services.
Generator Owner <a href="#">[Archive]</a>	GO	2/8/2005	3/16/2007	Entity that owns and maintains generating units.
Generator Shift Factor <a href="#">[Archive]</a>	GSF	2/8/2005	3/16/2007	A factor to be applied to a generator's expected change in output to determine the amount of flow contribution that change in output will impose on an identified transmission facility or Flowgate.
Generator-to-Load Distribution Factor <a href="#">[Archive]</a>	GLDF	2/8/2005	3/16/2007	The algebraic sum of a Generator Shift Factor and a Load Shift Factor to determine the total impact of an Interchange Transaction on an identified transmission facility or Flowgate.
Generation Capability Import Requirement <a href="#">[Archive]</a>	GCIR	11/13/2008	11/24/2009	The amount of generation capability from external sources identified by a Load-Serving Entity (LSE) or Resource Planner (RP) to meet its generation reliability or resource adequacy requirements as an alternative to internal resources.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Host Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. A Balancing Authority that confirms and implements Interchange Transactions for a Purchasing Selling Entity that operates generation or serves customers directly within the Balancing Authority's metered boundaries.</li> <li>2. The Balancing Authority within whose metered boundaries a jointly owned unit is physically located.</li> </ol>
Hourly Value <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Data measured on a Clock Hour basis.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Implemented Interchange <a href="#">[Archive]</a>		5/2/2006	3/16/2007	The state where the Balancing Authority enters the Confirmed Interchange into its Area Control Error equation.
Inadvertent Interchange <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The difference between the Balancing Authority's Net Actual Interchange and Net Scheduled Interchange. ( $I_A - I_S$ )
Independent Power Producer <a href="#">[Archive]</a>	IPP	2/8/2005	3/16/2007	Any entity that owns or operates an electricity generating facility that is not included in an electric utility's rate base. This term includes, but is not limited to, cogenerators and small power producers and all other nonutility electricity producers, such as exempt wholesale generators, who sell electricity.
Institute of Electrical and Electronics Engineers, Inc. <a href="#">[Archive]</a>	IEEE	2/7/2006	3/16/2007	
Interactive Remote Access <a href="#">[Archive]</a>		11/26/12		User-initiated access by a person employing a remote access client or other remote access technology using a routable protocol. Remote access originates from a Cyber Asset that is not an Intermediate Device and not located within any of the Responsible Entity's Electronic Security Perimeter(s) or at a defined Electronic Access Point (EAP). Remote access may be initiated from: 1) Cyber Assets used or owned by the Responsible Entity, 2) Cyber Assets used or owned by employees, and 3) Cyber Assets used or owned by vendors, contractors, or consultants. Interactive remote access does not include system-to-system process communications.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Interchange <a href="#">[Archive]</a>		5/2/2006	3/16/2007	Energy transfers that cross Balancing Authority boundaries.
Interchange Authority <a href="#">[Archive]</a>	IA	5/2/2006	3/16/2007	The responsible entity that authorizes implementation of valid and balanced Interchange Schedules between Balancing Authority Areas, and ensures communication of Interchange information for reliability assessment purposes.
Interchange Distribution Calculator <a href="#">[Archive]</a>	IDC	2/8/2005	3/16/2007	The mechanism used by Reliability Coordinators in the Eastern Interconnection to calculate the distribution of Interchange Transactions over specific Flowgates. It includes a database of all Interchange Transactions and a matrix of the Distribution Factors for the Eastern Interconnection.
Interchange Schedule <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An agreed-upon Interchange Transaction size (megawatts), start and end time, beginning and ending ramp times and rate, and type required for delivery and receipt of power and energy between the Source and Sink Balancing Authorities involved in the transaction.
Interchange Transaction <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An agreement to transfer energy from a seller to a buyer that crosses one or more Balancing Authority Area boundaries.
Interchange Transaction Tag or Tag <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The details of an Interchange Transaction required for its physical implementation.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Interconnected Operations Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A service (exclusive of basic energy and transmission services) that is required to support the reliable operation of interconnected Bulk Electric Systems.
Interconnection <a href="#">[Archive]</a>		2/8/2005	3/16/2007	When capitalized, any one of the three major electric system networks in North America: Eastern, Western, and ERCOT.
Interconnection Reliability Operating Limit <a href="#">[Archive]</a>	IROL	2/8/2005	3/16/2007 Retired 12/27/2007	The value (such as MW, MVar, Amperes, Frequency or Volts) derived from, or a subset of the System Operating Limits, which if exceeded, could expose a widespread area of the Bulk Electric System to instability, uncontrolled separation(s) or cascading outages.
Interconnection Reliability Operating Limit <a href="#">[Archive]</a>	IROL	11/1/2006	12/27/2007	A System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading outages <sup>3</sup> that adversely impact the reliability of the Bulk Electric System.
Interconnection Reliability Operating Limit T <sub>v</sub> <a href="#">[Archive]</a>	IROL T <sub>v</sub>	11/1/2006	12/27/2007	The maximum time that an Interconnection Reliability Operating Limit can be violated before the risk to the interconnection or other Reliability Coordinator Area(s) becomes greater than acceptable. Each Interconnection Reliability Operating Limit's T <sub>v</sub> shall be less than or equal to 30 minutes.

