Operating Criteria

Revision 2.2

MAINTAINED BY

SPP Operating Reliability Working Group

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REVISIONS

Revision	Date	Description of Modification
0.a	10/12/2010	Initial draft
1.0	11/20/2015	Reflects the approval of RR117 and RR58_CRR014.
1.1	4/1/2016	Reflects the approval of RR98.
1.2	10/3/2016	Reflects the approval of RR113, RR146, RR159
1.3	4/27/2017	Reflects the approval of RR134, RR168, RR195, RR213
1.4	12/11/2017	Reflects the approval of RR240
1.5	2/7/2018	Reflects the approval of RR162
2.0	4/30/2018	Reflects the approval of RRs 268, 269, 270
2.1	10/19/2018	Reflects the approval of RR309
2.2	6/17/2019	Reflects the approval of RR349

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1. Introduction

The Operating Criteria contained within this document serves to support the values and principles upon which Southwest Power Pool, Inc. (SPP) is formed. These criteria are reviewed and managed by the Organizational Group structure as described in the SPP Bylaws. Unless stated otherwise in the applicable section of this document, these Operating Criteria shall be reviewed by the Operating Reliability Working Group (ORWG) and any revisions to this document shall be performed pursuant to the approved Revision Request Process and submitted to the Markets and Operations Policy Committee (MOPC) for consideration of approval. The MOPC shall present applicable Revision Requests to the SPP Board of Directors for their review and approval as appropriate.

1.1 Purpose

The Operating Criteria provide background information, guidelines, business rules, and processes for the operation and administration of the various SPP operating reliability functions. Stand-alone governing documents for the purposes of meeting certain NERC Reliability Standards are also referenced in the SPP Operating Criteria.

1.2 Document Relationship

Multiple NERC Reliability Standards require SPP to develop and maintain documents. Such documents can be described by NERC as a 'methodology', 'operating process', or other descriptions. In such cases where required, SPP shall develop and maintain stand-alone governing documents to meet such NERC Reliability Standard requirements. Each of these stand-alone governing documents will be referenced in an appropriate Operating Criteria section. For the purposes of the SPP Bylaws and the SPP Membership Agreement, these stand-alone governing documents shall be considered an extension of these Operating Criteria.

2. Operating Functions Overview

SPP's operating reliability functions include: Reliability Coordinator (RC), Balancing Authority (BA), Transmission Service Provider (TSP), and Reserve Sharing Group (RSG) administrator. For the purposes of SPP Operating Criteria and Appendices, these functions are defined by the NERC Glossary of Terms.

2.1 Reliability Coordination

SPP is registered with the North American Electric Reliability Corporation (NERC) as a Reliability Coordinator (RC) for Transmission Operators (TOPs), Generator Operators (GOPs) and Balancing Authorities (BAs).

2.2 Balancing Authority

SPP is registered with NERC as a Balancing Authority (BA) for selected TOPs and GOPs.

2.3 Transmission Service Provider

SPP is is registered with NERC as a Transmission Service Provider (TSP) for the SPP Open Access Transmission Tariff. SPP administers the provisions of the Tariff and provides Transmission Service to Transmission Customers under the applicable transmission service agreements.

2.4 Reserve Sharing Group

SPP is registered with NERC as a Reserve Sharing Group (RSG).

As the administrator of the SPP RSG, and in coordination with other participating BAs, SPP maintains the *SPP Reserve Sharing Group Operating Process (RSGOP).* The RSGOP establishes standard terminology and minimum requirements governing the amount and availability of Contingency Reserves. BAs participating in the SPP RSG shall meet the requirements set forth in the *SPP RSGOP*, which can be found on the SPP website.

3. Reliability Coordination

Continuous coordinated operation of the Bulk Electric System is essential to maintain reliable electric service to all customers. Reliability coordination procedures are established herein for sharing of operating information and around-the-clock coordination of normal and emergency operating conditions to secure the reliability of the Bulk Electric System.

3.1 SPP Emergency Communication Network

The SPP emergency communication network consists of satellite phones located at the SPP primary and backup control centers, control centers of each member BA and/or TOP. If loss of any primary communication facilities occurs, the SPP emergency communication network may be used to exchange information. Therefore, it is important for operators to be familiar and comfortable with the operation of the satellite phones. The RC can provide training upon request.

