Unofficial Comment Form

Project 2010-05.3 Phase 3 of Protection Systems: Remedial Action Schemes (RAS)

PRC-012-2

**DO NOT** use this form for submitting comments. Use the [electronic form](https://sbs.nerc.net/) to submit comments on draft 1 of **PRC-012-2 – Remedial Action Schemes**. The electronic comment form must be submitted by **8 p.m. Eastern, Monday, October 5, 2015.**

Documents and information about this project are available on the [project page](http://www.nerc.com/pa/Stand/Pages/Project-2010-05_3-Remedial-Action-Schemes_Phase-3-of-Protection-Systems.aspx). If you have questions, contact Standards Developer, [Al McMeekin](mailto:Al.McMeekin@nerc.net) (via email), or at (404) 446-9675.

## Background Information

This project is addressing all aspects of Remedial Action Schemes (RAS) and Special Protection Systems (SPS) contained in the RAS/SPS-related Reliability Standards: PRC-012-1, PRC-013-1, PRC-014-1, PRC-015-1, and PRC-016-1. The maintenance of the Protection System components associated with RAS (PRC-017-1 Remedial Action Scheme Maintenance and Testing) are already addressed in PRC-005. PRC-012-2 addresses the testing of the non-Protection System components associated with RAS/SPS

In FERC Order No. 693 (dated March 16, 2007), the Commission identified PRC-012-0, PRC-013-0, and PRC-014-0 as “fill-in-the-blank” standards and did not approve or remand them. These standards are applicable to the Regional Reliability Organizations (RROs), assigning the RROs the responsibility to establish regional procedures and databases, and to assess and document the operation, coordination, and compliance of RAS/SPS. The deference to regional practices precludes the consistent application of RAS/SPS-related Reliability Standard requirements.

The proposed draft of PRC-012-2 corrects the applicability of the fill-in-the-blank standards by assigning the requirement responsibilities to the specific users, owners, and operators of the Bulk-Power System; and incorporates the reliability objectives of all the RAS/SPS-related standards.

**45-day Formal Comment Period**

The drafting team is soliciting stakeholder comments and feedback on the first draft of PRC-012-2. The team appreciates the feedback you provided during the informal comment period earlier this year and considered all of your suggestions. While many of your thoughts were incorporated into this product, a few were not and the drafting team offers the following explanations.

**Choice of applicable entity in specific requirements:** The drafting team selected the functional entity they assert is the most capable of performing the required actions. The drafting team recognizes that in some instances the specified entity will need to collaborate with or obtain information from other entities. For example, in Requirement R5, the RAS-owner is tasked with analyzing RAS operations. The RAS-owner was designated because they own the RAS and are responsible for maintaining the performance of the RAS. The drafting team recognizes that the RAS-owner may need to obtain information from entities such as the Transmission Operator, Transmission Planner, Balancing Authority, or others to complete the analysis but contends that ultimate responsibility should remain with the RAS-owner.

**Periodic Planning Evaluation Considerations:** Requirement R4 mandates that the Transmission Planner (TP) perform a technical evaluation (planning analyses) of each RAS at least once every 60 full calendar months to verify the continued effectiveness and coordination of the RAS, including BES performance following an inadvertent operation and single component failure of the RAS.

In structuring Requirement R4, the SDT considered the issue of the TP reviewing the RAS design made by the RAS-owner. Although the TP is not involved in the detailed design of the RAS, the SDT asserts that the TP is aware, to some extent, of the redundancy level of the RAS design from the initial planning studies. Requirement R4 is a planning evaluation to assess the impact of System changes over time on the RAS effectiveness and is not intended to be a RAS design review.

The language used in the current Requirement R4, Part 4.4 is aligned with the language of Requirement R1.3 in PRC-012-0 (RAS single component failure).The evaluation of a RAS under Requirement R4, Part 4.4 will consider the following three scenarios:

1. The RAS was originally designed such that a “single component failure” does not prevent RAS operation in-whole. Due to System changes that may affect achieving the System performance requirement(s), the TP must re-evaluate whether the operation of the RAS still meets them. If it does not, then a CAP must be developed per Requirement R6 to meet “single component failure” performance requirements.
2. The RAS was originally designed such that a “single component failure” could cause the RAS to not operate when intended. Therefore, System performance when the RAS fails to operate must be evaluated. For deficient System performance, a CAP must be developed per Requirement R6 to meet “single component failure” performance requirements.
3. The RAS was designed such that a “single component failure” could cause part but not all of the RAS to not operate, yet still meet the System performance requirement(s) (e.g. over-arming used to mitigate “single component failure” for load shedding or generation rejection). Due to System changes that may affect achieving the System performance requirement(s), the TP must re-evaluate whether partial operation of the RAS still meets them. If it does not, then a CAP must be developed per Requirement R6 to meet “single component failure” performance requirements.

In all cases, detailed design review is not required. The SDT recognizes that involvement of the RAS-owner may be necessary for the TP to be aware of the consequences of single component failure for its RAS.

