

A. Introduction

1. **Title:** Cyber Security — Physical Security of Critical Cyber Assets
2. **Number:** CIP-006-2c
3. **Purpose:** Standard CIP-006-2 is intended to ensure the implementation of a physical security program for the protection of Critical Cyber Assets. Standard CIP-006-2 should be read as part of a group of standards numbered Standards CIP-002-2 through CIP-009-2.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-006-2, “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-006-2:
 - 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-002-2, 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. Physical Security Plan — The Responsible Entity shall document, implement, and maintain a physical security plan, approved by the senior manager or delegate(s) that shall address, at a minimum, the following:
 - R1.1. All Cyber Assets within an Electronic Security Perimeter shall reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to such Cyber Assets.

- R1.2.** Identification of all physical access points through each Physical Security Perimeter and measures to control entry at those access points.
- R1.3.** Processes, tools, and procedures to monitor physical access to the perimeter(s).
- R1.4.** Appropriate use of physical access controls as described in Requirement R4 including visitor pass management, response to loss, and prohibition of inappropriate use of physical access controls.
- R1.5.** Review of access authorization requests and revocation of access authorization, in accordance with CIP-004-2 Requirement R4.
- R1.6.** Continuous escorted access within the Physical Security Perimeter of personnel not authorized for unescorted access.
- R1.7.** Update of the physical security plan within thirty calendar days of the completion of any physical security system redesign or reconfiguration, including, but not limited to, addition or removal of access points through the Physical Security Perimeter, physical access controls, monitoring controls, or logging controls.
- R1.8.** Annual review of the physical security plan.
- R2.** Protection of Physical Access Control Systems — Cyber Assets that authorize and/or log access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access point such as electronic lock control mechanisms and badge readers, shall:
 - R2.1.** Be protected from unauthorized physical access.
 - R2.2.** Be afforded the protective measures specified in Standard CIP-003-2; Standard CIP-004-2 Requirement R3; Standard CIP-005-2 Requirements R2 and R3; Standard CIP-006-2 Requirements R4 and R5; Standard CIP-007-2; Standard CIP-008-2; and Standard CIP-009-2.
- R3.** Protection of Electronic Access Control Systems — Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall reside within an identified Physical Security Perimeter.
- R4.** Physical Access Controls — The Responsible Entity shall document and implement the operational and procedural controls to manage physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. The Responsible Entity shall implement one or more of the following physical access methods:
 - Card Key: A means of electronic access where the access rights of the card holder are predefined in a computer database. Access rights may differ from one perimeter to another.
 - Special Locks: These include, but are not limited to, locks with “restricted key” systems, magnetic locks that can be operated remotely, and “man-trap” systems.
 - Security Personnel: Personnel responsible for controlling physical access who may reside on-site or at a monitoring station.
 - Other Authentication Devices: Biometric, keypad, token, or other equivalent devices that control physical access to the Critical Cyber Assets.
- R5.** Monitoring Physical Access — The Responsible Entity shall document and implement the technical and procedural controls for monitoring physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. Unauthorized access

attempts shall be reviewed immediately and handled in accordance with the procedures specified in Requirement CIP-008-2. One or more of the following monitoring methods shall be used:

- Alarm Systems: Systems that alarm to indicate a door, gate or window has been opened without authorization. These alarms must provide for immediate notification to personnel responsible for response.
 - Human Observation of Access Points: Monitoring of physical access points by authorized personnel as specified in Requirement R4.
- R6.** Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:
- Computerized Logging: Electronic logs produced by the Responsible Entity's selected access control and monitoring method.
 - Video Recording: Electronic capture of video images of sufficient quality to determine identity.
 - Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R4.
- R7.** Access Log Retention — The responsible entity shall retain physical access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-2.
- R8.** Maintenance and Testing — The Responsible Entity shall implement a maintenance and testing program to ensure that all physical security systems under Requirements R4, R5, and R6 function properly. The program must include, at a minimum, the following:
- R8.1.** Testing and maintenance of all physical security mechanisms on a cycle no longer than three years.
 - R8.2.** Retention of testing and maintenance records for the cycle determined by the Responsible Entity in Requirement R8.1.
 - R8.3.** Retention of outage records regarding access controls, logging, and monitoring for a minimum of one calendar year.

C. Measures

- M1.** The Responsible Entity shall make available the physical security plan as specified in Requirement R1 and documentation of the implementation, review and updating of the plan.
- M2.** The Responsible Entity shall make available documentation that the physical access control systems are protected as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation that the electronic access control systems are located within an identified Physical Security Perimeter as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation identifying the methods for controlling physical access to each access point of a Physical Security Perimeter as specified in Requirement R4.
- M5.** The Responsible Entity shall make available documentation identifying the methods for monitoring physical access as specified in Requirement R5.

- M6.** The Responsible Entity shall make available documentation identifying the methods for logging physical access as specified in Requirement R6.
- M7.** The Responsible Entity shall make available documentation to show retention of access logs as specified in Requirement R7.
- M8.** The Responsible Entity shall make available documentation to show its implementation of a physical security system maintenance and testing program as specified in Requirement R8.

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 Entities.
- 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 documents other than those specified in Requirements R7 and R8.2 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.
- 1.4.2** 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

- 1.5.1** The Responsible Entity may not make exceptions in its cyber security policy to the creation, documentation, or maintenance of a physical security plan.
- 1.5.2** For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall not be required to comply with Standard CIP-006-2 for that single access point at the dial-up device.