<sup>3</sup> On September 13, 2012, FERC issued an Order approving NERC's request to modify the reference to "Cascading Outages" to "Cascading outages" within the definition of IROL due to the fact that the definition of "Cascading Outages" was previously remanded by FERC.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Intermediate Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A Balancing Authority Area that has connecting facilities in the Scheduling Path between the Sending Balancing Authority Area and Receiving Balancing Authority Area and operating agreements that establish the conditions for the use of such facilities.
Intermediate System <a href="#">[Archive]</a>		11/26/12		A Cyber Asset or collection of Cyber Assets performing access control to restrict Interactive Remote Access to only authorized users. The Intermediate System must not be located inside the Electronic Security Perimeter.
Interpersonal Communication <a href="#">[Archive]</a>		11/7/2012		Any medium that allows two or more individuals to interact, consult, or exchange information.
Interruptible Load or Interruptible Demand <a href="#">[Archive]</a>		11/1/2006	3/16/2007	Demand that the end-use customer makes available to its Load-Serving Entity via contract or agreement for curtailment.
Joint Control <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Automatic Generation Control of jointly owned units by two or more Balancing Authorities.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Limiting Element <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The element that is 1. )Either operating at its appropriate rating, or 2,) Would be following the limiting contingency. Thus, the Limiting Element establishes a system limit.
Load <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An end-use device or customer that receives power from the electric system.
Load Shift Factor <a href="#">[Archive]</a>	LSF	2/8/2005	3/16/2007	A factor to be applied to a load's expected change in demand to determine the amount of flow contribution that change in demand will impose on an identified transmission facility or monitored Flowgate.
Load-Serving Entity <a href="#">[Archive]</a>	LSE	2/8/2005	3/16/2007	Secures energy and transmission service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers.
Long-Term Transmission Planning Horizon <a href="#">[Archive]</a>		8/4/2011		Transmission planning period that covers years six through ten or beyond when required to accommodate any known longer lead time projects that may take longer than ten years to complete.
Market Flow <a href="#">[Archive]</a>		11/4/2010	4/21/2011	The total amount of power flowing across a specified Facility or set of Facilities due to a market dispatch of generation internal to the market to serve load internal to the market.
Minimum Vegetation Clearance Distance <a href="#">[Archive]</a>	MVCD	11/3/2011		The calculated minimum distance stated in feet (meters) to prevent flash-over between conductors and vegetation, for various altitudes and operating voltages.



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Misoperation <a href="#">[Archive]</a>		2/7/2006	3/16/2007	<ul style="list-style-type: none"> <li>• Any failure of a Protection System element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection.</li> <li>• Any operation for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone).</li> <li>• Any unintentional Protection System operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity.</li> </ul>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Native Load <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The end-use customers that the Load-Serving Entity is obligated to serve.
Near-Term Transmission Planning Horizon <a href="#">[Archive]</a>		1/24/2011	11/17/2011	The transmission planning period that covers Year One through five.
Net Actual Interchange <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The algebraic sum of all metered interchange over all interconnections between two physically Adjacent Balancing Authority Areas.
Net Energy for Load <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Net Balancing Authority Area generation, plus energy received from other Balancing Authority Areas, less energy delivered to Balancing Authority Areas through interchange. It includes Balancing Authority Area losses but excludes energy required for storage at energy storage facilities.
Net Interchange Schedule <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The algebraic sum of all Interchange Schedules with each Adjacent Balancing Authority.
Net Scheduled Interchange <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The algebraic sum of all Interchange Schedules across a given path or between Balancing Authorities for a given period or instant in time.
Network Integration Transmission Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Service that allows an electric transmission customer to integrate, plan, economically dispatch and regulate its network reserves in a manner comparable to that in which the Transmission Owner serves Native Load customers.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Non-Consequential Load Loss <a href="#">[Archive]</a>		8/4/2011		Non-Interruptible Load loss that does not include: (1) Consequential Load Loss, (2) the response of voltage sensitive Load, or (3) Load that is disconnected from the System by end-user equipment.
Non-Firm Transmission Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Transmission service that is reserved on an as-available basis and is subject to curtailment or interruption.
Non-Spinning Reserve <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. That generating reserve not connected to the system but capable of serving demand within a specified time.</li> <li>2. Interruptible load that can be removed from the system in a specified time.</li> </ol>
Normal Clearing <a href="#">[Archive]</a>		11/1/2006	12/27/2007	A protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems.
Normal Rating <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units that a system, facility, or element can support or withstand through the daily demand cycles without loss of equipment life.
Nuclear Plant Generator Operator <a href="#">[Archive]</a>		5/2/2007	10/16/2008	Any Generator Operator or Generator Owner that is a Nuclear Plant Licensee responsible for operation of a nuclear facility licensed to produce commercial power.
Nuclear Plant Off-site Power Supply (Off-site Power) <a href="#">[Archive]</a>		5/2/2007	10/16/2008	The electric power supply provided from the electric system to the nuclear power plant distribution system as required per the nuclear power plant license.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Nuclear Plant Licensing Requirements <a href="#">[Archive]</a>	NPLRs	5/2/2007	10/16/2008	Requirements included in the design basis of the nuclear plant and statutorily mandated for the operation of the plant, including nuclear power plant licensing requirements for: <ol style="list-style-type: none"> <li>1) Off-site power supply to enable safe shutdown of the plant during an electric system or plant event; and</li> <li>2) Avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.</li> </ol>
Nuclear Plant Interface Requirements <a href="#">[Archive]</a>	NPIRs	5/2/2007	10/16/2008	The requirements based on NPLRs and Bulk Electric System requirements that have been mutually agreed to by the Nuclear Plant Generator Operator and the applicable Transmission Entities.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Off-Peak <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Those hours or other periods defined by NAESB business practices, contract, agreements, or guides as periods of lower electrical demand.
On-Peak <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Those hours or other periods defined by NAESB business practices, contract, agreements, or guides as periods of higher electrical demand.
Open Access Same Time Information Service <a href="#">[Archive]</a>	OASIS	2/8/2005	3/16/2007	An electronic posting system that the Transmission Service Provider maintains for transmission access data and that allows all transmission customers to view the data simultaneously.
Open Access Transmission Tariff <a href="#">[Archive]</a>	OATT	2/8/2005	3/16/2007	Electronic transmission tariff accepted by the U.S. Federal Energy Regulatory Commission requiring the Transmission Service Provider to furnish to all shippers with non-discriminating service comparable to that provided by Transmission Owners to themselves.
Operating Plan <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A document that identifies a group of activities that may be used to achieve some goal. An Operating Plan may contain Operating Procedures and Operating Processes. A company-specific system restoration plan that includes an Operating Procedure for black-starting units, Operating Processes for communicating restoration progress with other entities, etc., is an example of an Operating Plan.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Operating Procedure <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A document that identifies specific steps or tasks that should be taken by one or more specific operating positions to achieve specific operating goal(s). The steps in an Operating Procedure should be followed in the order in which they are presented, and should be performed by the position(s) identified. A document that lists the specific steps for a system operator to take in removing a specific transmission line from service is an example of an Operating Procedure.
Operating Process <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A document that identifies general steps for achieving a generic operating goal. An Operating Process includes steps with options that may be selected depending upon Real-time conditions. A guideline for controlling high voltage is an example of an Operating Process.
Operating Reserve <a href="#">[Archive]</a>		2/8/2005	3/16/2007	That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non-spinning reserve.
Operating Reserve – Spinning <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The portion of Operating Reserve consisting of: <ul style="list-style-type: none"> <li>• Generation synchronized to the system and fully available to serve load within the Disturbance Recovery Period following the contingency event; or</li> <li>• Load fully removable from the system within the Disturbance Recovery Period following the contingency event.</li> </ul>

