



December 8, 2009

VIA ELECTRONIC FILING

Kirsten Walli, Board Secretary
Ontario Energy Board
P.O Box 2319
2300 Yonge Street
Toronto, Ontario, Canada
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Re: *North American Electric Reliability Corporation*

Dear Ms. Walli:

The North American Electric Reliability Corporation (“NERC”) hereby submits this petition seeking approval for interpretation of Requirement R1 in NERC Reliability Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, as set forth in **Exhibit A** to this petition. Upon approval, the standard that includes the interpretation will be referred to as PRC-005-1a.

The interpretation was approved by the NERC Board of Trustees on November 5, 2009. NERC requests this interpretation be made effective immediately upon approval.

NERC’s petition consists of the following:

- This transmittal letter;
- A table of contents for the filing;
- A narrative description explaining how the interpretation meets the reliability goal of the standard involved;
- Interpretation of PRC-005-1, Requirement R1 submitted for approval (**Exhibit A**);

- Reliability Standard PRC-005-1a — Transmission and Generation Protection System Maintenance and Testing that includes the appended interpretation (**Exhibit B**);
- The complete development record of the interpretation (**Exhibit C**); and
- A roster of the interpretation development team (**Exhibit D**).

Please contact the undersigned if you have any questions.

Respectfully submitted,

/s/ Holly A. Hawkins

Holly A. Hawkins

*Attorney for North American Electric
Reliability Corporation*

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| | Exhibit B — Reliability Standard PRC-005-1a — Transmission and Generation Protection System Maintenance and Testing that includes the appended interpretation. | |
| | Exhibit C — Complete Record of Development of the interpretation for Reliability Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1. | |
| | Exhibit D — Roster of the Interpretation Development Team. | |

I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”) hereby requests approval of an interpretation to a requirement of a NERC Reliability Standard:

- PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1

No modification to the language contained in this specific requirement is being proposed through the interpretation. The NERC Board of Trustees approved the interpretation to Reliability Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1 on November 5, 2009. NERC requests approval of PRC-005-1a that includes the appended interpretation, to be made effective immediately upon approval. **Exhibit A** to this filing sets forth the proposed interpretation. **Exhibit B** contains the affected Reliability Standard that includes the appended interpretation. **Exhibit C** contains the complete development record of the proposed interpretation to PRC-005-1, Requirement R1. **Exhibit D** contains a roster of the interpretation development team.

NERC filed this interpretation with the Federal Energy Regulatory Commission (“FERC”) on November 17, 2009, and is filing this interpretation with the other applicable governmental authorities in Canada.

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:

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III. BACKGROUND

a. Reliability Standards Development Procedure and Interpretation

All persons who are directly or materially affected by the reliability of the North American bulk power system are permitted to request an interpretation of a Reliability Standard, as discussed in NERC’s *Reliability Standards Development Procedure*, which is incorporated into the Rules of Procedure as Appendix 3A.¹ Upon request, NERC will assemble a team with the relevant expertise to address the interpretation request and, within 45 days, present the interpretation response for industry ballot. If approved by the ballot pool and the NERC Board of Trustees, the interpretation is appended to the Reliability Standard and filed for approval with the applicable governmental authorities to be made effective when approved. When the affected Reliability Standard is next revised using the Reliability Standards Development Process, the interpretation will then be incorporated into the Reliability Standard.

¹ See NERC’s *Reliability Standards Development Procedure*, Approved by the NERC Board of Trustees on March 12, 2007, and Effective June 7, 2007 (“*Reliability Standards Development Procedure*”), available at http://www.nerc.com/files/Appendix3A_StandardsDevelopmentProcess.pdf.

The interpretation set out in **Exhibit A** has been developed and approved by industry stakeholders using NERC's *Reliability Standards Development Procedure*. It was approved by the NERC Board of Trustees on November 5, 2009.

IV. Reliability Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1

The present filing includes the Reliability Standard PRC-005-1a that contains the appended interpretation in **Exhibit B**.

In Section IV (a), below, NERC discusses the proposed interpretation to the standard, and explains the need for the development of an interpretation to Requirement R1 in Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing. In this discussion, NERC demonstrates that the interpretation is consistent with the stated reliability goals of the FERC-approved standard.

Section IV (b) below, describes the stakeholder ballot results and an explanation of how stakeholder comments were considered and addressed by the interpretation development team assembled to provide the interpretation.

The complete development record for the interpretation is set forth in **Exhibit C**. **Exhibit C** includes the request for the interpretation, the response to the request for the interpretation, the ballot pool and the final ballot results by registered ballot body members, stakeholder comments received during the balloting and an explanation of how those comments were considered. **Exhibit D** contains a roster of the team members who worked on the interpretation.

a. Justification for Approval of Interpretation

The stated purpose of PRC-005-1 is “to ensure all transmission and generation Protection Systems affecting the reliability of the Bulk Electric System (BES) are

maintained and tested. More specifically, PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing requires the following:

Requirement R1 of the standard provides:

R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

R1.1. Maintenance and testing intervals and their basis.

R1.2. Summary of maintenance and testing procedures.

The term “Protection System” is defined in NERC’s Glossary of Terms as follows:

Protection System: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.

On January 30, 2009, the Regional Entities Compliance Monitoring Processes Working Group (“CMPWG”) submitted a request for an interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1. The focus of the request was on the definition of Protection System. The CPMWG request was assigned to the Project 2007-17 (Protection System Maintenance and Testing) standard drafting team. The specific questions and the responses to those questions are provided below:

Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?

Response: While battery chargers are vital for ensuring “station batteries” are available to support Protection System functions, they are not identified within the definition of “Protection Systems.” Therefore, PRC-005-1 does not currently require maintenance and testing of battery chargers.

Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e., transformer sudden pressure relays)

Response: *The existing definition of “Protection System” does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity’s maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.*

Does R1 require maintenance and testing of transmission line re-closing relays?

Response: *No. “Protective Relays” refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a “protective” function.*

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response: *PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.*

For R1, what are examples of “associated communications systems” that are part of “Protection Systems” that require a maintenance and testing program?

Response: *“Associated communication systems” refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection. Examples include the following:*

- communications equipment involved in power-line-carrier relaying*
- communications equipment involved in various types of permissive protection system applications*
- direct transfer-trip systems*
- digital communication systems (which would include the protection system communications functions of standard IEC 61850² as well as various proprietary systems)*

During its November 5, 2009 meeting, the NERC Board of Trustees offered guidance regarding interpretations and the interpretations process. As part of this guidance, the NERC Board of Trustees adopted the following resolution:

² IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations.

WHEREAS, the NERC Board of Trustees has considered the record of development of a number of proposed interpretations of reliability standards, the discussion and recommendations from the November 4, 2009 conference on interpretations, and the recommendation of NERC management,

RESOLVED, that the NERC Board of Trustees approves the following proposed interpretations of Reliability Standards:

1. Interpretation of Requirement R1 of PRC-005-1;
2. Interpretations of Requirement R3 of TOP-005-1 and Requirement R12 of IRO-005-1;
3. Interpretation of Requirement R2 of CIP-007-1;
4. Interpretation of Requirement R1.3.10 of TPL-002-0;
5. Interpretation of Requirements R2 and R8 of MOD-001-1; and Requirements R5 and R6 of MOD-029-1;

FURTHER RESOLVED, that the NERC Board of Trustees provides the following guidance regarding interpretations and the interpretations process:

- a. In deciding whether or not to approve a proposed interpretation, the board will use a standard of strict construction and not seek to expand the reach of the standard to correct a perceived gap or deficiency in the standard;
- b. It is the expectation of the board that when work on an interpretation reveals a gap or deficiency in a Reliability Standard, stakeholders will take prompt action to address the gap or deficiency in the standard and that the time and effort expended on the interpretation should be a relatively small proportion of the time and effort expended on addressing the gap or deficiency;
- c. Priority should be given to addressing deficiencies or gaps in standards that pose a significant risk to the reliability of the bulk power system — addressing the gaps and deficiencies identified in Reliability Standard PRC-005-1 should be given such priority, and the Standards Committee should report on its plans and progress in that regard at the board's February 2010 meeting;
- d. The Standards Committee should ensure that the comments by NERC staff and other stakeholders on the proposed interpretations are considered by the standard drafting team in addressing any identified gaps and deficiencies, with a report back to the board on the disposition of those comments;
- e. The number of registrants that might end up in non-compliance or the difficulty of compliance are not appropriate inputs to an

interpretation process, although those inputs may well be appropriate considerations in a standard development process and development of an implementation plan; and

- f. Requests for a decision on how a Reliability Standard applies to a registered entity's particular facts and circumstances should not be addressed through the interpretations process.

On this basis, NERC believes that the interpretation fairly represents the language in the standard. As presented, the interpretation clarifies what equipment is to be included in the maintenance and testing programs specified by this requirement with reference to the definition of Protection System in the NERC Glossary of Terms. This clarification helps to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a critical line of defense essential to the reliability of the bulk power system. Because the failure of Protection Systems can cause catastrophic events, preventive maintenance is critical to reliability. The interpretation supports the reliability objective of the standard by providing greater certainty and clarity regarding the equipment that must be maintained in support of this objective.

An interpretation to a standard requirement cannot expand the intent or meaning of the requirement. As such, any modifications to the language in the requirements must be processed through the NERC *Reliability Standards Development Procedure, Version 6.1*. With this in mind, NERC recognizes that greater clarity to the requirement language in PRC-005-1a is necessary to provide a complete framework for maintenance and testing of equipment necessary to ensure the reliability of the Bulk Power System. This activity is already underway in the scope of Project 2007-17 — Protection System Maintenance and Testing. The initial draft of a wholesale revision to PRC-005-1a, including a modified definition of Protection System, was posted for industry comment through early

September 2009. The team is responding to comments received and anticipates completion of this activity in 2010.

b. Summary of the Reliability Standard Development Proceedings

On January 30, 2009, the CMPWG submitted a request for interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, Requirement R1. The request focused on the definition of Protection System.

NERC presented the interpretation response for pre-ballot review on March 9, 2009 followed by a ten-day initial ballot that commenced on April 8, 2009. The initial ballot achieved a 92.70 percent quorum with a weighted segment approval of 92.71 percent. There were ten negative ballots submitted for the initial ballot, and eight of those ballots included a comment. Some balloters listed more than one reason for their negative ballot. The reasons cited for the negative ballots included:

- One balloter disagreed with the response to question 5, specifically relating to digital communications systems, stating that the continuously monitored digital communications systems are not maintained and tested because the functions are embedded within the relays.
- Three balloters indicated the answers given to the question on examples of “associated communications systems” were not sufficient.
- Three balloters indicated support for including station battery chargers under PRC-005-1, stating that battery charger failure could lead to other problems.
- One balloter indicated the drafting team did not provide sufficient clarification regarding DC control circuitry in question 4.
- Two balloters indicated disagreement with the last portion of the response to question 2: “devices that respond to quantities other electrical quantities (for example, sudden pressure relays) are not included in R1.” The balloters stated that relays/devices, such as sudden pressure relays in a major transformer and some protective relays for transformers tapped off a Bulk Electric System (BES) line should be considered as part of the protection system, as they are important for ensuring reliability.
- Three balloters indicated the team interpreted the language of the standard too strictly and should have considered the intent of the original standard.

- One balloter stated the proper approach would be to assume the "but not limited to" language was never removed from the definition when the Version 0 standards were developed.
- Two balloters stated the strict interpretation runs counter to the purpose of the standards, *i.e.*, ensuring reliability.
- One balloter commented that the interpretation should not redefine the meaning of the standard.

The recirculation ballot was conducted from July 24, 2009 to August 6, 2009 and achieved a quorum of 95.26 percent with a weighted affirmative approval of 95.62 percent.

V. CONCLUSION

NERC requests approval of the interpretation to the Requirement R1 in FERC-approved Reliability Standard PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, as set out in **Exhibit A**. NERC requests that this interpretation be made effective immediately upon issuance of the order in this proceeding.

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Exhibit A

**Interpretation of Reliability Standard PRC-005-1 — Transmission and Generation
Protection System Maintenance and Testing, Requirement R1 Proposed for
Approval**

| Request for an Interpretation of a Reliability Standard | |
|---|--|
| Date submitted: January 30, 2009 | |
| Contact information for person requesting the interpretation: | |
| Name: | Gary Campbell |
| Organization: | Compliance Monitoring Processes Working Group (CMPWG) |
| Telephone: | 330-247-3062 |
| E-mail: | gary.campbell@rfirst.org |
| Identify the standard that needs clarification: | |
| Standard Number: | PRC-005-1 |
| Identify specifically what needs clarification: | |
| <i>Requirement Number and Text of Requirement:</i> | |
| (The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.) | |
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> <ol style="list-style-type: none"> 1. Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System? 2. Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays) 3. Does R1 require maintenance and testing of transmission line re-closing relays? 4. Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring? <p>For R1, what are examples of "associated communications systems" that are part of</p> | |

| |
|---|
| "Protection Systems" that require a maintenance and testing program? |
| Identify the material impact associated with this interpretation: |
| <i>Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.</i> |
| This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events. |

| |
|---|
| Project 2009-10: Response to Request for an Interpretation of PRC-005-1, Requirement R1 for the Compliance Monitoring Processes Working Group |
| The following interpretation of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing, Requirement R1 was developed by the Protection System Maintenance and Testing Standard Drafting Team (assigned to Project 2007-17) on February 10, 2009. |
| Requirement Number and Text of Requirement |
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> |
| Question #1 |
| Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System? |
| Response to Question #1 |
| While battery chargers are vital for ensuring "station batteries" are available to support Protection System functions, they are not identified within the definition of "Protection Systems." Therefore, PRC-005-1 does not require maintenance and testing of battery chargers. |
| Question #2 |
| Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e. transformer sudden pressure relays) |
| Response to Question #2 |
| The existing definition of "Protection System" does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity's maintenance and testing program for |

DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.

