

## 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**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
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	
4a	8/12/13	FERC Order issued granting an extension of time on CIP V4 Reliability Standards. This order extends the enforcement date from April 1, 2014 to October 1, 2014.	

**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>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> <p>Answer: As written, all cyber access to Critical Cyber Assets must be authorized, and all authorized</p>

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.