2. Violation Severity Levels (Under development by the CIP VSL Drafting Team)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		<p>Modifications to remove extraneous information from the requirements, improve readability, and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Replaced the RRO with RE as a responsible entity.</p> <p>Modified CIP-006-1 Requirement R1 to clarify that a physical security plan to protect Critical Cyber Assets must be documented, maintained, <u>implemented</u> and approved by the senior manager.</p> <p>Revised the wording in R1.2 to identify all “physical” access points. Added Requirement R2 to CIP-006-2 to clarify the requirement to safeguard the Physical Access Control Systems and exclude hardware at the Physical Security Perimeter access point, such as electronic lock control mechanisms and badge readers from the requirement. Requirement R2.1 requires the Responsible Entity to protect the Physical Access Control Systems from unauthorized access. CIP-006-1 Requirement R1.8 was moved to become CIP-006-2 Requirement R2.2.</p> <p>Added Requirement R3 to CIP-006-2, clarifying the requirement for Electronic Access Control Systems to be safeguarded within an identified Physical Security Perimeter.</p> <p>The sub requirements of CIP-006-2 Requirements R4, R5, and R6 were changed from formal requirements to bulleted lists of options consistent with the intent of the requirements.</p> <p>Changed the Compliance Monitor to Compliance Enforcement Authority.</p>	
2	May 6, 2009	Adopted by NERC Board of Trustees	Revised
1a	February 12, 2008	Added Appendix 1: Interpretation of R1 and Additional Compliance Information Section 1.4.4 as adopted by the Board of Trustees	Addition
1b	August 5, 2009	Added Appendix 2: Interpretation of R4 as adopted by the Board of Trustees	Addition
1c	February 16, 2010	Added Appendix3: Interpretation of R1 and R1.1 as adopted by the Board of Trustees	Addition
2c	July 15, 2010	Approved by FERC; added effective date	Update

Appendix 1

Interpretation of Requirement R1.1.

Request: *Are dial-up RTUs that use non-routable protocols and have dial-up access required to have a six-wall perimeters or are they exempted from CIP-006-1 and required to have only electronic security perimeters? This has a direct impact on how any identified RTUs will be physically secured.*

Interpretation:

Dial-up assets are Critical Cyber Assets, assuming they meet the criteria in CIP-002-1, and they must reside within an Electronic Security Perimeter. However, physical security control over a critical cyber asset is not required if that asset does not have a routable protocol. Since there is minimal risk of compromising other critical cyber assets dial-up devices such as Remote Terminals Units that do not use routable protocols are not required to be enclosed within a “six-wall” border.

CIP-006-1 — Requirement 1.1 requires a Responsible Entity to have a physical security plan that stipulate cyber assets that are within the Electronic Security Perimeter also be within a Physical Security Perimeter.

R1. Physical Security Plan — The Responsible Entity shall create and maintain a physical security plan, approved by a senior manager or delegate(s) that shall address, at a minimum, the following:

R1.1. Processes to ensure and document that all Cyber Assets within an Electronic Security Perimeter also reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to the Critical Cyber Assets.

CIP-006-1 — Additional Compliance Information 1.4.4 identifies dial-up accessible assets that use non-routable protocols as a special class of cyber assets that are not subject to the Physical Security Perimeter requirement of this standard.

1.4. Additional Compliance Information

1.4.4 For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall not be required to comply with Standard CIP-006 for that single access point at the dial-up device.

Appendix 2

The following interpretation of CIP-006-1a — Cyber Security — Physical Security of Critical Cyber Assets, Requirement R4 was developed by the standard drafting team assigned to Project 2008-14 (Cyber Security Violation Severity Levels) on October 23, 2008.

Request:

1. *For physical access control to cyber assets, does this include monitoring when an individual leaves the controlled access cyber area?*
2. *Does the term, “time of access” mean logging when the person entered the facility or does it mean logging the entry/exit time and “length” of time the person had access to the critical asset?*

Interpretation:

No, monitoring and logging of access are only required for ingress at this time. The term “time of access” refers to the time an authorized individual enters the physical security perimeter.

Requirement Number and Text of Requirement

- R4. Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:**
- R4.1. Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method.**
 - R4.2. Video Recording: Electronic capture of video images of sufficient quality to determine identity.**
 - R4.3. Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R2.3.**

Appendix 3

Requirement Number and Text of Requirement
<p>R1. Physical Security Plan — The Responsible Entity shall create and maintain a physical security plan, approved by a senior manager or delegate(s) that shall address, at a minimum, the following:</p> <p style="padding-left: 40px;">R1.1. Processes to ensure and document that all Cyber Assets within an Electronic Security Perimeter also reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to the Critical Cyber Assets.</p>
Question
<p>If a completely enclosed border cannot be created, what does the phrase, “to control physical access” require? Must the alternative measure be physical in nature? If so, must the physical barrier literally prevent physical access e.g. using concrete encased fiber, or can the alternative measure effectively mitigate the risks associated with physical access through cameras, motions sensors, or encryption?</p> <p>Does this requirement preclude the application of logical controls as an alternative measure in mitigating the risks of physical access to Critical Cyber Assets?</p>
Response
<p>For Electronic Security Perimeter wiring external to a Physical Security Perimeter, the drafting team interprets the Requirement R1.1 as not limited to measures that are “physical in nature.” The alternative measures may be physical or logical, on the condition that they provide security equivalent or better to a completely enclosed (“six-wall”) border. Alternative physical control measures may include, but are not limited to, multiple physical access control layers within a non-public, controlled space. Alternative logical control measures may include, but are not limited to, data encryption and/or circuit monitoring to detect unauthorized access or physical tampering.</p>