Question #3

Does R1 require maintenance and testing of transmission line re-closing relays?

Response to Question #3

No. "Protective Relays" refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a "protective" function.

Question #4

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response to Question #4

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

Question #5

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Response to Question #5

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection. Examples include the following:

- communications equipment involved in power-line-carrier relaying
- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850¹ as well as various proprietary systems)

¹ IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations

Exhibit B

**Reliability Standard PRC-005-1a — Transmission and Generation Protection
System Maintenance and Testing that includes the Appended Interpretation**

A. Introduction

1. **Title:** **Transmission and Generation Protection System Maintenance and Testing**
2. **Number:** PRC-005-1a
3. **Purpose:** To ensure all transmission and generation Protection Systems affecting the reliability of the Bulk Electric System (BES) are maintained and tested.
4. **Applicability**
 - 4.1. Transmission Owner.
 - 4.2. Generator Owner.
 - 4.3. Distribution Provider that owns a transmission Protection System.
5. **Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:
 - R1.1.** Maintenance and testing intervals and their basis.
 - R1.2.** Summary of maintenance and testing procedures.
- R2.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall provide documentation of its Protection System maintenance and testing program and the implementation of that program to its Regional Reliability Organization on request (within 30 calendar days). The documentation of the program implementation shall include:
 - R2.1.** Evidence Protection System devices were maintained and tested within the defined intervals.
 - R2.2.** Date each Protection System device was last tested/maintained.

C. Measures

- M1.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System that affects the reliability of the BES, shall have an associated Protection System maintenance and testing program as defined in Requirement 1.
- M2.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System that affects the reliability of the BES, shall have evidence it provided documentation of its associated Protection System maintenance and testing program and the implementation of its program as defined in Requirement 2.

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Time Frame

One calendar year.

1.3. Data Retention

The Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System, shall retain evidence of the implementation of its Protection System maintenance and testing program for three years.

The Compliance Monitor shall retain any audit data for three years.

1.4. Additional Compliance Information

The Transmission Owner and any Distribution Provider that owns a transmission Protection System and the Generator Owner that owns a generation Protection System, shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Levels of Non-Compliance

2.1. Level 1: Documentation of the maintenance and testing program provided was incomplete as required in R1, but records indicate maintenance and testing did occur within the identified intervals for the portions of the program that were documented.

2.2. Level 2: Documentation of the maintenance and testing program provided was complete as required in R1, but records indicate that maintenance and testing did not occur within the defined intervals.

2.3. Level 3: Documentation of the maintenance and testing program provided was incomplete, and records indicate implementation of the documented portions of the maintenance and testing program did not occur within the identified intervals.

2.4. Level 4: Documentation of the maintenance and testing program, or its implementation, was not provided.

E. Regional Differences

None identified.

Version History

| Version | Date | Action | Change Tracking |
|----------------|------------------|---|------------------------|
| 0 | April 1, 2005 | Effective Date | New |
| 1 | December 1, 2005 | <ol style="list-style-type: none"> 1. Changed incorrect use of certain hyphens (-) to “en dash” (–) and “em dash” (—). 2. Added “periods” to items where appropriate. 3. Changed “Timeframe” to “Time Frame” in item D, 1.2. | 01/20/05 |

Standard PRC-005-1a — Transmission and Generation Protection System Maintenance and Testing

| | | | |
|----|------------------|---|----------|
| 1a | November 5, 2009 | Added Appendix 1 – Interpretation of R1, R1.1, and R1.2 approved by BOT on November 5, 2009 | Addition |
|----|------------------|---|----------|

Appendix 1

| Requirement Number and Text of Requirement |
|---|
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> |
| Question #1 |
| <p>Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?</p> |
| Response to Question #1 |
| <p>While battery chargers are vital for ensuring “station batteries” are available to support Protection System functions, they are not identified within the definition of “Protection Systems.” Therefore, PRC-005-1 does not require maintenance and testing of battery chargers.</p> |
| Question #2 |
| <p>Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e. transformer sudden pressure relays)</p> |
| Response to Question #2 |
| <p>The existing definition of “Protection System” does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity’s maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.</p> |
| Question #3 |
| <p>Does R1 require maintenance and testing of transmission line re-closing relays?</p> |
| Response to Question #3 |
| <p>No. “Protective Relays” refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a “protective” function.</p> |

Question #4

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response to Question #4

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

Question #5

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Response to Question #5

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection. Examples include the following:

- communications equipment involved in power-line-carrier relaying
- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850¹ as well as various proprietary systems)

¹ IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations

Exhibit C

**Complete Record of Development of the interpretation for Reliability Standard
PRC-005-1 — Transmission and Generation Protection System Maintenance and
Testing, Requirement R1**

Project 2009-10

Interpretation – PRC-005-1, R1 – Transmission and Generation Protection System Maintenance and Testing by the Compliance Monitoring Processes Working Group

Status:

A request for an interpretation of PRC-005-1 Requirement R1 has been submitted by the Compliance Monitoring Processes Working Group (CMPWG). The interpretation was approved by the NERC Board of Trustees on November 5, 2009 and will be submitted to FERC for approval.

Summary:

The request asks for clarification on the following:

- Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?
- Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e. transformer sudden pressure relays)
- Does R1 require maintenance and testing of transmission line re-closing relays?
- Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?
- For R1, what are examples of "associated communications systems" that are part of “Protection Systems” that require a maintenance and testing program?

Purpose/Industry Need:

In accordance with the Reliability Standards Development Procedure, the interpretation must be posted for a 30-day pre-ballot review, and then balloted. There is no public comment period for an interpretation. Balloting will be conducted following the same method used for balloting standards. If the interpretation is approved by its ballot pool, then the interpretation will be appended to the standard and will become effective when adopted by the NERC Board of Trustees and approved by the applicable regulatory authorities. The interpretation will remain appended to the standard until the standard is revised through the normal standards development process. When the standard is revised, the clarifications provided by the interpretation will be incorporated into the revised standard.

| Draft | Action | Dates | Results | Consideration of Comments |
|---|--|------------------------------------|---|------------------------------------|
| CMPWG Request for Interpretation of PRC-005-1, Requirement R1 Interpretation Clean (9) Redline (10) | Recirculation Ballot Info>> (8) Vote>> | 07/24/09 - 08/06/09 (closed) | Summary>> (11) Full Record>>(12) | |
| CMPWG Request for Interpretation of PRC-005-1, Requirement R1 Interpretation (2) Request for Interpretation (3) | Initial Ballot Info>> (4) Vote>> | 04/08/09 - 04/17/09 (closed) | Summary>> (5) Full Record>> (6) | Consideration of Comments>> (7) |
| | Pre-ballot Review Info>> (1) Join>> | 03/09/09 - 04/07/09 (closed) | | |



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Announcement

Ballot Pool and Pre-ballot Window

March 9–April 7, 2009

Now available at: <https://standards.nerc.net/BallotPool.aspx>

Interpretation of PRC-005-1 for the Compliance Monitoring Processes Working Group (Project 2009-10)

An interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing Requirement R1 for the Compliance Monitoring Processes Working Group is posted for a 30-day pre-ballot review. Registered Ballot Body members may join the ballot pool to be eligible to vote on this interpretation **until 8 a.m. EDT on April 7, 2009**.

During the pre-ballot window, members of the ballot pool may communicate with one another by using their “ballot pool list server.” (Once the balloting begins, ballot pool members are prohibited from using the ballot pool list servers.) The list server for this ballot pool is:

[bp-2009-10_RFI_CMPWG_in](#)

Project Background

The Compliance Monitoring Processes Working Group is seeking clarification on aspects of the maintenance and testing program required for Protection Systems in Requirement R1. The request includes questions about battery chargers, relays, sensing devices, circuitry, and communication systems.

The request and interpretation can be found on the project page:

http://www.nerc.com/filez/standards/Project2009-10_Interpretation_PRC-005-1_CMPWG.html

Standards Development Process

The [Reliability Standards Development Procedure](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance,
please contact Shaun Streeter at shaun.streeter@nerc.net or at 609.452.8060.*

Request for an Interpretation of a Reliability Standard

Date submitted: January 30, 2009

Contact information for person requesting the interpretation:

Name: Gary Campbell

Organization: Compliance Monitoring Processes Working Group (CMPWG)

Telephone: 330-247-3062

E-mail: gary.campbell@rfirst.org

Identify the standard that needs clarification:

Standard Number: PRC-005-1

Identify specifically what needs clarification:

Requirement Number and Text of Requirement:

(The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.)

R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

R1.1. Maintenance and testing intervals and their basis.

R1.2. Summary of maintenance and testing procedures.

1. Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System?
2. Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays)
3. Does R1 require maintenance and testing of transmission line re-closing relays?
4. Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Identify the material impact associated with this interpretation:

Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.

This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events.

Project 2009-10: Response to Request for an Interpretation of PRC-005-1, Requirement R1 for the Compliance Monitoring Processes Working Group

The following interpretation of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing, Requirement R1 was developed by the Protection System Maintenance and Testing Standard Drafting Team (assigned to Project 2007-17) on February 10, 2009.

Requirement Number and Text of Requirement

R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

R1.1. Maintenance and testing intervals and their basis.

R1.2. Summary of maintenance and testing procedures.

Question #1

Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?

Response to Question #1

While battery chargers are vital for ensuring “station batteries” are available to support Protection System functions, they are not identified within the definition of “Protection Systems.” Therefore, PRC-005-1 does not currently require maintenance and testing of battery chargers.

Question #2

Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays)

Response to Question #2

The existing definition of “Protection System” does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity’s maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.

Question #3

Does R1 require maintenance and testing of transmission line re-closing relays?

Response to Question #3

No. “Protective Relays” refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a “protective” function.

Question #4

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry

with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response to Question #4

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

Question #5

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Response to Question #5

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection.

Examples include the following:

- communications equipment involved in power-line-carrier relaying
- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850¹ as well as various proprietary systems)

¹ IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations

Note: an Interpretation cannot be used to change a standard.

| Request for an Interpretation of a Reliability Standard | |
|--|---|
| Date submitted: January 30, 2009 | |
| Contact information for person requesting the interpretation: | |
| Name: | Gary Campbell |
| Organization: | Compliance Monitoring Processes Working Group (CMPWG) |
| Telephone: | 330-247-3062 |
| E-mail: | gary.campbell@rfirst.org |
| Identify the standard that needs clarification: | |
| Standard Number: | PRC-005-1 Requirement R1 |
| Standard Title: | Transmission and Generation Protection System Maintenance and Testing |
| Identify specifically what needs clarification (If a category is not applicable, please leave it blank): | |
| Requirement Number and Text of Requirement: (The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.) | |
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> | |
| Clarification needed: | |
| <ul style="list-style-type: none"> • Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System? • Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays) • Does R1 require maintenance and testing of transmission line re-closing relays? • Does R1 require a maintenance and testing program for the DC circuitry that is just the | |

Request for an Interpretation of a Reliability Standard

circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

- For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Identify the material impact associated with this interpretation:

Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.

This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events.



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Announcement

Initial Ballot Window Open

April 8–17, 2009

Now available at: <https://standards.nerc.net/CurrentBallots.aspx>

Interpretation of PRC-005-1 for the Compliance Monitoring Processes Working Group (Project 2009-10)

An initial ballot window for an interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing Requirement R1 for the Compliance Monitoring Processes Working Group is now open **until 8 p.m. EDT on April 17, 2009.**

Project Background

The Compliance Monitoring Processes Working Group is seeking clarification on aspects of the maintenance and testing program required for Protection Systems in Requirement R1. The request includes questions about battery chargers, relays, sensing devices, circuitry, and communication systems. The request and interpretation can be found on the project page:

<http://www.nerc.com/filez/standards/Project2009-10 Interpretation PRC-005-1 CMPWG.html>

Standards Development Process

The [Reliability Standards Development Procedure](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance,
please contact Shaun Streeter at shaun.streeter@nerc.net or at 609.452.8060.*



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Announcement

Initial Ballot Results

Now available at: <https://standards.nerc.net/Ballots.aspx>

Interpretation of PRC-005-1 for the Compliance Monitoring Processes Working Group (Project 2009-10)

Since at least one negative ballot was submitted with a comment, a recirculation ballot will be held. The recirculation ballot will be held after the drafting team responds to voter comments submitted during this ballot.

The initial ballot for an interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing Requirement R1 for the Compliance Monitoring Processes Working Group ended April 17, 2009. The ballot results are shown below. The [Ballot Results](#) Web page provides a link to the detailed results.

Quorum: 92.70%

Approval: 92.71%

Project page: http://www.nerc.com/filez/standards/Project2009-10_Interpretation_PRC-005-1_CMPWG.html

Ballot Criteria

Approval requires both:

- A quorum, which is established by at least 75% of the members of the ballot pool for submitting either an affirmative vote, a negative vote, or an abstention; and
- A two-thirds majority of the weighted segment votes cast must be affirmative. The number of votes cast is the sum of affirmative and negative votes, excluding abstentions and nonresponses.