**CAP Development Considerations:** The drafting team selected the RAS-owner as the applicable entity to develop, submit, and implement CAPs associated with RAS performance because they own the RAS, are responsible for maintaining the performance of the RAS, and make all of the financial decisions regarding the RAS. The six-month timeframe to develop a CAP was selected to provide enough time for engineering studies to analyze possible modifications to the RAS. The six months is the maximum timeframe. The SDT anticipates that most CAPs can be developed in less time. The glossary definition of a CAP includes the work schedules associated with implementing and completing actions within the CAP. The implementation timeframe should not impact System reliability because the RC will determine whether the RAS can remain in service, or if other System operating limits must be imposed. The RAS-owner must submit the CAP to the RC. The RC is not required to approve a CAP that does not require functional modifications to the RAS; however, the drafting team expects the RC would provide feedback on any concerns with CAP adequacy. A CAP that does require functional modifications will be reviewed and approved by the RC in accordance with Requirements R1, R2, and R3.

**Functional Testing:** The drafting team asserts that the functional testing of RAS should remain in PRC-012-2 and not be included in PRC-005.While the drafting team agrees that many RAS have Protection System components that will be maintained in accordance with PRC-005, the purpose of the functional testing is to verify the control equipment operation and confirm the overall RAS performance rather than the performance of individual Protection System components. PRC-005 does not include the maintenance of RAS controllers such as PLCs, computers, or the control functions of microprocessor relays. There is no double jeopardy because PRC-012-2 specifically requires the verification of only non-Protection System components. The drafting team contends that functional testing is complementary to the Protection System component maintenance required in PRC-005. An entity could maintain its Protection System components in association with a functional testing of a RAS and document it for compliance with its Protection System Maintenance Plan for PRC-005.

**RAS Database and Attachment 3:** The drafting team selected the Reliability Coordinator to maintain the RAS database because the RC is the reviewing entity for new and functionally modified RAS and as such receives the pertinent data from the RAS-entity in Attachment 1. The RAS database serves as a repository of information about all RAS in an RC Area that enables entities with a reliability-related need access to the information through the RC. The data in Attachment 3 is the minimum an RC is required to maintain; however, the RC has the discretion to require additional information deemed necessary for a high-level understanding of a RAS. The drafting team contends it is not necessary to require detailed information for every RAS in the database as that would make database maintenance a burden for both the RC and the entities, while bringing little improvement to reliability. While the SDT agrees that detailed information may be important to an entity with a reliability-related need, it was agreed that such cases are specific enough to be treated individually and not systematically through a standard requirement. The drafting team also asserts that a requirement for an entity to provide detailed modeling information to other registered entities is not necessary. Entities that have a reliability-related need for this information have multiple avenues to get the data; e.g., regional model building processes, Planning Coordinator, and/or direct request to the RAS-owner.

The drafting team is charged with assigning the requirements of the new standard to the specific users, owners, and operators of the Bulk-Power System while incorporating the reliability objectives of all the RAS/SPS-related standards. In drafting this standard, the team has worked diligently to minimize the changes that will be required from your existing processes. The drafting team requests that you read the standard including the rationales and technical justifications thoroughly and provide your thoughtful comments. The electronic comment form must be completed by **8 p.m. Eastern Monday, October 5, 2015.**

**Questions**

Requirements R1, R2, and R3 pertain to the submittal of Attachment 1 information to the Reliability Coordinator (RC) for the review of a RAS, the RC using Attachment 2 as a guide for performing the RAS review, and the RC approving the RAS prior to the RAS being placed in service. Question 1 is relevant to these activities.

1. **RAS review and approval:** Do you agree with the RAS review process outlined by Requirements R1, R2, and R3? If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

Requirement R4 mandates that the Transmission Planner perform a technical evaluation (planning analyses) of each RAS at least once every 60 full calendar months to verify the continued effectiveness and coordination of the RAS, including BES performance following an inadvertent operation and single component failure of the RAS. Questions 2, 3, and 4 pertain to these topics.

1. **RAS Periodic Evaluations:** Do you agree with the RAS planning evaluation process outlined by Requirement R4? If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

1. **RAS Inadvertent Operation:** Do you agree with Requirement 4 Part 4.3 and Attachment 1 which stipulates that RAS inadvertent operation due to a single component malfunction still satisfies the System performance requirements common to TPL-001-4 P1-P7 events listed in Parts 4.3.1-4.3.5? (Note that this requirement remains the same as PRC-012-0 R1.4 except for the allowance for designed-in security that would prevent RAS inadvertent operation for any single component malfunction). If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

1. **RAS Single Component Failure:** Do you agree with Requirement 4 Part 4.4 and Attachment 1 which stipulates that any RAS intended to satisfy System performance requirements in a TPL standard must still satisfy those requirements when experiencing a single component failure? (Note that this requirement remains unchanged from PRC-012-0 R1.3.) If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

Requirements R6 and R7 pertain to the development and implementation of Corrective Action Plans (CAPs). Question 5 addresses these requirements.

1. **Corrective Action Plans:** Do you agree that the application of Requirements R6 and R7 would address the reliability objectives associated with CAPs? If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

1. **Implementation Plan:** Do you agree with the Implementation Plan? If no, please provide the basis for your disagreement and an alternate proposal.

Yes

No

Comments:

1. If you have any other comments that you haven’t already provided in response to the above questions, please provide them here.

Comments: