

Special Protection Systems/Remedial Action Schemes (RAS)
Interpretation of Application
 Sept. 24, 2007

Business-Sensitive

Background:

BPA has been contacted by WECC (see e-mail at end) as to our responsibilities related to four standards:

| Standard | Title | Purpose | Requirements |
|-----------|---|---|--|
| IRO-005-1 | Reliability Coordination – Current-Day Operations | The Reliability Coordinator must be continuously aware of conditions within its Reliability Coordinator Area and include this information in its reliability assessments. The Reliability Coordinator must monitor Bulk Electric System parameters that may have significant impacts upon the Reliability Coordinator Area and neighboring Reliability Coordinator Areas. | <p>R1. Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:</p> <p>R1.1. Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.</p> <p>R1.2. Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.</p> <p>R1.3. Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.</p> <p>R1.4. System real and reactive reserves (actual versus required).</p> <p>R1.5. Capacity and energy adequacy conditions.</p> <p>R1.6. Current ACE for all its Balancing Authorities.</p> <p>R1.7. Current local or Transmission Loading Relief procedures in effect.</p> <p>R1.8. Planned generation dispatches.</p> <p>R1.9. Planned transmission or generation outages.</p> <p>R1.10. Contingency events.</p> |
| PRC-015-0 | Special Protection System Data and Documentation | To ensure that all Special Protection Systems (SPS) are properly designed, meet performance requirements, and are coordinated with other protection systems. To ensure that maintenance and testing programs are developed and misoperations are analyzed and corrected. | <p>R1. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall maintain a list of and provide data for existing and proposed SPSs as specified in Reliability Standard PRC-013-0_R1.</p> <p>R2. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have evidence it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures as defined in Reliability Standard PRC-012-0_R1 prior to being placed in service.</p> <p>R3. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of SPS data and the results of Studies that show compliance of new or functionally modified SPSs with NERC Reliability Standards and Regional Reliability Organization criteria to affected Regional Reliability Organizations and NERC on request (within 30 calendar days).</p> |
| PRC-016-0 | Special Protection System Misoperations | To ensure that all Special Protection Systems (SPS) are properly designed, meet performance requirements, and are coordinated with other protection systems. To ensure that maintenance and testing programs are developed and misoperations are analyzed and corrected. | <p>R1. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall analyze its SPS operations and maintain a record of all misoperations in accordance with the Regional SPS review procedure specified in Reliability Standard PRC-012-0_R1.</p> <p>R2. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall take corrective actions to avoid future misoperations.</p> <p>R3. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of the misoperation analyses and the corrective action plans to its Regional Reliability Organization and NERC on request (within 90 calendar days).</p> |
| PRC-017-0 | Special Protection System Maintenance and Testing | To ensure that all Special Protection Systems (SPS) are properly designed, meet performance requirements, and are coordinated with other protection systems. To ensure that maintenance and testing programs are developed and misoperations are analyzed and corrected. | <p>R1. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have a system maintenance and testing program(s) in place. The program(s) shall include:</p> <p>R1.1. SPS identification shall include but is not limited to:</p> <p>R1.1.1. Relays.</p> <p>R1.1.2. Instrument transformers.</p> <p>R1.1.3. Communications systems, where appropriate.</p> <p>R1.1.4. Batteries.</p> <p>R1.2. Documentation of maintenance and testing intervals and their basis.</p> <p>R1.3. Summary of testing procedure.</p> <p>R1.4. Schedule for system testing.</p> <p>R1.5. Schedule for system maintenance.</p> <p>R1.6. Date last tested/maintained.</p> <p>R2. The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of the program and its implementation to the appropriate Regional Reliability Organizations and NERC on request (within 30 calendar days).</p> |

Definition: From the NERC Glossary of Terms Used in Reliability Standards

Special Protection System
(Remedial Action Scheme)

An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and Mvar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.

Interpretation:

BPA owns and operates the following SPS*:

- AC RAS
- West Side (WS) RAS
- Lower Snake (LS) RAS
- Northern Intertie (NI) RAS
- DC RAS
- Chief Joseph Brake Local Scheme
- FACRI
- Western Montana (WM) RAS
- Flathead Valley RAS
- Boundary RAS
- Big Eddy 115 kV RAS
- Klondike and Condon Wind Gen Drop
- Tucannon River Wind RAS
- Spring Creek / Big Horn Gen Drop
- Jones Canyon Gen Drop
- Goldendale EGP
- BALT (Bellingham Area Load Trip)
- SOCSS (South of Chehalis Sectionalizing Scheme)

*Some of these SPS are WECC approved and some are Local Schemes, not subject to WECC review.

A number of BPA's neighboring utilities own and maintain equipment that performs an action directed by a BPA RAS Controller. Such equipment may include gen drop arming panels, RAS transfer trip equipment, voltage supervision for incoming RAS trips (for reactive switching schemes), line loss logic, generation loss logic, sequence of events recorders, RTU's used for RAS arming, etc. This equipment on its own does not constitute a separate SPS; it part of a BPA SPS.

BPA owns, operates, monitors, analyzes and tests all of its SPS in accordance with the NERC Reliability Standards PRC-015, PRC-016 and PRC-017. Maintenance is performed by BPA personnel, or by the neighboring utility in response to local alarms on their equipment that is part of BPA's RAS.