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Operating Reserve – Supplemental <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The portion of Operating Reserve consisting of: <ul style="list-style-type: none"> <li>• Generation (synchronized or capable of being synchronized to the system) that is fully available to serve load within the Disturbance Recovery Period following the contingency event; or</li> <li>• Load fully removable from the system within the Disturbance Recovery Period following the contingency event.</li> </ul>
Operating Voltage <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The voltage level by which an electrical system is designated and to which certain operating characteristics of the system are related; also, the effective (root-mean-square) potential difference between any two conductors or between a conductor and the ground. The actual voltage of the circuit may vary somewhat above or below this value.
Operational Planning Analysis <a href="#">[Archive]</a>		10/17/2008	3/17/2011	An analysis of the expected system conditions for the next day's operation. (That analysis may be performed either a day ahead or as much as 12 months ahead.) Expected system conditions include things such as load forecast(s), generation output levels, and known system constraints (transmission facility outages, generator outages, equipment limitations, etc.).
Outage Transfer Distribution Factor <a href="#">[Archive]</a>	OTDF	8/22/2008	11/24/2009	In the post-contingency configuration of a system under study, the electric Power Transfer Distribution Factor (PTDF) with one or more system Facilities removed from service (outaged).

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Overlap Regulation Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A method of providing regulation service in which the Balancing Authority providing the regulation service incorporates another Balancing Authority's actual interchange, frequency response, and schedules into providing Balancing Authority's AGC/ACE equation.



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Participation Factors <a href="#">[Archive]</a>		8/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, generators are assigned a percentage that they will contribute to serve load.
Peak Demand <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. The highest hourly integrated Net Energy For Load within a Balancing Authority Area occurring within a given period (e.g., day, month, season, or year).</li> <li>2. The highest instantaneous demand within the Balancing Authority Area.</li> </ol>
Performance-Reset Period <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The time period that the entity being assessed must operate without any violations to reset the level of non compliance to zero.
Physical Access Control Systems <a href="#">[Archive]</a>	PACS	11/26/12		Cyber Assets that control, alert, or log access to the Physical Security Perimeter(s), exclusive of locally mounted hardware or devices at the Physical Security Perimeter such as motion sensors, electronic lock control mechanisms, and badge readers.
Physical Security Perimeter <a href="#">[Archive]</a>	PSP	5/2/2006	1/18/2008	The physical, completely enclosed (“six-wall”) border surrounding computer rooms, telecommunications rooms, operations centers, and other locations in which Critical Cyber Assets are housed and for which access is controlled.
Physical Security Perimeter <a href="#">[Archive]</a>	PSP	11/26/12		The physical border surrounding locations in which BES Cyber Assets, BES Cyber Systems, or Electronic Access Control or Monitoring Systems reside, and for which access is controlled.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Planning Assessment <a href="#">[Archive]</a>		8/4/2011		Documented evaluation of future Transmission system performance and Corrective Action Plans to remedy identified deficiencies.
Planning Authority <a href="#">[Archive]</a>	PA	2/8/2005	3/16/2007	The responsible entity that coordinates and integrates transmission facility and service plans, resource plans, and protection systems.
Planning Coordinator <a href="#">[Archive]</a>	PC	8/22/2008	11/24/2009	See Planning Authority.
Point of Delivery <a href="#">[Archive]</a>	POD	2/8/2005	3/16/2007	A location that the Transmission Service Provider specifies on its transmission system where an Interchange Transaction leaves or a Load-Serving Entity receives its energy.
Point of Receipt <a href="#">[Archive]</a>	POR	2/8/2005	3/16/2007	A location that the Transmission Service Provider specifies on its transmission system where an Interchange Transaction enters or a Generator delivers its output.
Point to Point Transmission Service <a href="#">[Archive]</a>	PTP	2/8/2005	3/16/2007	The reservation and transmission of capacity and energy on either a firm or non-firm basis from the Point(s) of Receipt to the Point(s) of Delivery.
Postback <a href="#">[Archive]</a>		08/22/2008	Not approved; Modification directed 11/24/09	Positive adjustments to ATC or AFC as defined in Business Practices. Such Business Practices may include processing of redirects and unscheduled service.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Power Transfer Distribution Factor <a href="#">[Archive]</a>	PTDF	08/22/2008	11/24/2009	In the pre-contingency configuration of a system under study, a measure of the responsiveness or change in electrical loadings on transmission system Facilities due to a change in electric power transfer from one area to another, expressed in percent (up to 100%) of the change in power transfer
Pro Forma Tariff <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Usually refers to the standard OATT and/or associated transmission rights mandated by the U.S. Federal Energy Regulatory Commission Order No. 888.
Protected Cyber Assets <a href="#">[Archive]</a>	PCA	11/26/12		One or more Cyber Assets connected using a routable protocol within or on an Electronic Security Perimeter that is not part of the highest impact BES Cyber System within the same Electronic Security Perimeter. The impact rating of Protected Cyber Assets is equal to the highest rated BES Cyber System in the same ESP. A Cyber Asset is not a Protected Cyber Asset if, for 30 consecutive calendar days or less, it is connected either to a Cyber Asset within the ESP or to the network within the ESP, and it is used for data transfer, vulnerability assessment, maintenance, or troubleshooting purposes.
Protection System <a href="#">[Archive]</a>		2/7/2006	3/17/2007 Will be retired 4/1/2013	Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Protection System <sup>4</sup> <a href="#">[Archive]</a> <a href="#">[Implementation Plan]</a>		11/19/2010	2/3/2012	Protection System – <ul style="list-style-type: none"> <li>• Protective relays which respond to electrical quantities,</li> <li>• Communications systems necessary for correct operation of protective functions</li> <li>• Voltage and current sensing devices providing inputs to protective relays,</li> <li>• Station dc supply associated with protective functions (including batteries, battery chargers, and non-battery-based dc supply), and</li> <li>• Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</li> </ul>