Standards Development Process

The [Reliability Standards Development Procedure](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance,
please contact Shaun Streeter at shaun.streeter@nerc.net or at 609.452.8060.*



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| Ballot Results | |
|------------------------|---|
| Ballot Name: | Project 2009-10 Interpretation - CMPWG - PRC-005-1 R1_in |
| Ballot Period: | 4/8/2009 - 4/17/2009 |
| Ballot Type: | Initial |
| Total # Votes: | 254 |
| Total Ballot Pool: | 274 |
| Quorum: | 92.70 % The Quorum has been reached |
| Weighted Segment Vote: | 92.71 % |
| Ballot Results: | The standard will proceed to recirculation ballot. |

| Summary of Ballot Results | | | | | | | | | |
|---------------------------|-------------|----------------|-------------|----------|----------|----------|---------|---------|----|
| Segment | Ballot Pool | Segment Weight | Affirmative | | Negative | | Abstain | No Vote | |
| | | | # Votes | Fraction | # Votes | Fraction | # Votes | No Vote | |
| 1 - Segment 1. | 78 | 1 | 74 | 0.987 | 1 | 0.013 | 0 | | 3 |
| 2 - Segment 2. | 10 | 0.9 | 8 | 0.8 | 1 | 0.1 | 1 | | 0 |
| 3 - Segment 3. | 62 | 1 | 51 | 0.962 | 2 | 0.038 | 1 | | 8 |
| 4 - Segment 4. | 19 | 1 | 18 | 1 | 0 | 0 | 0 | | 1 |
| 5 - Segment 5. | 60 | 1 | 52 | 0.981 | 1 | 0.019 | 1 | | 6 |
| 6 - Segment 6. | 29 | 1 | 24 | 0.923 | 2 | 0.077 | 1 | | 2 |
| 7 - Segment 7. | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | | 0 |
| 8 - Segment 8. | 4 | 0.4 | 3 | 0.3 | 1 | 0.1 | 0 | | 0 |
| 9 - Segment 9. | 3 | 0.3 | 3 | 0.3 | 0 | 0 | 0 | | 0 |
| 10 - Segment 10. | 8 | 0.8 | 6 | 0.6 | 2 | 0.2 | 0 | | 0 |
| Totals | 274 | 7.5 | 240 | 6.953 | 10 | 0.547 | 4 | | 20 |

| Individual Ballot Pool Results | | | | |
|--------------------------------|---------------------------------------|-----------------|-------------|----------|
| Segment | Organization | Member | Ballot | Comments |
| 1 | Allegheny Power | Rodney Phillips | Affirmative | |
| 1 | Ameren Services | Kirit S. Shah | Affirmative | |
| 1 | American Electric Power | Paul B. Johnson | Affirmative | |
| 1 | American Transmission Company, LLC | Jason Shaver | Affirmative | |
| 1 | Associated Electric Cooperative, Inc. | John Bussman | Affirmative | |
| 1 | Avista Corp. | Scott Kinney | Affirmative | |
| 1 | Baltimore Gas & Electric Company | John J. Moraski | Affirmative | |
| 1 | BC Transmission Corporation | Gordon Rawlings | Affirmative | |

| | | | | |
|---|--|------------------------------|-------------|----------------------|
| 1 | Black Hills Corp | Eric Egge | Affirmative | |
| 1 | Bonneville Power Administration | Donald S. Watkins | Affirmative | |
| 1 | Brazos Electric Power Cooperative, Inc. | Tony Kroskey | Affirmative | |
| 1 | CenterPoint Energy | Paul Rocha | Affirmative | |
| 1 | Central Maine Power Company | Brian Conroy | | |
| 1 | City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power | Alan L Cooke | Affirmative | |
| 1 | City Utilities of Springfield, Missouri | Jeff Knottek | Affirmative | |
| 1 | Cleco Power LLC | Danny McDaniel | Affirmative | |
| 1 | Consolidated Edison Co. of New York | Christopher L de Graffenried | Affirmative | |
| 1 | Dairyland Power Coop. | Robert W. Roddy | Affirmative | |
| 1 | Deseret Power | James Tucker | Affirmative | |
| 1 | Dominion Virginia Power | William L. Thompson | Affirmative | |
| 1 | Duke Energy Carolina | Douglas E. Hils | Negative | View |
| 1 | E.ON U.S. LLC | Larry Monday | Affirmative | |
| 1 | East Kentucky Power Coop. | George S. Carruba | Affirmative | |
| 1 | Entergy Corporation | George R. Bartlett | Affirmative | |
| 1 | Exelon Energy | John J. Blazekovich | Affirmative | |
| 1 | Farmington Electric Utility System | Alan Glazner | Affirmative | |
| 1 | FirstEnergy Energy Delivery | Robert Martinko | Affirmative | View |
| 1 | Florida Keys Electric Cooperative Assoc. | Dennis Minton | Affirmative | |
| 1 | Florida Power & Light Co. | C. Martin Mennes | Affirmative | |
| 1 | Georgia Transmission Corporation | Harold Taylor, II | Affirmative | |
| 1 | Great River Energy | Gordon Pietsch | Affirmative | |
| 1 | Hoosier Energy Rural Electric Cooperative, Inc. | Damon Holladay | Affirmative | |
| 1 | Hydro One Networks, Inc. | Ajay Garg | Affirmative | |
| 1 | ITC Transmission | Elizabeth Howell | Affirmative | |
| 1 | JEA | Ted E. Hobson | Affirmative | |
| 1 | Kansas City Power & Light Co. | Michael Gammon | Affirmative | |
| 1 | Kissimmee Utility Authority | Joe B Watson | Affirmative | |
| 1 | Lee County Electric Cooperative | Rodney Hawkins | Affirmative | |
| 1 | Lincoln Electric System | Doug Bantam | | |
| 1 | Lower Colorado River Authority | Martyn Turner | Affirmative | |
| 1 | Manitoba Hydro | Michelle Rheault | Affirmative | |
| 1 | MEAG Power | Danny Dees | Affirmative | |
| 1 | MidAmerican Energy Co. | Terry Harbour | Affirmative | |
| 1 | Minnesota Power, Inc. | Carol Gerou | Affirmative | |
| 1 | National Grid | Manuel Couto | Affirmative | |
| 1 | Nebraska Public Power District | Richard L. Koch | Affirmative | |
| 1 | New York Power Authority | Ralph Ruffano | Affirmative | |
| 1 | Northeast Utilities | David H. Boguslawski | Affirmative | |
| 1 | Northern Indiana Public Service Co. | Kevin M Largura | Affirmative | |
| 1 | Ohio Valley Electric Corp. | Robert Matthey | Affirmative | |
| 1 | Oklahoma Gas and Electric Co. | Marvin E VanBebber | Affirmative | |
| 1 | Omaha Public Power District | Ilores Tados | Affirmative | |
| 1 | Oncor Electric Delivery | Charles W. Jenkins | Affirmative | |
| 1 | Orange and Rockland Utilities, Inc. | Edward Bedder | Affirmative | |
| 1 | Orlando Utilities Commission | Brad Chase | Affirmative | |
| 1 | Otter Tail Power Company | Lawrence R. Larson | Affirmative | |
| 1 | PacifiCorp | Mark Sampson | | |
| 1 | Platte River Power Authority | John C. Collins | Affirmative | |
| 1 | Potomac Electric Power Co. | Richard J. Kafka | Affirmative | |
| 1 | PowerSouth Energy Cooperative | Larry D Avery | Affirmative | |
| 1 | PP&L, Inc. | Ray Mammarella | Affirmative | |
| 1 | Progress Energy Carolinas | Sammy Roberts | Affirmative | |
| 1 | Public Service Electric and Gas Co. | Kenneth D. Brown | Affirmative | |
| 1 | Public Utility District No. 1 of Chelan County | Chad Bowman | Affirmative | View |
| 1 | Puget Sound Energy, Inc. | Catherine Koch | Affirmative | |
| 1 | Salt River Project | Robert Kondziolka | Affirmative | |
| 1 | Santee Cooper | Terry L. Blackwell | Affirmative | |
| 1 | SaskPower | Wayne Guttormson | Affirmative | |
| 1 | Seattle City Light | Pawel Krupa | Affirmative | |
| 1 | Sierra Pacific Power Co. | Richard Salgo | Affirmative | View |
| 1 | Southern California Edison Co. | Dana Cabbell | Affirmative | |
| 1 | Southern Company Services, Inc. | Horace Stephen Williamson | Affirmative | |
| 1 | Southwest Transmission Cooperative, Inc. | James L. Jones | Affirmative | |

| | | | | |
|---|--|-------------------------|-------------|----------------------|
| 1 | Tampa Electric Co. | Thomas J. Szelistowski | Affirmative | |
| 1 | Westar Energy | Allen Klassen | Affirmative | |
| 1 | Western Area Power Administration | Brandy A Dunn | Affirmative | |
| 1 | Western Farmers Electric Coop. | Alan Derichsweiler | Affirmative | |
| 1 | Xcel Energy, Inc. | Gregory L. Pieper | Affirmative | |
| 2 | Alberta Electric System Operator | Anita Lee | Negative | View |
| 2 | British Columbia Transmission Corporation | Phil Park | Affirmative | |
| 2 | California ISO | Greg Tillitson | Abstain | |
| 2 | Independent Electricity System Operator | Kim Warren | Affirmative | |
| 2 | ISO New England, Inc. | Kathleen Goodman | Affirmative | |
| 2 | Midwest ISO, Inc. | Terry Bilke | Affirmative | |
| 2 | New Brunswick System Operator | Alden Briggs | Affirmative | |
| 2 | New York Independent System Operator | Gregory Campoli | Affirmative | |
| 2 | PJM Interconnection, L.L.C. | Tom Bowe | Affirmative | |
| 2 | Southwest Power Pool | Charles H Yeung | Affirmative | |
| 3 | Alabama Power Company | Robin Hurst | Affirmative | |
| 3 | Allegheny Power | Bob Reeping | Affirmative | |
| 3 | Ameren Services | Mark Peters | Affirmative | |
| 3 | American Electric Power | Raj Rana | Affirmative | |
| 3 | Arizona Public Service Co. | Thomas R. Glock | Affirmative | |
| 3 | Atlantic City Electric Company | James V. Petrella | Affirmative | |
| 3 | Basin Electric Power Cooperative | Daniel Klempel | | |
| 3 | BC Hydro and Power Authority | Pat G. Harrington | Abstain | |
| 3 | Black Hills Power | Andy Butcher | Affirmative | |
| 3 | Bonneville Power Administration | Rebecca Berdahl | Affirmative | |
| 3 | Central Lincoln PUD | Steve Alexanderson | Affirmative | View |
| 3 | City of Tallahassee | Rusty S. Foster | | |
| 3 | Cleco Utility Group | Bryan Y Harper | Affirmative | |
| 3 | Commonwealth Edison Co. | Stephen Lesniak | | |
| 3 | Consolidated Edison Co. of New York | Peter T Yost | Affirmative | |
| 3 | Consumers Energy | David A. Lapinski | Affirmative | |
| 3 | Cowlitz County PUD | Russell A Noble | Affirmative | |
| 3 | Delmarva Power & Light Co. | Michael R. Mayer | | |
| 3 | Detroit Edison Company | Kent Kujala | Affirmative | |
| 3 | Dominion Resources, Inc. | Jalal (John) Babik | Affirmative | |
| 3 | Douglas County PUD #1 | Jeff Johnson | | |
| 3 | Duke Energy Carolina | Henry Ernst-Jr | Negative | |
| 3 | Entergy Services, Inc. | Matt Wolf | Affirmative | |
| 3 | FirstEnergy Solutions | Joanne Kathleen Borrell | Affirmative | View |
| 3 | Florida Power Corporation | Lee Schuster | Affirmative | |
| 3 | Georgia Power Company | Leslie Sibert | Affirmative | |
| 3 | Grays Harbor PUD | Wesley W Gray | Affirmative | |
| 3 | Great River Energy | Sam Kokkinen | Affirmative | |
| 3 | Gulf Power Company | Gwen S Frazier | Affirmative | |
| 3 | Hydro One Networks, Inc. | Michael D. Penstone | Affirmative | |
| 3 | JEA | Garry Baker | Affirmative | |
| 3 | Kansas City Power & Light Co. | Charles Locke | Affirmative | |
| 3 | Kissimmee Utility Authority | Gregory David Woessner | Affirmative | |
| 3 | Lakeland Electric | Mace Hunter | Affirmative | |
| 3 | Lincoln Electric System | Bruce Merrill | Negative | View |
| 3 | Louisville Gas and Electric Co. | Charles A. Freibert | | |
| 3 | Manitoba Hydro | Jamie Hall | Affirmative | |
| 3 | MidAmerican Energy Co. | Thomas C. Mielnik | Affirmative | |
| 3 | Mississippi Power | Don Horsley | Affirmative | |
| 3 | New York Power Authority | Michael Lupo | Affirmative | |
| 3 | Niagara Mohawk (National Grid Company) | Michael Schiavone | Affirmative | |
| 3 | Northern Indiana Public Service Co. | William SeDoris | Affirmative | |
| 3 | Orlando Utilities Commission | Ballard Keith Mutters | Affirmative | |
| 3 | PacifiCorp | John Apperson | Affirmative | |
| 3 | PECO Energy an Exelon Co. | John J. McCawley | Affirmative | |
| 3 | Platte River Power Authority | Terry L Baker | Affirmative | |
| 3 | Potomac Electric Power Co. | Robert Reuter | Affirmative | |
| 3 | Progress Energy Carolinas | Sam Waters | Affirmative | |
| 3 | Public Service Electric and Gas Co. | Jeffrey Mueller | Affirmative | |
| 3 | Public Utility District No. 1 of Chelan County | Kenneth R. Johnson | Affirmative | View |
| 3 | Public Utility District No. 2 of Grant County | Greg Lange | Affirmative | |
| 3 | Salt River Project | John T. Underhill | Affirmative | |

| | | | | |
|---|---|---------------------|-------------|----------------------|
| 3 | San Diego Gas & Electric | Scott Peterson | | |
| 3 | Santee Cooper | Zack Dusenbury | Affirmative | |
| 3 | Seattle City Light | Dana Wheelock | Affirmative | |
| 3 | Southern California Edison Co. | David Schiada | Affirmative | |
| 3 | Southern Indiana Gas and Electric Co. | Fred Frederick | | |
| 3 | Tampa Electric Co. | Ronald L. Donahey | Affirmative | |
| 3 | Tri-State G & T Association Inc. | Lisa Tiffin | Affirmative | |
| 3 | Turlock Irrigation District | Casey Hashimoto | Affirmative | |
| 3 | Wisconsin Electric Power Marketing | James R. Keller | Affirmative | |
| 3 | Xcel Energy, Inc. | Michael Ibold | Affirmative | |
| 4 | Alliant Energy Corp. Services, Inc. | Kenneth Goldsmith | Affirmative | |
| 4 | American Municipal Power - Ohio | Kevin L Holt | Affirmative | |
| 4 | Black Hills Corp | Kelly Wolfe | Affirmative | |
| 4 | Consumers Energy | David Frank Ronk | Affirmative | |
| 4 | Detroit Edison Company | Daniel Herring | Affirmative | |
| 4 | Eugene Water & Electric Board | Dean Ahlsten | | |
| 4 | Illinois Municipal Electric Agency | Bob C. Thomas | Affirmative | |
| 4 | Indiana Municipal Power Agency | Gayle Mayo | Affirmative | |
| 4 | Madison Gas and Electric Co. | Joseph G. DePoorter | Affirmative | |
| 4 | Northern California Power Agency | Fred E. Young | Affirmative | |
| 4 | Ohio Edison Company | Douglas Hohlbaugh | Affirmative | View |
| 4 | Oklahoma Municipal Power Authority | David W Osburn | Affirmative | |
| 4 | Old Dominion Electric Coop. | Mark Ringhausen | Affirmative | |
| 4 | Public Utility District No. 1 of Douglas County | Henry E. LuBean | Affirmative | |
| 4 | Sacramento Municipal Utility District | Dilip Mahendra | Affirmative | |
| 4 | Seattle City Light | Hao Li | Affirmative | |
| 4 | Seminole Electric Cooperative, Inc. | Steven R. Wallace | Affirmative | |
| 4 | Wisconsin Energy Corp. | Anthony Jankowski | Affirmative | |
| 4 | Y-W Electric Association, Inc. | James A Ziebarth | Affirmative | View |
| 5 | AEP Service Corp. | Brock Ondayko | Affirmative | |
| 5 | Allegheny Energy Supply Company, LLC | Robert Loy | Affirmative | |
| 5 | Amerenue | Sam Dwyer | Affirmative | |
| 5 | Avista Corp. | Edward F. Groce | Affirmative | |
| 5 | Black Hills Corp | George Tatar | Affirmative | |
| 5 | Bonneville Power Administration | Francis J. Halpin | Affirmative | |
| 5 | Calpine Corporation | John Brent Hebert | Affirmative | |
| 5 | Chelan County Public Utility District #1 | John Yale | Affirmative | |
| 5 | City of Farmington | Clinton J Jacobs | Affirmative | |
| 5 | City of Tallahassee | Alan Gale | Affirmative | |
| 5 | Cleco Power LLC | Grant Bryant | Affirmative | |
| 5 | Colmac Clarion/Piney Creek LP | Harvie D. Beavers | Affirmative | |
| 5 | Constellation Generation Group | Michael F. Gildea | Affirmative | |
| 5 | Consumers Energy | James B Lewis | Affirmative | |
| 5 | Covanta Energy | Samuel Cabassa | Affirmative | |
| 5 | Dairyland Power Coop. | Warren Schaefer | Affirmative | |
| 5 | Detroit Edison Company | Ronald W. Bauer | Affirmative | |
| 5 | Dominion Resources, Inc. | Mike Garton | Affirmative | |
| 5 | Dynegy | Greg Mason | Affirmative | |
| 5 | Electric Power Supply Association | Jack R. Cashin | | |
| 5 | Entergy Corporation | Stanley M Jaskot | Affirmative | |
| 5 | Exelon Nuclear | Michael Korchynsky | Affirmative | |
| 5 | FirstEnergy Solutions | Kenneth Dresner | Affirmative | View |
| 5 | FPL Energy | Benjamin Church | Affirmative | |
| 5 | Great River Energy | Cynthia E Sulzer | Affirmative | |
| 5 | Hardee Power Partners | Ralph Randall | Affirmative | |
| 5 | JEA | Donald Gilbert | Affirmative | |
| 5 | Kansas City Power & Light Co. | Scott Heidtbrink | Affirmative | |
| 5 | Liberty Electric Power LLC | Daniel Duff | Affirmative | |
| 5 | Lincoln Electric System | Dennis Florom | Negative | View |
| 5 | Louisville Gas and Electric Co. | Charlie Martin | | |
| 5 | Lower Colorado River Authority | Tom Foreman | | |
| 5 | Manitoba Hydro | Mark Aikens | Affirmative | |
| 5 | Midway Sunset Cogeneration Company | Richard McPherson | Affirmative | |
| 5 | Municipal Electric Authority of Georgia | Roger Brand | Affirmative | |
| 5 | New York Power Authority | Gerald Mannarino | Affirmative | |
| 5 | Northern Indiana Public Service Co. | Michael K Wilkerson | Affirmative | |
| 5 | Northern States Power Co. | Liam Noailles | Affirmative | |

| | | | | |
|----|--|------------------------------|-------------|----------------------|
| 5 | Orlando Utilities Commission | Richard Kinase | | |
| 5 | Pacific Gas and Electric Company | Richard J. Padilla | Affirmative | |
| 5 | PacifiCorp Energy | David Godfrey | Affirmative | |
| 5 | PowerSouth Energy Cooperative | Tim Hattaway | Affirmative | |
| 5 | PPL Generation LLC | Mark A. Heimbach | Affirmative | |
| 5 | Progress Energy Carolinas | Wayne Lewis | Affirmative | |
| 5 | PSEG Power LLC | Thomas Piascik | Affirmative | |
| 5 | Reliant Energy Services | Thomas J. Bradish | Affirmative | View |
| 5 | Salt River Project | Glen Reeves | Affirmative | |
| 5 | Seattle City Light | Michael J. Haynes | Affirmative | |
| 5 | Seminole Electric Cooperative, Inc. | Brenda K. Atkins | Affirmative | |
| 5 | South Carolina Electric & Gas Co. | Richard Jones | | |
| 5 | South Mississippi Electric Power Association | Jerry W Johnson | Affirmative | |
| 5 | Southeastern Power Administration | Douglas Spencer | Affirmative | |
| 5 | Southern Company Generation | William D Shultz | Affirmative | |
| 5 | Tampa Electric Co. | Frank L Busot | Abstain | |
| 5 | Tenaska, Inc. | Scott M. Helyer | Affirmative | |
| 5 | TransAlta Centralia Generation, LLC | Joanna Luong-Tran | Affirmative | |
| 5 | U.S. Army Corps of Engineers Northwestern Division | Karl Bryan | Affirmative | |
| 5 | U.S. Bureau of Reclamation | Martin Bauer | Affirmative | View |
| 5 | Wisconsin Electric Power Co. | Linda Horn | Affirmative | |
| 5 | Wisconsin Public Service Corp. | Leonard Rentmeester | | |
| 6 | AEP Marketing | Edward P. Cox | Affirmative | |
| 6 | Ameren Energy Marketing Co. | Jennifer Richardson | Affirmative | |
| 6 | Bonneville Power Administration | Brenda S. Anderson | Affirmative | |
| 6 | Consolidated Edison Co. of New York | Nickesha P Carrol | Affirmative | |
| 6 | Dominion Resources, Inc. | Louis S Slade | Affirmative | |
| 6 | Duke Energy Carolina | Walter Yeager | Negative | |
| 6 | Entergy Services, Inc. | Terri F Benoit | Affirmative | |
| 6 | Eugene Water & Electric Board | Daniel Mark Bedbury | Affirmative | |
| 6 | Exelon Power Team | Pulin Shah | | |
| 6 | FirstEnergy Solutions | Mark S Travaglianti | Affirmative | View |
| 6 | Great River Energy | Donna Stephenson | Affirmative | |
| 6 | Kansas City Power & Light Co. | Thomas Saitta | Affirmative | |
| 6 | Lincoln Electric System | Eric Ruskamp | Negative | View |
| 6 | Louisville Gas and Electric Co. | Daryn Barker | Affirmative | |
| 6 | Manitoba Hydro | Daniel Prowse | Affirmative | |
| 6 | New York Power Authority | Thomas Papadopoulos | Affirmative | |
| 6 | Northern Indiana Public Service Co. | Joseph O'Brien | Affirmative | |
| 6 | PacifiCorp | Gregory D Maxfield | | |
| 6 | PP&L, Inc. | Thomas Hyzinski | Affirmative | |
| 6 | Progress Energy | James Eckelkamp | Affirmative | |
| 6 | PSEG Energy Resources & Trade LLC | James D. Hebson | Affirmative | |
| 6 | Public Utility District No. 1 of Chelan County | Hugh A. Owen | Affirmative | |
| 6 | Reliant Energy Services | Trent Carlson | Affirmative | View |
| 6 | Salt River Project | Mike Hummel | Affirmative | |
| 6 | Santee Cooper | Suzanne Ritter | Affirmative | |
| 6 | Seminole Electric Cooperative, Inc. | Trudy S. Novak | Affirmative | |
| 6 | Southern California Edison Co. | Marcus V Lotto | Affirmative | |
| 6 | Tampa Electric Co. | Heidi Giustiniani | Abstain | |
| 6 | Xcel Energy, Inc. | David F. Lemmons | Affirmative | |
| 7 | Alcoa, Inc. | Thomas Gianneschi | Affirmative | |
| 8 | JDRJC Associates | Jim D. Cyrulewski | Affirmative | |
| 8 | Other | Michehl R. Gent | Negative | View |
| 8 | Utility Services LLC | Brian Evans-Mongeon | Affirmative | |
| 8 | Volkman Consulting, Inc. | Terry Volkman | Affirmative | |
| 9 | California Energy Commission | William Mitchell Chamberlain | Affirmative | |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald E. Nelson | Affirmative | |
| 9 | National Association of Regulatory Utility Commissioners | Diane J. Barney | Affirmative | |
| 10 | Electric Reliability Council of Texas, Inc. | Kent Saathoff | Negative | View |
| 10 | Florida Reliability Coordinating Council | Linda Campbell | Affirmative | |
| 10 | Midwest Reliability Organization | Dan R Schoenecker | Affirmative | |
| 10 | New York State Reliability Council | Alan Adamson | Affirmative | |
| 10 | Northeast Power Coordinating Council, Inc. | Guy V. Zito | Affirmative | |
| 10 | ReliabilityFirst Corporation | Jacque Smith | Negative | View |



| | | | | |
|----|--|-----------------|-------------|----------------------|
| 10 | SERC Reliability Corporation | Carter B. Edge | Affirmative | |
| 10 | Western Electricity Coordinating Council | Louise McCarren | Affirmative | View |
| | | | | |

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Washington Office: 1120 G Street, N.W. : Suite 990 : Washington, DC 20005-3801

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Consideration of Comments on Initial Ballot — Interpretation of PRC-005-1 Requirement R1 for the Compliance Monitoring Processes Working Group (Project 2009-10)

Summary Consideration: Balloters presented a mixed response to the approach for interpreting the questions, especially related to whether or not battery chargers were part of the standard. Some balloters supported the drafting team’s literal approach while others believed the team should have applied more of its own judgment. While the drafting team agrees with balloters regarding the importance of battery chargers and other elements, those types of changes need to go through the full standards development process rather than the interpretation process. The drafting team will forward suggestions for changes to the team working on Project 2007-17, which is drafting a revised version of PRC-005-1 and is considering the types of issues identified by the balloters.

Some balloters suggested the word “currently” be removed from the response to Question 1. The drafting team agrees and will remove the term as a correction prior to posting the interpretation for recirculation ballot.