<sup>4</sup> This term becomes effective on April 1, 2013.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Protection System Maintenance Program <a href="#">[Archive]</a>	PSMP	11/7/2012		<p>An ongoing program by which Protection System components are kept in working order and proper operation of malfunctioning components is restored. A maintenance program for a specific component includes one or more of the following activities:</p> <p>Verify — Determine that the component is functioning correctly.</p> <p>Monitor — Observe the routine in-service operation of the component.</p> <p>Test — Apply signals to a component to observe functional performance or output behavior, or to diagnose problems.</p> <p>Inspect — Examine for signs of component failure, reduced performance or degradation.</p> <p>Calibrate — Adjust the operating threshold or measurement accuracy of a measuring element to meet the intended performance requirement.</p>
Pseudo-Tie <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A telemetered reading or value that is updated in real time and used as a “virtual” tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.
Purchasing-Selling Entity <a href="#">[Archive]</a>	PSE	2/8/2005	3/16/2007	The entity that purchases or sells, and takes title to, energy, capacity, and Interconnected Operations Services. Purchasing-Selling Entities may be affiliated or unaffiliated merchants and may or may not own generating facilities.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Ramp Rate or Ramp <a href="#">[Archive]</a>		2/8/2005	3/16/2007	(Schedule) The rate, expressed in megawatts per minute, at which the interchange schedule is attained during the ramp period.  (Generator) The rate, expressed in megawatts per minute, that a generator changes its output.
Rated Electrical Operating Conditions <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The specified or reasonably anticipated conditions under which the electrical system or an individual electrical circuit is intend/ designed to operate
Rating <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The operational limits of a transmission system element under a set of specified conditions.
Rated System Path Methodology <a href="#">[Archive]</a>		08/22/2008	11/24/2009	The Rated System Path Methodology is characterized by an initial Total Transfer Capability (TTC), determined via simulation. Capacity Benefit Margin, Transmission Reliability Margin, and Existing Transmission Commitments are subtracted from TTC, and Postbacks and counterflows are added as applicable, to derive Available Transfer Capability. Under the Rated System Path Methodology, TTC results are generally reported as specific transmission path capabilities.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Reactive Power <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The portion of electricity that establishes and sustains the electric and magnetic fields of alternating-current equipment. Reactive power must be supplied to most types of magnetic equipment, such as motors and transformers. It also must supply the reactive losses on transmission facilities. Reactive power is provided by generators, synchronous condensers, or electrostatic equipment such as capacitors and directly influences electric system voltage. It is usually expressed in kilovars (kvar) or megavars (Mvar).
Real Power <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The portion of electricity that supplies energy to the load.
Reallocation <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The total or partial curtailment of Transactions during TLR Level 3a or 5a to allow Transactions using higher priority to be implemented.
Real-time <a href="#">[Archive]</a>		2/7/2006	3/16/2007	Present time as opposed to future time. (From Interconnection Reliability Operating Limits standard.)
Real-time Assessment <a href="#">[Archive]</a>		10/17/2008	3/17/2011	An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data
Receiving Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Balancing Authority importing the Interchange.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Regional Reliability Organization <a href="#">[Archive]</a>	RRO	2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. An entity that ensures that a defined area of the Bulk Electric System is reliable, adequate and secure.</li> <li>2. A member of the North American Electric Reliability Council. The Regional Reliability Organization can serve as the Compliance Monitor.</li> </ol>
Regional Reliability Plan <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The plan that specifies the Reliability Coordinators and Balancing Authorities within the Regional Reliability Organization, and explains how reliability coordination will be accomplished.
Regulating Reserve <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An amount of reserve responsive to Automatic Generation Control, which is sufficient to provide normal regulating margin.
Regulation Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The process whereby one Balancing Authority contracts to provide corrective response to all or a portion of the ACE of another Balancing Authority. The Balancing Authority providing the response assumes the obligation of meeting all applicable control criteria as specified by NERC for itself and the Balancing Authority for which it is providing the Regulation Service.
Reliability Adjustment RFI <a href="#">[Archive]</a>		10/29/2008	12/17/2009	Request to modify an Implemented Interchange Schedule for reliability purposes.



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Reliability Coordinator <a href="#">[Archive]</a>	RC	2/8/2005	3/16/2007	The entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the Wide Area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator’s vision.
Reliability Coordinator Area <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.
Reliability Coordinator Information System <a href="#">[Archive]</a>	RCIS	2/8/2005	3/16/2007	The system that Reliability Coordinators use to post messages and share operating information in real time.
Reliability Directive <a href="#">[Archive]</a>		8/16/2012		A communication initiated by a Reliability Coordinator, Transmission Operator, or Balancing Authority where action by the recipient is necessary to address an Emergency or Adverse Reliability Impact.
Remedial Action Scheme <a href="#">[Archive]</a>	RAS	2/8/2005	3/16/2007	See “Special Protection System”
Reportable Cyber Security Incident <a href="#">[Archive]</a>		11/26/12		A Cyber Security Incident that has compromised or disrupted one or more reliability tasks of a functional entity.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Reportable Disturbance <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Any event that causes an ACE change greater than or equal to 80% of a Balancing Authority's or reserve sharing group's most severe contingency. The definition of a reportable disturbance is specified by each Regional Reliability Organization. This definition may not be retroactively adjusted in response to observed performance.
Request for Interchange <a href="#">[Archive]</a>	RFI	5/2/2006	3/16/2007	A collection of data as defined in the NAESB RFI Datasheet, to be submitted to the Interchange Authority for the purpose of implementing bilateral Interchange between a Source and Sink Balancing Authority.
Reserve Sharing Group <a href="#">[Archive]</a>	RSG	2/8/2005	3/16/2007	A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating reserves required for each Balancing Authority's use in recovering from contingencies within the group. Scheduling energy from an Adjacent Balancing Authority to aid recovery need not constitute reserve sharing provided the transaction is ramped in over a period the supplying party could reasonably be expected to load generation in (e.g., ten minutes). If the transaction is ramped in quicker (e.g., between zero and ten minutes) then, for the purposes of Disturbance Control Performance, the Areas become a Reserve Sharing Group.
Resource Planner <a href="#">[Archive]</a>	RP	2/8/2005	3/16/2007	The entity that develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Response Rate <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Ramp Rate that a generating unit can achieve under normal operating conditions expressed in megawatts per minute (MW/Min).
Right-of-Way <a href="#">[Archive]</a>	ROW	2/7/2006	3/16/2007	A corridor of land on which electric lines may be located. The Transmission Owner may own the land in fee, own an easement, or have certain franchise, prescription, or license rights to construct and maintain lines.
Right-of-Way <a href="#">[Archive]</a>	ROW	11/3/2011		The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the Transmission Owner's legal rights but may be less based on the aforementioned criteria.
Right-of-Way <a href="#">[Archive]</a>	ROW	5/9/12		The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the applicable Transmission Owner's or applicable Generator Owner's legal rights but may be less based on the aforementioned criteria.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Scenario <a href="#">[Archive]</a>		2/7/2006	3/16/2007	Possible event.
Schedule <a href="#">[Archive]</a>		2/8/2005	3/16/2007	(Verb) To set up a plan or arrangement for an Interchange Transaction. (Noun) An Interchange Schedule.
Scheduled Frequency <a href="#">[Archive]</a>		2/8/2005	3/16/2007	60.0 Hertz, except during a time correction.
Scheduling Entity <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An entity responsible for approving and implementing Interchange Schedules.
Scheduling Path <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Transmission Service arrangements reserved by the Purchasing-Selling Entity for a Transaction.
Sending Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Balancing Authority exporting the Interchange.
Sink Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Balancing Authority in which the load (sink) is located for an Interchange Transaction. (This will also be a Receiving Balancing Authority for the resulting Interchange Schedule.)
Source Balancing Authority <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The Balancing Authority in which the generation (source) is located for an Interchange Transaction. (This will also be a Sending Balancing Authority for the resulting Interchange Schedule.)

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Special Protection System (Remedial Action Scheme) <a href="#">[Archive]</a>	SPS	2/8/2005	3/16/2007	An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and Mvar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.
Spinning Reserve <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Unloaded generation that is synchronized and ready to serve additional demand.
Stability <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The ability of an electric system to maintain a state of equilibrium during normal and abnormal conditions or disturbances.
Stability Limit <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The maximum power flow possible through some particular point in the system while maintaining stability in the entire system or the part of the system to which the stability limit refers.
Supervisory Control and Data Acquisition <a href="#">[Archive]</a>	SCADA	2/8/2005	3/16/2007	A system of remote control and telemetry used to monitor and control the transmission system.
Supplemental Regulation Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A method of providing regulation service in which the Balancing Authority providing the regulation service receives a signal representing all or a portion of the other Balancing Authority's ACE.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Surge <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A transient variation of current, voltage, or power flow in an electric circuit or across an electric system.
Sustained Outage <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The deenergized condition of a transmission line resulting from a fault or disturbance following an unsuccessful automatic reclosing sequence and/or unsuccessful manual reclosing procedure.
System <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A combination of generation, transmission, and distribution components.
System Operating Limit <a href="#">[Archive]</a>	SOL	2/8/2005	3/16/2007	The value (such as MW, MVar, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to: <ul style="list-style-type: none"> <li>• Facility Ratings (Applicable pre- and post-Contingency equipment or facility ratings)</li> <li>• Transient Stability Ratings (Applicable pre- and post-Contingency Stability Limits)</li> <li>• Voltage Stability Ratings (Applicable pre- and post-Contingency Voltage Stability)</li> <li>• System Voltage Limits (Applicable pre- and post-Contingency Voltage Limits)</li> </ul>
System Operator <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An individual at a control center (Balancing Authority, Transmission Operator, Generator Operator, Reliability Coordinator) whose responsibility it is to monitor and control that electric system in real time.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Telemetry <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The process by which measurable electrical quantities from substations and generating stations are instantaneously transmitted to the control center, and by which operating commands from the control center are transmitted to the substations and generating stations.
Thermal Rating <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The maximum amount of electrical current that a transmission line or electrical facility can conduct over a specified time period before it sustains permanent damage by overheating or before it sags to the point that it violates public safety requirements.
Tie Line <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A circuit connecting two Balancing Authority Areas.
Tie Line Bias <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A mode of Automatic Generation Control that allows the Balancing Authority to 1.) maintain its Interchange Schedule and 2.) respond to Interconnection frequency error.
Time Error <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The difference between the Interconnection time measured at the Balancing Authority(ies) and the time specified by the National Institute of Standards and Technology. Time error is caused by the accumulation of Frequency Error over a given period.
Time Error Correction <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An offset to the Interconnection's scheduled frequency to return the Interconnection's Time Error to a predetermined value.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
TLR Log <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Report required to be filed after every TLR Level 2 or higher in a specified format. The NERC IDC prepares the report for review by the issuing Reliability Coordinator. After approval by the issuing Reliability Coordinator, the report is electronically filed in a public area of the NERC Web site.
Total Flowgate Capability <a href="#">[Archive]</a>	TFC	08/22/2008	11/24/2009	The maximum flow capability on a Flowgate, is not to exceed its thermal rating, or in the case of a flowgate used to represent a specific operating constraint (such as a voltage or stability limit), is not to exceed the associated System Operating Limit.
Total Transfer Capability <a href="#">[Archive]</a>	TTC	2/8/2005	3/16/2007	The amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions.
Transaction <a href="#">[Archive]</a>		2/8/2005	3/16/2007	See Interchange Transaction.
Transfer Capability <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The measure of the ability of interconnected electric systems to move or transfer power <i>in a reliable manner</i> from one area to another over all transmission lines (or paths) between those areas under specified system conditions. The units of transfer capability are in terms of electric power, generally expressed in megawatts (MW). The transfer capability from "Area A" to "Area B" is <i>not</i> generally equal to the transfer capability from "Area B" to "Area A."



Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Transfer Distribution Factor <a href="#">[Archive]</a>		2/8/2005	3/16/2007	See Distribution Factor.
Transmission <a href="#">[Archive]</a>		2/8/2005	3/16/2007	An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
Transmission Constraint <a href="#">[Archive]</a>		2/8/2005	3/16/2007	A limitation on one or more transmission elements that may be reached during normal or contingency system operations.
Transmission Customer <a href="#">[Archive]</a>		2/8/2005	3/16/2007	<ol style="list-style-type: none"> <li>1. Any eligible customer (or its designated agent) that can or does execute a transmission service agreement or can or does receive transmission service.</li> <li>2. Any of the following responsible entities: Generator Owner, Load-Serving Entity, or Purchasing-Selling Entity.</li> </ol>
Transmission Line <a href="#">[Archive]</a>		2/7/2006	3/16/2007	A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances.
Transmission Operator <a href="#">[Archive]</a>	TOP	2/8/2005	3/16/2007	The entity responsible for the reliability of its "local" transmission system, and that operates or directs the operations of the transmission facilities.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Transmission Operator Area <a href="#">[Archive]</a>		08/22/2008	11/24/2009	The collection of Transmission assets over which the Transmission Operator is responsible for operating.
Transmission Owner <a href="#">[Archive]</a>	TO	2/8/2005	3/16/2007	The entity that owns and maintains transmission facilities.
Transmission Planner <a href="#">[Archive]</a>	TP	2/8/2005	3/16/2007	The entity that develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area.
Transmission Reliability Margin <a href="#">[Archive]</a>	TRM	2/8/2005	3/16/2007	The amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.
Transmission Reliability Margin Implementation Document <a href="#">[Archive]</a>	TRMID	08/22/2008	11/24/2009	A document that describes the implementation of a Transmission Reliability Margin methodology, and provides information related to a Transmission Operator's calculation of TRM.
Transmission Service <a href="#">[Archive]</a>		2/8/2005	3/16/2007	Services provided to the Transmission Customer by the Transmission Service Provider to move energy from a Point of Receipt to a Point of Delivery.
Transmission Service Provider <a href="#">[Archive]</a>	TSP	2/8/2005	3/16/2007	The entity that administers the transmission tariff and provides Transmission Service to Transmission Customers under applicable transmission service agreements.