If you feel that the drafting team overlooked your comments, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Gerry Adamski, at 609-452-8060 or at gerry.adamski@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

| Voter | Entity | Segment | Vote | Comment |
|-----------------|----------------------|---------|----------|---|
| Douglas E. Hils | Duke Energy Carolina | 1 | Negative | Duke Energy provides the following comments: • We agree with the response to Question #1. • On Question #2, we agree that the definition of “Protection System” does not include auxiliary relays. That equipment is tested on initial commissioning, and when modifications are made. The only other testing performed on that equipment would be testing that is incidental to our testing program for DC control circuits during the commissioning process. However the Interpretation could be read to require maintenance and testing of imbedded auxiliary relays as part of DC control circuit testing. We agree that devices such as sudden pressure relays are not included in Requirement R1. • We agree with the response to Question #3. • We agree with the response to Question #4, because this is how our program is defined. DC circuits should be fully checked during the commissioning process or when changes are made to the DC circuits. Routine testing to the DC circuitry is not required on a time-based interval but based on changes to the DC circuitry. • We disagree with the response to Question #5. The first three bullets of the response are fine, but the fourth bullet is wrong. Continuously monitored digital |

¹ The appeals process is in the Reliability Standards Development Procedure: http://www.nerc.com/files/RSDP_V6_1_12Mar07.pdf.

| Voter | Entity | Segment | Vote | Comment |
|---|-----------------------------|---------|-------------|---|
| | | | | communications systems are not maintained and tested because the functions are embedded within the relays. |
| <p>Response: The answer provided for Question #5 provides examples of what systems might be considered "associated communication systems". It does not indicate what degree of maintenance and testing might be required. In the case that the systems are demonstrated to be fully monitored, a decision that no periodic maintenance and testing might be appropriate.</p> <p>Draft PRC-005-2 (Project 2007-17), which is nearing its first comment posting, includes provisions for fully monitored Protection System components.</p> | | | | |
| Robert Martinko | FirstEnergy Energy Delivery | 1 | Affirmative | <p>FirstEnergy Corp. supports the interpretation of PRC-005-1 Req. R1 and is voting Affirmative. We offer the following comments. 1. Interpretations should only state facts based on the wording of the current requirements. In the answer the Question 1 of the interpretation, the word "currently" should be dropped from the last sentence. "Currently" implies that these devices may need to be covered in future revisions of the standard, but this should be handled through a SAR and the normal standard development process. 2. Regarding Question #2 and the interpretation provided for the question, we agree that auxiliary relays are not covered by the standard and that maintenance and testing should be limited to devices that respond only to electrical quantities of current and voltage. 3. With regard to Question #3 that re-closing relays are not covered by PRC-005-1, we agree that by the definition of Protection System and the requirements of PRC-005-1 that a reclosing relay is not considered a protective relay. The inclusion of re-closing relays should be considered in the on-going revision of PRC-005 and Protection System definition underway in NERC Project 2007-17. It is FE's opinion that Protection Systems should include not only devices designed to detect and initiate action to isolate a fault on a system, but also schemes designed to automatically restore tripped facilities. This opinion should be fully vetted via the standards development process.</p> |
| <p>Response: The word "currently" will be removed from the interpretation of Question #1. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |

| Voter | Entity | Segment | Vote | Comment |
|---|-----------------------|---------|-------------|---|
| Joanne Kathleen Borrell | FirstEnergy Solutions | 3 | Affirmative | <p>FirstEnergy Corp. supports the interpretation of PRC-005-1 Req. R1 and is voting Affirmative. We offer the following comments. 1. Interpretations should only state facts based on the wording of the current requirements. In the answer the Question 1 of the interpretation, the word "currently" should be dropped from the last sentence. "Currently" implies that these devices may need to be covered in future revisions of the standard, but this should be handled through a SAR and the normal standard development process. 2. Regarding Question #2 and the interpretation provided for the question, we agree that auxiliary relays are not covered by the standard and that maintenance and testing should be limited to devices that respond only to electrical quantities of current and voltage. 3. With regard to Question #3 that re-closing relays are not covered by PRC-005-1, we agree that by the definition of Protection System and the requirements of PRC-005-1 that a reclosing relay is not considered a protective relay. The inclusion of re-closing relays should be considered in the on-going revision of PRC-005 and Protection System definition underway in NERC Project 2007-17. It is FE's opinion that Protection Systems should include not only devices designed to detect and initiate action to isolate a fault on a system, but also schemes designed to automatically restore tripped facilities. This opinion should be fully vetted via the standards development process.</p> |
| <p>Response: The word "currently" will be removed from the interpretation of Question #1. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |
| Douglas Hohlbaugh | Ohio Edison Company | 4 | Affirmative | <p>FirstEnergy Corp. supports the interpretation of PRC-005-1 Req. R1 and is voting Affirmative. We offer the following comments. 1. Interpretations should only state facts based on the wording of the current requirements. In the answer the Question 1 of the interpretation, the word "currently" should be dropped from the last sentence. "Currently" implies that these devices may need to be covered in future revisions of the standard, but this should be handled through a SAR and the normal standard development process. 2. Regarding Question #2 and the interpretation provided for the question, we agree that auxiliary relays are not covered by the standard and that maintenance and testing should be limited to devices that respond only to electrical quantities of current and voltage. 3. With regard to Question #3 that re-closing relays are not covered by PRC-005-1, we agree that by the definition</p> |

| Voter | Entity | Segment | Vote | Comment |
|---|------------------------------|----------|--------------------|---|
| | | | | <p>of Protection System and the requirements of PRC-005-1 that a reclosing relay is not considered a protective relay. The inclusion of re-closing relays should be considered in the on-going revision of PRC-005 and Protection System definition underway in NERC Project 2007-17. It is FE's opinion that Protection Systems should include not only devices designed to detect and initiate action to isolate a fault on a system, but also schemes designed to automatically restore tripped facilities. This opinion should be fully vetted via the standards development process.</p> |
| <p>Response: The word "currently" will be removed from the interpretation of Question #1. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |
| <p>Kenneth Dresner</p> | <p>FirstEnergy Solutions</p> | <p>5</p> | <p>Affirmative</p> | <p>FirstEnergy Corp. supports the interpretation of PRC-005-1 Req. R1 and is voting Affirmative. We offer the following comments. 1. Interpretations should only state facts based on the wording of the current requirements. In the answer the Question 1 of the interpretation, the word "currently" should be dropped from the last sentence. "Currently" implies that these devices may need to be covered in future revisions of the standard, but this should be handled through a SAR and the normal standard development process. 2. Regarding Question #2 and the interpretation provided for the question, we agree that auxiliary relays are not covered by the standard and that maintenance and testing should be limited to devices that respond only to electrical quantities of current and voltage. 3. With regard to Question #3 that re-closing relays are not covered by PRC-005-1, we agree that by the definition of Protection System and the requirements of PRC-005-1 that a reclosing relay is not considered a protective relay. The inclusion of re-closing relays should be considered in the on-going revision of PRC-005 and Protection System definition underway in NERC Project 2007-17. It is FE's opinion that Protection Systems should include not only devices designed to detect and initiate action to isolate a fault on a system, but also schemes designed to automatically restore tripped facilities. This opinion should be fully vetted via the standards development process.</p> |
| <p>Response: The word "currently" will be removed from the interpretation of Question #1. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |

| Voter | Entity | Segment | Vote | Comment |
|---|--|---------|-------------|---|
| Mark S Travaglianti | FirstEnergy Solutions | 6 | Affirmative | <p>FirstEnergy Corp. supports the interpretation of PRC-005-1 Req. R1 and is voting Affirmative. We offer the following comments. 1. Interpretations should only state facts based on the wording of the current requirements. In the answer the Question 1 of the interpretation, the word "currently" should be dropped from the last sentence. "Currently" implies that these devices may need to be covered in future revisions of the standard, but this should be handled through a SAR and the normal standard development process. 2. Regarding Question #2 and the interpretation provided for the question, we agree that auxiliary relays are not covered by the standard and that maintenance and testing should be limited to devices that respond only to electrical quantities of current and voltage. 3. With regard to Question #3 that re-closing relays are not covered by PRC-005-1, we agree that by the definition of Protection System and the requirements of PRC-005-1 that a reclosing relay is not considered a protective relay. The inclusion of re-closing relays should be considered in the on-going revision of PRC-005 and Protection System definition underway in NERC Project 2007-17. It is FE's opinion that Protection Systems should include not only devices designed to detect and initiate action to isolate a fault on a system, but also schemes designed to automatically restore tripped facilities. This opinion should be fully vetted via the standards development process.</p> |
| <p>Response: The word "currently" will be removed from the interpretation of Question #1. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |
| Richard Salgo | Sierra Pacific Power Co. | 1 | Affirmative | <p>I agree with all elements of the interpretation. With respect to number 5, it appears that the "associated communications" are only included to the extent that they are essential to the protection of the particular element.</p> |
| <p>Response: Thank you for your support.</p> | | | | |
| Chad Bowman | Public Utility District No. 1 of Chelan County | 1 | Affirmative | <p>I think the proposed Interpretation is excellent. It makes use of the plain language of the approved Standard to determine scope. If more expansive application of testing and maintenance of protection systems are needed, efforts to make such changes should be routed through the revision process already in place, rather than</p> |

| Voter | Entity | Segment | Vote | Comment |
|---|-------------------------------|---------|-------------|---|
| Response: Thank you for your support. | | | | |
| Steve Alexanders on | Central Lincoln PUD | 3 | Affirmative | If more expansive application of testing and maintenance of protection systems are needed, efforts to make such changes should be routed through the revision process already in place, rather than achieved through expansive interpretations of existing language. |
| Response: Thank you for your support. | | | | |
| Bruce Merrill | Lincoln Electric System | 3 | Negative | LES does not think that the answers given to the question on examples of "associated communications systems" is a sufficient answer. LES believes the intent of the request for interpretation was to know if the whole telecom system was included, or if only the parts of it that can affect the bulk electric system. Logically, the answer should be the same whether we own or lease the channel, though we certainly can not go down to the phone company to test their equipment. LES recommends that the demarcation point be at a place just after the device that generates the signal to be sent to the remote end and/or receives the remote signal and generates an action output, e.g., trip, block, unblock etc. If the telecom system is to be included, the requirement should be in COMM, not PRC. |
| Response: The answer provided for Question #5 provides examples of what systems might be considered "associated communication systems." If the associated communication system is used to convey essential Protection System tripping logic, then it is included. If a telecom circuit is used to convey a trip signal or block-trip signal or any essential trip scheme logic, then that telecommunications equipment is part of a Protection System. There should be no distinction as to whether the system is owned or leased. The interpretation does not indicate what degree of maintenance and testing might be required. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1. | | | | |

| Voter | Entity | Segment | Vote | Comment |
|--|---|---------|-------------|---|
| Dennis Florum | Lincoln Electric System | 5 | Negative | LES does not think that the answers given to the question on examples of "associated communications systems" is a sufficient answer. LES believes the intent of the request for interpretation was to know if the whole telecom system was included, or if only the parts of it can affect the bulk electric system. Logically, the answer should be the same whether we own or lease the channel, though we certainly can not go down to the phone company to test their equipment. LES recommends that the demarcation point be at a place just after the device that generates the signal to be sent to the remote end and/or receives the remote signal and generates an action output, e.g., trip, block, unblock etc. If the telecom system is to be included, the requirement should be in COMM, not PRC. |
| Eric Ruskamp | Lincoln Electric System | 6 | Negative | LES does not think that the answers given to the question on examples of "associated communications systems" is a sufficient answer. LES believes the intent of the request for interpretation was to know if the whole telecom system was included, or if only the parts of it that can affect the bulk electric system. Logically, the answer should be the same whether we own or lease the channel, though we certainly can not go down to the phone company to test their equipment. LES recommends that the demarcation point be at a place just after the device that generates the signal to be sent to the remote end and/or receives the remote signal and generates an action output, e.g., trip, block, unblock etc. If the telecom system is to be included, the requirement should be in COMM, not PRC. |
| <p>Response: The answer provided for Question #5 provides examples of what systems might be considered "associated communication systems." If the associated communication system is used to convey essential Protection System tripping logic, then it is included. If a telecom circuit is used to convey a trip signal or block-trip signal or any essential trip scheme logic, then that telecommunications equipment is part of a Protection System. There should be no distinction as to whether the system is owned or leased. The interpretation does not indicate what degree of maintenance and testing might be required. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |
| Kenneth R. Johnson | Public Utility District No. 1 of Chelan | 3 | Affirmative | Nice work |

| Voter | Entity County | Segment | Vote | Comment |
|--|---------------------------------|---------|----------|--|
| Response: Thank you for your support. | | | | |
| Jacquie Smith | ReliabilityFirst Corporation | 10 | Negative | <p>ReliabilityFirst staff believe that station batteries chargers are part of the station batteries thus would be included under PRC-005-1.</p> <p>ReliabilityFirst staff request that the drafting team provide the clarification that was being sought in Question 4 for the DC control circuitry. The team should provide the interpretation based upon not only the standard and glossary of terms but also the intent of the standard when they were drafting it. The team strictly interpreted the language of the glossary of terms but the questions were seeking an interpretation to the standard and glossary of terms to clarify the ambiguity of the standard and provide consistency among the regions.</p> <p>ReliabilityFirst staff disagree that reclosers or anything else used to restore vs. isolate is not part of the protective system.</p> |
| <p>Response: Thank you for your comments.</p> <p>We concur that the battery chargers play a critical role in the station DC Supply; however, the existing definition does not specifically include that element. It is noted that the existing standard needs to be revised in order to address this deficiency, and a substantive change such as this needs to go through the full standards development process, rather than the abbreviated process used for interpretations.</p> <p>Draft PRC-005-2 (Project 2007-17), which is nearing its first comment posting, addresses battery chargers and the issues raised relative to DC control circuitry. Your comments will be forwarded to the Project 2007-17 SDT.</p> | | | | |

| Voter | Entity | Segment | Vote | Comment |
|-------------------|-------------------------|---------|-------------|---|
| Thomas J. Bradish | Reliant Energy Services | 5 | Affirmative | <p>Reliant voted affirmative but we are concerned over the statement in the answer to Question 2: "The existing definition of "Protection System" does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity's maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays.</p> <p>Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1." Although sudden pressure relays don't meet the strict definition of voltage and current sensing devices but we believe that they meet the intent of the definition. SPR's respond quicker than other protective schemes and therefore they do a better job to limit damage to a transformer. If they are employed on a transformer, why not test them?</p> <p>Also in the answer to Question 3: "R1 does not require maintenance and testing of transmission line re-closing relay because "protective relays" refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a "protective" function". Our concern is if a re-closing relay mis-operates and causes the interrupting device to close back into a persistent fault in the circuit, that's a problem. Or, if a re-closing relay mis-operates and doesn't allow the interrupting device to re-close into a cleared circuit, that could be a problem (e.g., customers not returned to service until after crews are dispatched to determine the status of the circuit, interrupting device, etc.).</p> |
| Trent Carlson | Reliant Energy Services | 6 | Affirmative | <p>Reliant voted affirmative but we are concerned over the statement in the answer to Question 2: "The existing definition of "Protection System" does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity's maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays.</p> <p>Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within</p> |

| Voter | Entity | Segment | Vote | Comment |
|---|----------------------------|---------|-------------|---|
| | | | | <p>Requirement R1." Although sudden pressure relays don't meet the strict definition of voltage and current sensing devices but we believe that they meet the intent of the definition. SPR's respond quicker than other protective schemes and therefore they do a better job to limit damage to a transformer. If they are employed on a transformer, why not test them?</p> <p>Also in the answer to Question 3: "R1 does not require maintenance and testing of transmission line re-closing relay because "protective relays" refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a "protective" function". Our concern is if a re-closing relay mis-operates and causes the interrupting device to close back into a persistent fault in the circuit, that's a problem. Or, if a re-closing relay mis-operates and doesn't allow the interrupting device to re-close into a cleared circuit, that could be a problem (e.g., customers not returned to service until after crews are dispatched to determine the status of the circuit, interrupting device, etc.).</p> |
| <p>Response: Thank you for your comments. Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> | | | | |
| Martin Bauer | U.S. Bureau of Reclamation | 5 | Affirmative | <p>Relying on the NERC Glossary for an interpretation that a Battery Charger is not included in the meaning of what is included in "Batteries" seems to contradict the standards intent to ensure reliability. Batteries will not provide a reliable source of power if the battery chargers are not reliable. The response becomes a literal reading rather than an interpretation.</p> |
| <p>Response: Thank you for your comments. A request for interpretation is specifically tasked with interpreting a standard, not changing requirements or establishing new requirements. If the definition is not adequate, changes must be pursued through the standards development process.</p> <p>Draft PRC-005-2 (Project 2007-17), which is nearing its first comment posting, proposes a change to the definition of "Protection System" to include the overall DC Supply, and proposes specific required maintenance activities for battery chargers.</p> | | | | |
| Anita Lee | Alberta Electric | 2 | Negative | <p>The AESO agrees with all the responses to the questions in the interpretation, except for Q#2. The AESO agrees with the first part of the response to Q#2, that</p> |

| Voter | Entity | Segment | Vote | Comment |
|-----------------|---|---------|----------|---|
| | System Operator | | | <p>being auxiliary relays are not considered to be protective relays and therefore are not within scope of R1.</p> <p>However, the AESO disagrees with the last portion of the response where it said "devices that respond to quantities other electrical quantities (for example, sudden pressure relays) are not included in R1". The AESO believes that some protective relays/devices, even they do not respond to electric quantities, such as sudden pressure relays in a major transformer, pressure sensing relay in a GIS substation, etc., should be considered as part of the protection system because they can be crucial in ensuring the BES reliability. This interpretation actually limits/reduces the original intended scope of R1.</p> |
| | | | | <p>Response: Thank you for your comments. The drafting team believes that current NERC PRC standards do not address this type of protective device. A change of this nature is more appropriately handled via the overall standards development process rather than via the abbreviated process used for interpretations.</p> <p>Your comments will be forwarded to the Project 2007-17 SDT that is presently drafting proposed revisions to PRC-005-1.</p> |
| Michehl R. Gent | Other | 8 | Negative | <p>The wrong interpretation has been made! Battery chargers are well known to fail and the result often leads to malfunctions of relays. The "right thing" would be to assume the "but not limited to" language was never removed from the definition when the version "0" standards were developed.</p> |
| | | | | <p>Response: Thank you for your comments. We concur that the battery charger plays a critical role in the station DC Supply; however, the existing definition does not specifically include that element.</p> <p>Draft PRC-005-2 (Project 2007-17), which is nearing its first comment posting, proposes a change to the definition of "Protection System" to include the overall DC Supply, and proposes specific required maintenance activities for battery chargers.</p> |
| Kent Saathoff | Electric Reliability Council of Texas, Inc. | 10 | Negative | <p>We should not lose sight of the fact that ensuring reliability is the overarching purpose of the Standards. This strict interpretation of the wording of the definition of Protection Systems runs directly counter to that purpose. Battery chargers, auxiliary relays and line reclosing relays must function properly and be maintained to have properly functioning protection systems and a reliable electric system.</p> |

| Voter | Entity | Segment | Vote | Comment |
|--|--|---------|-------------|---|
| Louise McCarren | Western Electricity Coordinating Council | 10 | Affirmative | <p>Response: Thank you for your comments. We concur that the battery charger plays a critical role in the reliability of the Protection System; however, the existing definition does not specifically include that element.</p> <p>The drafting team believes that auxiliary relays in the tripping path are included today only to the degree that an entity's Protection System maintenance and testing program maintains the DC control circuits as currently expressed in the definition of Protection System, but are not explicitly included in PRC-005-1.</p> <p>Draft PRC-005-2 (Project 2007-17), which is nearing its first comment posting, proposes a change to the definition of "Protection System" to include the overall DC Supply, and proposes specific required maintenance activities for battery chargers. It also explicitly discusses auxiliary relays that are in the trip path.</p> <p>Your comments on reclosing relays will be forwarded to the Project 2007-17 SDT.</p> |
| <p>Response: Thank you for your support. Revisions to PRC-005-1 are proceeding under Project 2007-17.</p> | | | | |
| James A Ziebarth | Y-W Electric Association, Inc. | 4 | Affirmative | <p>Y-W Electric Association agrees with the interpretation of these terms. While the CMPWG may have some valid concerns for equipment to be added to the definition of a Protection System, Y-WEA believes that the definition should be formally changed through the revision process rather than by adopting and applying expansive interpretations of the existing language.</p> |
| <p>Response: Thank you for your support. Revisions to PRC-005-1 are proceeding under Project 2007-17, which will propose revisions to the Protection System definition.</p> | | | | |



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Announcement

Recirculation Ballot Window Open

July 22–August 3, 2009

Now available at: <https://standards.nerc.net/CurrentBallots.aspx>

Project 2009-10: Interpretation of PRC-005-1 for the Compliance Monitoring Processes Working Group

A recirculation ballot window for an interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing Requirement R1 for the Compliance Monitoring Processes Working Group is now open **until 8 p.m. EDT on August 3, 2009**.

Please note that a correction has been made to the interpretation. The word “currently” in the phrase “Therefore, PRC-005-1 does not currently require...” has been removed from the response; the term is redundant. A redlined copy has been posted to show the edit. The edit is considered errata, not a content revision, allowing the interpretation to proceed to the recirculation ballot stage.

Instructions

Members of the ballot pool associated with this project may log in and submit their votes from the following page: <https://standards.nerc.net/CurrentBallots.aspx>

Recirculation Ballot Process

The Standards Committee encourages all members of the ballot pool to review the consideration of comments submitted with the initial ballots. In the recirculation ballot, votes are counted by exception only — if a ballot pool member does not submit a revision to that member’s original vote, the vote remains the same as in the first ballot. Members of the ballot pool may:

- Reconsider and change their vote from the first ballot.
- Vote in the second ballot even if they did not vote on the first ballot.
- Take no action if they do not want to change their original vote.

Next Steps

Voting results will be posted and announced after the ballot window closes.

Project Background

The Compliance Monitoring Processes Working Group is seeking clarification on aspects of the maintenance and testing program required for Protection Systems in Requirement R1. The



request includes questions about battery chargers, relays, sensing devices, circuitry, and communication systems. The request and interpretation can be found on the project page: http://www.nerc.com/filez/standards/Project2009-10_Interpretation_PRC-005-1_CMPWG.html

Standards Development Process

The [Reliability Standards Development Procedure](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

*For more information or assistance,
please contact Shaun Streeter at shaun.streeter@nerc.net or at 609.452.8060.*



Request for an Interpretation of a Reliability Standard

Date submitted: January 30, 2009

Contact information for person requesting the interpretation:

Name: Gary Campbell

Organization: Compliance Monitoring Processes Working Group (CMPWG)

Telephone: 330-247-3062

E-mail: gary.campbell@rfirst.org

Identify the standard that needs clarification:

Standard Number: PRC-005-1

Identify specifically what needs clarification:

Requirement Number and Text of Requirement:

(The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.)

R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

R1.1. Maintenance and testing intervals and their basis.

R1.2. Summary of maintenance and testing procedures.

1. Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System?
2. Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays)
3. Does R1 require maintenance and testing of transmission line re-closing relays?
4. Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

For R1, what are examples of "associated communications systems" that are part of

| |
|---|
| "Protection Systems" that require a maintenance and testing program? |
| Identify the material impact associated with this interpretation: |
| <i>Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.</i> |
| This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events. |

| |
|---|
| Project 2009-10: Response to Request for an Interpretation of PRC-005-1, Requirement R1 for the Compliance Monitoring Processes Working Group |
| The following interpretation of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing, Requirement R1 was developed by the Protection System Maintenance and Testing Standard Drafting Team (assigned to Project 2007-17) on February 10, 2009. |
| Requirement Number and Text of Requirement |
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> |
| Question #1 |
| Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System? |
| Response to Question #1 |
| While battery chargers are vital for ensuring "station batteries" are available to support Protection System functions, they are not identified within the definition of "Protection Systems." Therefore, PRC-005-1 does not require maintenance and testing of battery chargers. |
| Question #2 |
| Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e. transformer sudden pressure relays) |
| Response to Question #2 |
| The existing definition of "Protection System" does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity's maintenance and testing program for |

DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.

Question #3

Does R1 require maintenance and testing of transmission line re-closing relays?

Response to Question #3

No. "Protective Relays" refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a "protective" function.

Question #4

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response to Question #4

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

Question #5

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Response to Question #5

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection. Examples include the following:

- communications equipment involved in power-line-carrier relaying
- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850¹ as well as various proprietary systems)

¹ IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations

| Request for an Interpretation of a Reliability Standard | |
|--|--|
| | Date submitted: January 30, 2009 |
| Contact information for person requesting the interpretation: | |
| Name: | Gary Campbell |
| Organization: | Compliance Monitoring Processes Working Group (CMPWG) |
| Telephone: | 330-247-3062 |
| E-mail: | gary.campbell@rfirst.org |
| Identify the standard that needs clarification: | |
| Standard Number: | PRC-005-1 |
| Identify specifically what needs clarification: | |
| <i>Requirement Number and Text of Requirement:</i> | |
| (The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.) | |
| <p>R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:</p> <p>R1.1. Maintenance and testing intervals and their basis.</p> <p>R1.2. Summary of maintenance and testing procedures.</p> <ol style="list-style-type: none"> 1. Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System? 2. Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays) 3. Does R1 require maintenance and testing of transmission line re-closing relays? 4. Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring? <p>For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?</p> | |

Identify the material impact associated with this interpretation:

Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.

This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events.

Project 2009-10: Response to Request for an Interpretation of PRC-005-1, Requirement R1 for the Compliance Monitoring Processes Working Group

The following interpretation of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing, Requirement R1 was developed by the Protection System Maintenance and Testing Standard Drafting Team (assigned to Project 2007-17) on February 10, 2009.

Requirement Number and Text of Requirement

R1. Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

R1.1. Maintenance and testing intervals and their basis.

R1.2. Summary of maintenance and testing procedures.

Question #1

Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?

Response to Question #1

While battery chargers are vital for ensuring “station batteries” are available to support Protection System functions, they are not identified within the definition of “Protection Systems.” Therefore, PRC-005-1 does not ~~currently~~ require maintenance and testing of battery chargers.

Question #2

Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e. transformer sudden pressure relays)

Response to Question #2

The existing definition of “Protection System” does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity’s maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example,

sudden pressure relays) are not included within Requirement R1.

Question #3

Does R1 require maintenance and testing of transmission line re-closing relays?

Response to Question #3

No. "Protective Relays" refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a "protective" function.

Question #4

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

Response to Question #4

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

Question #5

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

Response to Question #5

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection. Examples include the following:

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- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850¹ as well as various proprietary systems)

¹ IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Announcement Final Ballot Results

Now available at: <https://standards.nerc.net/Ballots.aspx>

Project 2009-10: Interpretation of PRC-005-1 for the Compliance Monitoring Processes Working Group

The recirculation ballot for an interpretation of PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing Requirement R1 for the Compliance Monitoring Processes Working Group ended August 6, 2009.

Ballot Results

Voting statistics are listed below, and the [Ballot Results](#) Web page provides a link to the detailed results:

Quorum: 95.26%

Approval: 95.62%

The ballot pool approved the interpretation. Ballot criteria details are listed at the end of the announcement.

Next Steps

The interpretation will be submitted to the NERC Board of Trustees for adoption.

Project Background

The Compliance Monitoring Processes Working Group is seeking clarification on aspects of the maintenance and testing program required for Protection Systems in Requirement R1. The request includes questions about battery chargers, relays, sensing devices, circuitry, and communication systems. The request and interpretation can be found on the project page:

<http://www.nerc.com/filez/standards/Project2009-10 Interpretation PRC-005-1 CMPWG.html>

Standards Development Process

The [Reliability Standards Development Procedure](#) contains all the procedures governing the standards development process. The success of the NERC standards development process depends on stakeholder participation. We extend our thanks to all those who participate.

Ballot Criteria: Approval requires both a (1) quorum, which is established by at least 75% of the members of the ballot pool for submitting either an affirmative vote, a negative vote, or an abstention, and (2) A two-thirds majority of the weighted segment votes cast must be affirmative; the number of votes cast is the sum of affirmative and negative votes, excluding abstentions and nonresponses. If there are no negative votes with reasons from the first ballot, the results of the first ballot shall stand. If, however, one or more members submit negative votes with reasons, a second ballot shall be conducted.

*For more information or assistance,
please contact Shaun Streeeter at shaun.streeeter@nerc.net or at 609.452.8060.*



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| Ballot Results | |
|------------------------|--|
| Ballot Name: | Project 2009-10 Interpretation - CMPWG - PRC-005-1 R1_rc |
| Ballot Period: | 7/24/2009 - 8/6/2009 |
| Ballot Type: | recirculation |
| Total # Votes: | 261 |
| Total Ballot Pool: | 274 |
| Quorum: | 95.26 % The Quorum has been reached |
| Weighted Segment Vote: | 95.62 % |
| Ballot Results: | The Standard has Passed |

| Summary of Ballot Results | | | | | | | | | |
|---------------------------|-------------|----------------|-------------|----------|----------|----------|---------|---------|--|
| Segment | Ballot Pool | Segment Weight | Affirmative | | Negative | | Abstain | No Vote | |
| | | | # Votes | Fraction | # Votes | Fraction | # Votes | | |
| 1 - Segment 1. | 78 | 1 | 74 | 0.987 | 1 | 0.013 | 2 | 1 | |
| 2 - Segment 2. | 10 | 0.9 | 8 | 0.8 | 1 | 0.1 | 1 | 0 | |
| 3 - Segment 3. | 62 | 1 | 52 | 0.945 | 3 | 0.055 | 2 | 5 | |
| 4 - Segment 4. | 19 | 1 | 18 | 1 | 0 | 0 | 0 | 1 | |
| 5 - Segment 5. | 60 | 1 | 52 | 0.981 | 1 | 0.019 | 2 | 5 | |
| 6 - Segment 6. | 29 | 1 | 26 | 0.963 | 1 | 0.037 | 1 | 1 | |
| 7 - Segment 7. | 1 | 0.1 | 1 | 0.1 | 0 | 0 | 0 | 0 | |
| 8 - Segment 8. | 4 | 0.4 | 3 | 0.3 | 1 | 0.1 | 0 | 0 | |
| 9 - Segment 9. | 3 | 0.3 | 3 | 0.3 | 0 | 0 | 0 | 0 | |
| 10 - Segment 10. | 8 | 0.7 | 7 | 0.7 | 0 | 0 | 1 | 0 | |
| Totals | 274 | 7.4 | 244 | 7.076 | 8 | 0.324 | 9 | 13 | |

| Individual Ballot Pool Results | | | | |
|--------------------------------|---------------------------------------|-----------------|-------------|----------|
| Segment | Organization | Member | Ballot | Comments |
| 1 | Allegheny Power | Rodney Phillips | Affirmative | |
| 1 | Ameren Services | Kirit S. Shah | Affirmative | |
| 1 | American Electric Power | Paul B. Johnson | Affirmative | |
| 1 | American Transmission Company, LLC | Jason Shaver | Affirmative | |
| 1 | Associated Electric Cooperative, Inc. | John Bussman | Affirmative | |
| 1 | Avista Corp. | Scott Kinney | Affirmative | |
| 1 | Baltimore Gas & Electric Company | John J. Moraski | Affirmative | |
| 1 | BC Transmission Corporation | Gordon Rawlings | Affirmative | |

| | | | | |
|---|--|------------------------------|-------------|----------------------|
| 1 | Black Hills Corp | Eric Egge | Affirmative | |
| 1 | Bonneville Power Administration | Donald S. Watkins | Affirmative | |
| 1 | Brazos Electric Power Cooperative, Inc. | Tony Kroskey | Affirmative | |
| 1 | CenterPoint Energy | Paul Rocha | Affirmative | |
| 1 | Central Maine Power Company | Brian Conroy | Affirmative | |
| 1 | City of Tacoma, Department of Public Utilities, Light Division, dba Tacoma Power | Alan L Cooke | Affirmative | |
| 1 | City Utilities of Springfield, Missouri | Jeff Knottek | Affirmative | |
| 1 | Cleco Power LLC | Danny McDaniel | Affirmative | |
| 1 | Consolidated Edison Co. of New York | Christopher L de Graffenried | Affirmative | |
| 1 | Dairyland Power Coop. | Robert W. Roddy | Affirmative | |
| 1 | Deseret Power | James Tucker | Affirmative | |
| 1 | Dominion Virginia Power | William L. Thompson | Affirmative | |
| 1 | Duke Energy Carolina | Douglas E. Hils | Negative | View |
| 1 | E.ON U.S. LLC | Larry Monday | Affirmative | |
| 1 | East Kentucky Power Coop. | George S. Carruba | Affirmative | |
| 1 | Entergy Corporation | George R. Bartlett | Affirmative | |
| 1 | Exelon Energy | John J. Blazekovich | Affirmative | |
| 1 | Farmington Electric Utility System | Alan Glazner | Affirmative | |
| 1 | FirstEnergy Energy Delivery | Robert Martinko | Affirmative | View |
| 1 | Florida Keys Electric Cooperative Assoc. | Dennis Minton | Affirmative | |
| 1 | Florida Power & Light Co. | C. Martin Mennes | Affirmative | |
| 1 | Georgia Transmission Corporation | Harold Taylor, II | Affirmative | |
| 1 | Great River Energy | Gordon Pietsch | Affirmative | |
| 1 | Hoosier Energy Rural Electric Cooperative, Inc. | Damon Holladay | Affirmative | |
| 1 | Hydro One Networks, Inc. | Ajay Garg | Affirmative | |
| 1 | ITC Transmission | Elizabeth Howell | Affirmative | |
| 1 | JEA | Ted E. Hobson | Affirmative | |
| 1 | Kansas City Power & Light Co. | Michael Gammon | Affirmative | |
| 1 | Kissimmee Utility Authority | Joe B Watson | Affirmative | |
| 1 | Lee County Electric Cooperative | Rodney Hawkins | Abstain | |
| 1 | Lincoln Electric System | Doug Bantam | Affirmative | |
| 1 | Lower Colorado River Authority | Martyn Turner | Affirmative | |
| 1 | Manitoba Hydro | Michelle Rheault | Affirmative | |
| 1 | MEAG Power | Danny Dees | Affirmative | |
| 1 | MidAmerican Energy Co. | Terry Harbour | Affirmative | |
| 1 | Minnesota Power, Inc. | Carol Gerou | Affirmative | |
| 1 | National Grid | Manuel Couto | Affirmative | |
| 1 | Nebraska Public Power District | Richard L. Koch | Affirmative | |
| 1 | New York Power Authority | Ralph Rufrano | Affirmative | |
| 1 | Northeast Utilities | David H. Boguslawski | Affirmative | |
| 1 | Northern Indiana Public Service Co. | Kevin M Largura | Affirmative | |
| 1 | Ohio Valley Electric Corp. | Robert Matthey | Affirmative | |
| 1 | Oklahoma Gas and Electric Co. | Marvin E VanBebber | Affirmative | |
| 1 | Omaha Public Power District | Ilorees Tadros | Affirmative | |
| 1 | Oncor Electric Delivery | Charles W. Jenkins | Affirmative | |
| 1 | Orange and Rockland Utilities, Inc. | Edward Bedder | Affirmative | |
| 1 | Orlando Utilities Commission | Brad Chase | Affirmative | |
| 1 | Otter Tail Power Company | Lawrence R. Larson | Affirmative | |
| 1 | PacifiCorp | Mark Sampson | | |
| 1 | Platte River Power Authority | John C. Collins | Affirmative | |
| 1 | Potomac Electric Power Co. | Richard J. Kafka | Affirmative | |
| 1 | PowerSouth Energy Cooperative | Larry D. Avery | Affirmative | |
| 1 | PP&L, Inc. | Ray Mammarella | Affirmative | |
| 1 | Progress Energy Carolinas | Sammy Roberts | Affirmative | |
| 1 | Public Service Electric and Gas Co. | Kenneth D. Brown | Affirmative | |
| 1 | Public Utility District No. 1 of Chelan County | Chad Bowman | Affirmative | View |
| 1 | Puget Sound Energy, Inc. | Catherine Koch | Affirmative | |
| 1 | Salt River Project | Robert Kondziolka | Affirmative | |
| 1 | Santee Cooper | Terry L. Blackwell | Affirmative | |
| 1 | SaskPower | Wayne Guttormson | Affirmative | |
| 1 | Seattle City Light | Pawel Krupa | Affirmative | |
| 1 | Sierra Pacific Power Co. | Richard Salgo | Affirmative | View |
| 1 | Southern California Edison Co. | Dana Cabbell | Affirmative | |
| 1 | Southern Company Services, Inc. | Horace Stephen Williamson | Affirmative | |
| 1 | Southwest Transmission Cooperative, Inc. | James L. Jones | Abstain | |

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|---|--|-------------------------|-------------|----------------------|
| 1 | Tampa Electric Co. | Thomas J. Szelistowski | Affirmative | |
| 1 | Westar Energy | Allen Klassen | Affirmative | |
| 1 | Western Area Power Administration | Brandy A Dunn | Affirmative | |
| 1 | Western Farmers Electric Coop. | Alan Derichsweiler | Affirmative | |
| 1 | Xcel Energy, Inc. | Gregory L. Pieper | Affirmative | |
| 2 | Alberta Electric System Operator | Anita Lee | Negative | View |
| 2 | British Columbia Transmission Corporation | Phil Park | Affirmative | |
| 2 | California ISO | Greg Tillitson | Abstain | |
| 2 | Independent Electricity System Operator | Kim Warren | Affirmative | |
| 2 | ISO New England, Inc. | Kathleen Goodman | Affirmative | |
| 2 | Midwest ISO, Inc. | Terry Bilke | Affirmative | |
| 2 | New Brunswick System Operator | Alden Briggs | Affirmative | |
| 2 | New York Independent System Operator | Gregory Campoli | Affirmative | |
| 2 | PJM Interconnection, L.L.C. | Tom Bowe | Affirmative | |
| 2 | Southwest Power Pool | Charles H Yeung | Affirmative | |
| 3 | Alabama Power Company | Robin Hurst | Affirmative | |
| 3 | Allegheny Power | Bob Reeping | Affirmative | |
| 3 | Ameren Services | Mark Peters | Affirmative | |
| 3 | American Electric Power | Raj Rana | Affirmative | |
| 3 | Arizona Public Service Co. | Thomas R. Glock | Affirmative | |
| 3 | Atlantic City Electric Company | James V. Petrella | Affirmative | |
| 3 | Basin Electric Power Cooperative | Daniel Klempel | | |
| 3 | BC Hydro and Power Authority | Pat G. Harrington | Abstain | |
| 3 | Black Hills Power | Andy Butcher | Affirmative | |
| 3 | Bonneville Power Administration | Rebecca Berdahl | Affirmative | |
| 3 | Central Lincoln PUD | Steve Alexanderson | Affirmative | View |
| 3 | City of Tallahassee | Rusty S. Foster | | |
| 3 | Cleco Utility Group | Bryan Y Harper | Affirmative | |
| 3 | Commonwealth Edison Co. | Stephen Lesniak | | |
| 3 | Consolidated Edison Co. of New York | Peter T Yost | Affirmative | |
| 3 | Consumers Energy | David A. Lapinski | Affirmative | |
| 3 | Cowlitz County PUD | Russell A Noble | Affirmative | |
| 3 | Delmarva Power & Light Co. | Michael R. Mayer | Affirmative | |
| 3 | Detroit Edison Company | Kent Kujala | Affirmative | |
| 3 | Dominion Resources, Inc. | Jalal (John) Babik | Affirmative | |
| 3 | Douglas County PUD #1 | Jeff Johnson | | |
| 3 | Duke Energy Carolina | Henry Ernst-Jr | Negative | |
| 3 | Entergy Services, Inc. | Matt Wolf | Affirmative | |
| 3 | FirstEnergy Solutions | Joanne Kathleen Borrell | Affirmative | View |
| 3 | Florida Power Corporation | Lee Schuster | Affirmative | |
| 3 | Georgia Power Company | Leslie Sibert | Affirmative | |
| 3 | Grays Harbor PUD | Wesley W Gray | Affirmative | |
| 3 | Great River Energy | Sam Kokkinen | Affirmative | |
| 3 | Gulf Power Company | Gwen S Frazier | Affirmative | |
| 3 | Hydro One Networks, Inc. | Michael D. Penstone | Affirmative | |
| 3 | JEA | Garry Baker | Affirmative | |
| 3 | Kansas City Power & Light Co. | Charles Locke | Affirmative | |
| 3 | Kissimmee Utility Authority | Gregory David Woessner | Negative | View |
| 3 | Lakeland Electric | Mace Hunter | Affirmative | |
| 3 | Lincoln Electric System | Bruce Merrill | Affirmative | |
| 3 | Louisville Gas and Electric Co. | Charles A. Freibert | Affirmative | |
| 3 | Manitoba Hydro | Jamie Hall | Affirmative | |
| 3 | MidAmerican Energy Co. | Thomas C. Mielnik | Abstain | |
| 3 | Mississippi Power | Don Horsley | Affirmative | |
| 3 | New York Power Authority | Michael Lupo | Affirmative | |
| 3 | Niagara Mohawk (National Grid Company) | Michael Schiavone | Affirmative | |
| 3 | Northern Indiana Public Service Co. | William SeDoris | Affirmative | |
| 3 | Orlando Utilities Commission | Ballard Keith Mutters | Affirmative | |
| 3 | PacifiCorp | John Apperson | Affirmative | |
| 3 | PECO Energy an Exelon Co. | John J. McCawley | Affirmative | |
| 3 | Platte River Power Authority | Terry L Baker | Affirmative | |
| 3 | Potomac Electric Power Co. | Robert Reuter | Affirmative | |
| 3 | Progress Energy Carolinas | Sam Waters | Affirmative | |
| 3 | Public Service Electric and Gas Co. | Jeffrey Mueller | Affirmative | |
| 3 | Public Utility District No. 1 of Chelan County | Kenneth R. Johnson | Affirmative | View |
| 3 | Public Utility District No. 2 of Grant County | Greg Lange | Affirmative | |
| 3 | Salt River Project | John T. Underhill | Negative | View |

| | | | | |
|---|---|---------------------|-------------|----------------------|
| 3 | San Diego Gas & Electric | Scott Peterson | | |
| 3 | Santee Cooper | Zack Dusenbury | Affirmative | |
| 3 | Seattle City Light | Dana Wheelock | Affirmative | |
| 3 | Southern California Edison Co. | David Schiada | Affirmative | |
| 3 | Southern Indiana Gas and Electric Co. | Fred Frederick | Affirmative | |
| 3 | Tampa Electric Co. | Ronald L. Donahey | Affirmative | |
| 3 | Tri-State G & T Association Inc. | Lisa Tiffin | Affirmative | |
| 3 | Turlock Irrigation District | Casey Hashimoto | Affirmative | |
| 3 | Wisconsin Electric Power Marketing | James R. Keller | Affirmative | |
| 3 | Xcel Energy, Inc. | Michael Ibold | Affirmative | |
| 4 | Alliant Energy Corp. Services, Inc. | Kenneth Goldsmith | Affirmative | |
| 4 | American Municipal Power - Ohio | Kevin L Holt | Affirmative | |
| 4 | Black Hills Corp | Kelly Wolfe | Affirmative | |
| 4 | Consumers Energy | David Frank Ronk | Affirmative | |
| 4 | Detroit Edison Company | Daniel Herring | Affirmative | |
| 4 | Eugene Water & Electric Board | Dean Ahlsten | | |
| 4 | Illinois Municipal Electric Agency | Bob C. Thomas | Affirmative | |
| 4 | Indiana Municipal Power Agency | Gayle Mayo | Affirmative | |
| 4 | Madison Gas and Electric Co. | Joseph G. DePoorter | Affirmative | |
| 4 | Northern California Power Agency | Fred E. Young | Affirmative | |
| 4 | Ohio Edison Company | Douglas Hohlbaugh | Affirmative | View |
| 4 | Oklahoma Municipal Power Authority | David W Osburn | Affirmative | |
| 4 | Old Dominion Electric Coop. | Mark Ringhausen | Affirmative | |
| 4 | Public Utility District No. 1 of Douglas County | Henry E. LuBean | Affirmative | |
| 4 | Sacramento Municipal Utility District | Dilip Mahendra | Affirmative | |
| 4 | Seattle City Light | Hao Li | Affirmative | |
| 4 | Seminole Electric Cooperative, Inc. | Steven R. Wallace | Affirmative | |
| 4 | Wisconsin Energy Corp. | Anthony Jankowski | Affirmative | |
| 4 | Y-W Electric Association, Inc. | James A Ziebarth | Affirmative | View |
| 5 | AEP Service Corp. | Brock Ondayko | Affirmative | |
| 5 | Allegheny Energy Supply Company, LLC | Robert Loy | Affirmative | |
| 5 | Amerenue | Sam Dwyer | Affirmative | |
| 5 | Avista Corp. | Edward F. Groce | Affirmative | |
| 5 | Black Hills Corp | George Tatar | Affirmative | |
| 5 | Bonneville Power Administration | Francis J. Halpin | Affirmative | |
| 5 | Calpine Corporation | John Brent Hebert | Affirmative | |
| 5 | Chelan County Public Utility District #1 | John Yale | Affirmative | |
| 5 | City of Farmington | Clinton J Jacobs | Affirmative | |
| 5 | City of Tallahassee | Alan Gale | Affirmative | |
| 5 | Cleco Power LLC | Grant Bryant | Affirmative | |
| 5 | Colmac Clarion/Piney Creek LP | Harvie D. Beavers | Affirmative | |
| 5 | Constellation Generation Group | Michael F. Gildea | Affirmative | |
| 5 | Consumers Energy | James B Lewis | Affirmative | |
| 5 | Covanta Energy | Samuel Cabassa | Affirmative | |
| 5 | Dairyland Power Coop. | Warren Schaefer | Affirmative | |
| 5 | Detroit Edison Company | Ronald W. Bauer | Affirmative | |
| 5 | Dominion Resources, Inc. | Mike Garton | Affirmative | |
| 5 | Dynegy | Greg Mason | Negative | |
| 5 | Electric Power Supply Association | Jack R. Cashin | | |
| 5 | Entergy Corporation | Stanley M Jaskot | Affirmative | |
| 5 | Exelon Nuclear | Michael Korchynsky | Affirmative | |
| 5 | FirstEnergy Solutions | Kenneth Dresner | Affirmative | View |
| 5 | FPL Energy | Benjamin Church | Affirmative | |
| 5 | Great River Energy | Cynthia E Sulzer | Affirmative | |
| 5 | Hardee Power Partners | Ralph Randall | Affirmative | |
| 5 | JEA | Donald Gilbert | Affirmative | |
| 5 | Kansas City Power & Light Co. | Scott Heidtbrink | Affirmative | |
| 5 | Liberty Electric Power LLC | Daniel Duff | Affirmative | |
| 5 | Lincoln Electric System | Dennis Florom | Affirmative | |
| 5 | Louisville Gas and Electric Co. | Charlie Martin | | |
| 5 | Lower Colorado River Authority | Tom Foreman | | |
| 5 | Manitoba Hydro | Mark Aikens | Affirmative | |
| 5 | Midway Sunset Cogeneration Company | Richard McPherson | Affirmative | |
| 5 | Municipal Electric Authority of Georgia | Roger Brand | Affirmative | |
| 5 | New York Power Authority | Gerald Mannarino | Affirmative | |
| 5 | Northern Indiana Public Service Co. | Michael K Wilkerson | Affirmative | |
| 5 | Northern States Power Co. | Liam Noailles | Affirmative | |

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| 5 | Orlando Utilities Commission | Richard Kinan | Affirmative | |
| 5 | Pacific Gas and Electric Company | Richard J. Padilla | Affirmative | |
| 5 | PacifiCorp Energy | David Godfrey | Affirmative | |
| 5 | PowerSouth Energy Cooperative | Tim Hattaway | Affirmative | |
| 5 | PPL Generation LLC | Mark A. Heimbach | Affirmative | |
| 5 | Progress Energy Carolinas | Wayne Lewis | Affirmative | |
| 5 | PSEG Power LLC | Thomas Piascik | Affirmative | |
| 5 | RRI Energy | Thomas J. Bradish | Affirmative | View |
| 5 | Salt River Project | Glen Reeves | Affirmative | |
| 5 | Seattle City Light | Michael J. Haynes | Affirmative | |
| 5 | Seminole Electric Cooperative, Inc. | Brenda K. Atkins | Affirmative | |
| 5 | South Carolina Electric & Gas Co. | Richard Jones | | |
| 5 | South Mississippi Electric Power Association | Jerry W Johnson | Affirmative | |
| 5 | Southeastern Power Administration | Douglas Spencer | Abstain | |
| 5 | Southern Company Generation | William D Shultz | Affirmative | |
| 5 | Tampa Electric Co. | Frank L Busot | Abstain | |
| 5 | Tenaska, Inc. | Scott M. Helyer | Affirmative | |
| 5 | TransAlta Centralia Generation, LLC | Joanna Luong-Tran | Affirmative | |
| 5 | U.S. Army Corps of Engineers Northwestern Division | Karl Bryan | Affirmative | |
| 5 | U.S. Bureau of Reclamation | Martin Bauer | Affirmative | View |
| 5 | Wisconsin Electric Power Co. | Linda Horn | Affirmative | |
| 5 | Wisconsin Public Service Corp. | Leonard Rentmeester | | |
| 6 | AEP Marketing | Edward P. Cox | Affirmative | |
| 6 | Ameren Energy Marketing Co. | Jennifer Richardson | Affirmative | |
| 6 | Bonneville Power Administration | Brenda S. Anderson | Affirmative | |
| 6 | Consolidated Edison Co. of New York | Nickesha P Carrol | Affirmative | |
| 6 | Dominion Resources, Inc. | Louis S Slade | Affirmative | |
| 6 | Duke Energy Carolina | Walter Yeager | Negative | |
| 6 | Entergy Services, Inc. | Terri F Benoit | Affirmative | |
| 6 | Eugene Water & Electric Board | Daniel Mark Bedbury | Affirmative | |
| 6 | Exelon Power Team | Pulin Shah | Affirmative | |
| 6 | FirstEnergy Solutions | Mark S Travaglianti | Affirmative | View |
| 6 | Great River Energy | Donna Stephenson | Affirmative | |
| 6 | Kansas City Power & Light Co. | Thomas Saitta | Affirmative | |
| 6 | Lincoln Electric System | Eric Ruskamp | Affirmative | |
| 6 | Louisville Gas and Electric Co. | Daryn Barker | Affirmative | |
| 6 | Manitoba Hydro | Daniel Prowse | Affirmative | |
| 6 | New York Power Authority | Thomas Papadopoulos | Affirmative | |
| 6 | Northern Indiana Public Service Co. | Joseph O'Brien | Affirmative | |
| 6 | PacifiCorp | Gregory D Maxfield | | |
| 6 | PP&L, Inc. | Thomas Hyzinski | Affirmative | |
| 6 | Progress Energy | James Eckelkamp | Affirmative | |
| 6 | PSEG Energy Resources & Trade LLC | James D. Hebson | Affirmative | |
| 6 | Public Utility District No. 1 of Chelan County | Hugh A. Owen | Affirmative | |
| 6 | RRI Energy | Trent Carlson | Affirmative | View |
| 6 | Salt River Project | Mike Hummel | Affirmative | |
| 6 | Santee Cooper | Suzanne Ritter | Affirmative | |
| 6 | Seminole Electric Cooperative, Inc. | Trudy S. Novak | Affirmative | |
| 6 | Southern California Edison Co. | Marcus V Lotto | Affirmative | |
| 6 | Tampa Electric Co. | Heidi Giustiniani | Abstain | |
| 6 | Xcel Energy, Inc. | David F. Lemmons | Affirmative | |
| 7 | Alcoa, Inc. | Thomas Gianneschi | Affirmative | |
| 8 | JDRJC Associates | Jim D. Cyrulewski | Affirmative | |
| 8 | Other | Michehl R. Gent | Negative | View |
| 8 | Utility Services LLC | Brian Evans-Mongeon | Affirmative | |
| 8 | Volkman Consulting, Inc. | Terry Volkman | Affirmative | |
| 9 | California Energy Commission | William Mitchell Chamberlain | Affirmative | |
| 9 | Commonwealth of Massachusetts Department of Public Utilities | Donald E. Nelson | Affirmative | |
| 9 | National Association of Regulatory Utility Commissioners | Diane J. Barney | Affirmative | |
| 10 | Electric Reliability Council of Texas, Inc. | Kent Saathoff | Abstain | View |
| 10 | Florida Reliability Coordinating Council | Linda Campbell | Affirmative | |
| 10 | Midwest Reliability Organization | Dan R Schoenecker | Affirmative | |
| 10 | New York State Reliability Council | Alan Adamson | Affirmative | |
| 10 | Northeast Power Coordinating Council, Inc. | Guy V. Zito | Affirmative | |
| 10 | ReliabilityFirst Corporation | Jacquie Smith | Affirmative | |



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|----|--|-----------------|-------------|----------------------|
| 10 | SERC Reliability Corporation | Carter B. Edge | Affirmative | |
| 10 | Western Electricity Coordinating Council | Louise McCarren | Affirmative | View |
| | | | | |

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Exhibit D

Roster of the Interpretation Development Team

RFI of PRC-005-1 by CMPWG — Project 2009-10

| | | |
|-------------------------------|---|---|
| Chairman | Charles W Rogers — Principal Engineer | Consumers Energy |
| | John Anderson | Xcel Energy, Inc. |
| | Merle Ashton | Tri-State G & T Association Inc. |
| | Bob Bentert | Florida Power & Light Co. |
| | John L. Ciufo — Manager, P&C Strategies and Standards | Hydro One, Inc. |
| | Richard Ferner — Regional Meter and Relay Foreman | Western Area Power Administration |
| | Carol Gerou | Midwest Reliability Organization |
| | Roger D. Green — E&I Manager | Southern Company Generation |
| | Russell Hardison, P.E. | Tennessee Valley Authority |
| | Dave Harper | NRG Maintenance Services |
| | John Kruse — Senior Engineer Real Time Analysis | Commonwealth Edison Co. |
| | Mark Peterson | Great River Energy |
| | William D Shultz | Southern Company Generation |
| | Leonard Swanson, Jr. — Protection Standards and Support | National Grid USA |
| | Eric Udren — Executive Advisor | Quanta Technology |
| | Philip Winston — Manager, Protection and Control | Georgia Power Company |
| | John Zipp | ITC Holdings |
| NERC Staff Coordinator | Al Calafiore — Standards Development Coordinator | North American Electric Reliability Corporation |
| NERC Staff | Maureen E. Long — Standards Process Manager | North American Electric Reliability Corporation |