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Vegetation <a href="#">[Archive]</a>		2/7/2006	3/16/2007	All plant material, growing or not, living or dead.
Vegetation Inspection <a href="#">[Archive]</a>		2/7/2006	3/16/2007	The systematic examination of a transmission corridor to document vegetation conditions.
Vegetation Inspection <a href="#">[Archive]</a>		11/3/2011		The systematic examination of vegetation conditions on a Right-of-Way and those vegetation conditions under the Transmission Owner's control that are likely to pose a hazard to the line(s) prior to the next planned maintenance or inspection. This may be combined with a general line inspection.
Vegetation Inspection <a href="#">[Archive]</a>		5/9/12		The systematic examination of vegetation conditions on a Right-of-Way and those vegetation conditions under the applicable Transmission Owner's or applicable Generator Owner's control that are likely to pose a hazard to the line(s) prior to the next planned maintenance or inspection. This may be combined with a general line inspection.
Wide Area <a href="#">[Archive]</a>		2/8/2005	3/16/2007	The entire Reliability Coordinator Area as well as the critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of Interconnected Reliability Operating Limits.
Year One <a href="#">[Archive]</a>		1/24/2011	11/17/2011	The first twelve month period that a Planning Coordinator or a Transmission Planner is responsible for assessing. For an assessment started in a given calendar year, Year One includes the forecasted peak Load period for one of the following two calendar years. For example, if a Planning Assessment was started in 2011, then Year One includes the forecasted peak Load period for either 2012 or 2013.

### ReliabilityFirst Regional Definitions

The following definitions were developed for use in ReliabilityFirst Regional Standards.

RFC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Resource Adequacy <a href="#">[Archive]</a>		08/05/2009	03/17/2011	The ability of supply-side and demand-side resources to meet the aggregate electrical demand (including losses)
Net Internal Demand <a href="#">[Archive]</a>		08/05/2009	03/17/2011	Total of all end-use customer demand and electric system losses within specified metered boundaries, less Direct Control Management and Interruptible Demand
Peak Period <a href="#">[Archive]</a>		08/05/2009	03/17/2011	A period consisting of two (2) or more calendar months but less than seven (7) calendar months, which includes the period during which the responsible entity's annual peak demand is expected to occur
Wind Generating Station <a href="#">[Archive]</a>		11/03/2011		A collection of wind turbines electrically connected together and injecting energy into the grid at one point, sometimes known as a "Wind Farm."
Year One <a href="#">[Archive]</a>		08/05/2009	03/17/2011	The planning year that begins with the upcoming annual Peak Period

### **NPCC Regional Definitions**

The following definitions were developed for use in NPCC Regional Standards.

<b>NPCC Regional Term</b>	<b>Acronym</b>	<b>BOT Approved Date</b>	<b>FERC Approved Date</b>	<b>Definition</b>
Current Zero Time <a href="#">[Archive]</a>		11/04/2010	10/20/2011	The time of the final current zero on the last phase to interrupt.
Generating Plant <a href="#">[Archive]</a>		11/04/2010	10/20/2011	One or more generators at a single physical location whereby any single contingency can affect all the generators at that location.

## WECC Regional Definitions

The following definitions were developed for use in WECC Regional Standards.

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Area Control Error <sup>†</sup> <a href="#">[Archive]</a>	ACE	3/12/2007	6/8/2007	Means the instantaneous difference between net actual and scheduled interchange, taking into account the effects of Frequency Bias including correction for meter error.
Automatic Generation Control <sup>‡</sup> <a href="#">[Archive]</a>	AGC	3/12/2007	6/8/2007	Means equipment that automatically adjusts a Control Area's generation from a central location to maintain its interchange schedule plus Frequency Bias.
Automatic Time Error Correction <a href="#">[Archive]</a>		3/26/2008	5/21/2009	A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.
Automatic Time Error Correction <a href="#">[Archive]</a>		12/19/2012		The addition of a component to the ACE equation that modifies the control point for the purpose of continuously paying back Primary Inadvertent Interchange to correct accumulated time error.
Average Generation <sup>‡</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means the total MWh generated within the Balancing Authority Operator's Balancing Authority Area during the prior year divided by 8760 hours (8784 hours if the prior year had 366 days).
Business Day <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means any day other than Saturday, Sunday, or a legal public holiday as designated in section 6103 of title 5, U.S. Code.

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Commercial Operation <a href="#">[Archive]</a>		10/29/2008	4/21/2011	Achievement of this designation indicates that the Generator Operator or Transmission Operator of the synchronous generator or synchronous condenser has received all approvals necessary for operation after completion of initial start-up testing.
Contributing Schedule <a href="#">[Archive]</a>		2/10/2009	3/17/2011	A Schedule not on the Qualified Transfer Path between a Source Balancing Authority and a Sink Balancing Authority that contributes unscheduled flow across the Qualified Transfer Path.
Dependability-Based Misoperation <a href="#">[Archive]</a>		10/29/2008	4/21/2011	Is the absence of a Protection System or RAS operation when intended. Dependability is a component of reliability and is the measure of a device's certainty to operate when required.
Disturbance <sup>‡</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means (i) any perturbation to the electric system, or (ii) the unexpected change in ACE that is caused by the sudden loss of generation or interruption of load.

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Extraordinary Contingency <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Shall have the meaning set out in Excuse of Performance, section B.4.c. language in section B.4.c: <i>means any act of God, actions by a non-affiliated third party, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, earthquake, explosion, accident to or breakage, failure or malfunction of machinery or equipment, or any other cause beyond the Reliability Entity's reasonable control; provided that prudent industry standards (e.g. maintenance, design, operation) have been employed; and provided further that no act or cause shall be considered an Extraordinary Contingency if such act or cause results in any contingency contemplated in any WECC Reliability Standard (e.g., the "Most Severe Single Contingency" as defined in the WECC Reliability Criteria or any lesser contingency).</i>
Frequency Bias <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means a value, usually given in megawatts per 0.1 Hertz, associated with a Control Area that relates the difference between scheduled and actual frequency to the amount of generation required to correct the difference.
Functionally Equivalent Protection System <a href="#">[Archive]</a>	FEPS	10/29/2008	4/21/2011	A Protection System that provides performance as follows: <ul style="list-style-type: none"> <li>• Each Protection System can detect the same faults within the zone of protection and provide the clearing times and coordination needed to comply with all Reliability Standards.</li> <li>• Each Protection System may have different components and operating characteristics.</li> </ul>
Functionally Equivalent RAS <a href="#">[Archive]</a>	FERAS	10/29/2008	4/21/2011	A Remedial Action Scheme ("RAS") that provides the same performance as follows: <ul style="list-style-type: none"> <li>• Each RAS can detect the same conditions and provide</li> </ul>



WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
				mitigation to comply with all Reliability Standards. <ul style="list-style-type: none"> <li>• Each RAS may have different components and operating characteristics.</li> </ul>
Generating Unit Capability <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means the MVA nameplate rating of a generator.
Non-spinning Reserve <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means that Operating Reserve not connected to the system but capable of serving demand within a specified time, or interruptible load that can be removed from the system in a specified time.
Normal Path Rating <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Is the maximum path rating in MW that has been demonstrated to WECC through study results or actual operation, whichever is greater. For a path with transfer capability limits that vary seasonally, it is the maximum of all the seasonal values.
Operating Reserve <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means that capability above firm system demand required to provide for regulation, load-forecasting error, equipment forced and scheduled outages and local area protection. Operating Reserve consists of Spinning Reserve and Nonspinning Reserve.
Operating Transfer Capability Limit <sup>†</sup> <a href="#">[Archive]</a>	OTC	3/12/2007	6/8/2007	Means the maximum value of the most critical system operating parameter(s) which meets: (a) precontingency criteria as determined by equipment loading capability and acceptable voltage conditions, (b) transient criteria as determined by equipment loading capability and acceptable voltage conditions, (c) transient performance criteria, and (d) post-contingency loading and voltage criteria.

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Primary Inadvertent Interchange <a href="#">[Archive]</a>		3/26/2008	5/21/2009	The component of area (n) inadvertent interchange caused by the regulating deficiencies of the area (n).
Qualified Controllable Device <a href="#">[Archive]</a>		2/10/2009	3/17/2011	A controllable device installed in the Interconnection for controlling energy flow and the WECC Operating Committee has approved using the device for controlling the USF on the Qualified Transfer Paths.
Qualified Transfer Path <a href="#">[Archive]</a>		2/10/2009	3/17/2011	A transfer path designated by the WECC Operating Committee as being qualified for WECC unscheduled flow mitigation.
Qualified Transfer Path Curtailment Event <a href="#">[Archive]</a>		2/10/2009	3/17/2011	Each hour that a Transmission Operator calls for Step 4 or higher for one or more consecutive hours (See Attachment 1 IRO-006-WECC-1) during which the curtailment tool is functional.
Relief Requirement <a href="#">[Archive]</a>		2/10/2009	3/17/2011	The expected amount of the unscheduled flow reduction on the Qualified Transfer Path that would result by curtailing each Sink Balancing Authority's Contributing Schedules by the percentages listed in the columns of WECC Unscheduled Flow Mitigation Summary of Actions Table in Attachment 1 WECC IRO-006-WECC-1.
Secondary Inadvertent Interchange <a href="#">[Archive]</a>		3/26/2008	5/21/2009	The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).
Security-Based Misoperation		10/29/2008	4/21/2011	A Misoperation caused by the incorrect operation of a Protection System or RAS. Security is a component of reliability

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
<a href="#">[Archive]</a>				and is the measure of a device’s certainty not to operate falsely.
Spinning Reserve <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means unloaded generation which is synchronized and ready to serve additional demand. It consists of Regulating reserve and Contingency reserve (as each are described in Sections B.a.i and ii).
Transfer Distribution Factor <a href="#">[Archive]</a>	TDF	2/10/2009	3/17/2011	The percentage of USF that flows across a Qualified Transfer Path when an Interchange Transaction (Contributing Schedule) is implemented. [See the WECC Unscheduled Flow Mitigation Summary of Actions Table (Attachment 1 WECC IRO-006-WECC-1).]
WECC Table 2 <sup>†</sup> <a href="#">[Archive]</a>		3/12/2007	6/8/2007	Means the table maintained by the WECC identifying those transfer paths monitored by the WECC regional Reliability coordinators. As of the date set out therein, the transmission paths identified in Table 2 are as listed in Attachment A to this Standard.

Endnotes

<sup>†</sup> FERC approved the WECC Tier One Reliability Standards in the Order Approving Regional Reliability Standards for the Western Interconnection and Directing Modifications, 119 FERC ¶ 61,260 (June 8, 2007). In that Order, FERC directed WECC to address the inconsistencies between the regional definitions and the NERC Glossary in developing permanent replacement standards. The replacement standards designed to address the shortcomings were filed with FERC in 2009.

**Exhibit C**

**Informational Summary of Each Reliability Standard Applicable to Nova Scotia,  
Approved by FERC in Fourth Quarter 2012**

**EXHIBIT C: Informational Summary of Reliability Standard Applicable to Nova Scotia, Approved by FERC in Fourth Quarter 2012**

**CIP-004-3a and CIP-004-4a** - This standard requires that personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness. Standard CIP-004-4 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3 (and CIP-002-4 and CIP-009-4).

Applicability:

- Reliability Coordinator.
- Balancing Authority.
- Interchange Authority.
- Transmission Service Provider.
- Transmission Owner.
- Transmission Operator.
- Generator Owner.
- Generator Operator.
- Load Serving Entity.
- NERC.
- Regional Entity.

On December 12, 2012, the interpretation to Requirements R2, R3, and R4 of CIP-004 was approved by the Federal Energy Regulatory Commission.