BAs, TOPs and RCs shall participate in weekly testing of the SPP emergency communication network. Testing will ensure reliability and it will also give users practice on the system. The RC shall initiate and monitor the SPP satellite phone testing.

During conditions requiring the use of the SPP emergency communication network, the RC shall initiate a group call and quickly determine the extent of the interruption. Communication is vital to an orderly recovery. Operating personnel shall keep conversations concise to keep channels clear. Priority should be given to establishing voice communication paths prior to re-establishing data communication paths.

3.2 Reliability Coordinator Outage Coordination Methodology

The *SPP RC Outage Coordination Methodology* document serves to meet the NERC Reliability Standards that require an outage coordination methodology for the SPP RC Area. Applicable entities in the SPP RC Area shall meet the requirements defined in the *SPP RC Outage Coordination Methodology* document, which can be found on the SPP website.

3.3 Reliability Coordinator Performance Standards

The SPP RC shall have the following performance standards:

1) The SPP RC shall act in accordance with Good Utility Practice including NERC Reliability Standards and SPP Criteria, shall not order SPP members to take any action that would not be in accordance with Good Utility Practice or NERC Reliability

Standards, and shall allow SPP members to take any actions required by Good Utility Practice and NERC Reliability Standards.

2) The SPP RC shall not take any action, or direct SPP members to take any action, which would be in violation of any lawful regulation or requirement of any governmental agency or NERC Reliability Standard.
3) The SPP RC shall carry out its responsibilities in at least as prompt and efficient a manner as that required by Good Utility Practice including NERC Reliability Standards and SPP Criteria.
4) The SPP RC shall comply with appropriate standards of conduct to ensure appropriate protection of competitively sensitive information.

3.4 SPP Reliability Coordinator Area SOL Methodology

The *SPP RC Area SOL Methodology* document serves to meet the NERC Reliability Standards that require an SOL methodology for the SPP RC Area. Applicable entities in the SPP RC Area shall meet the requirements defined in the *SPP RC Area SOL Methodology* document, which can be found on the SPP website.

4. Communications Protocols

The *SPP Reliability Coordinator and Balancing Authority Operating Instruction Communications Protocols* document exists to improve communications for the issuance of Operating Instructions to reduce the possibility of miscommunication that could lead to action or inaction harmful to the reliability of the Bulk Electric System. Applicable entities are required to follow the *SPP Reliability Coordinator and Balancing Authority Operating Instruction Communications Protocols* document, which can be found on the SPP website.

5. Communication of Data

5.1 Providing Required Reliability Data to the Reliability Coordinator and Balancing Authority

The *Required Data Specification for the SPP Reliability Coordinator and the SPP Balancing Authority* (RDS) document defines data required to perform reliability functions. Applicable entities shall meet the requirements defined in the *Required Data Specification for the SPP Reliability Coordinator and the SPP Balancing Authority* document, which can be found on the SPP website.

5.2 Node Connectivity Requirement

SPP operates Inter-Control Center Communications Protocol (ICCP) nodes at both the primary and backup sites. Both the primary and backup site ICCP nodes feed real-time data to their primary and backup site Energy Management Systems concurrently. To ensure maximum availability of ICCP data required for reliability, the following connectivity requirements are required for entities registered with NERC as a GOP or TOP within the SPP RC Area:

- All TOPs are required to configure their ICCP nodes to connect to the SPP primary and backup sites concurrently and to make the same Block 1 and Block 2 data available to both nodes.
- All TOPs and GOPs are required to configure two ICCP nodes so that, in the event of a failure of their active ICCP node, their alternate ICCP node reconnects to SPP's ICCP nodes within 240 seconds.
    - If the TOP or GOP has a third party contract for their ICCP connections, then the third party should be able to reconnect within 240 seconds.
- All GOPs with more than 1500 MW of net aggregate generation or fifteen capacity resources in the SPP BA Area are required to configure two ICCP nodes to read their Integrated Marketplace resource set point instructions from both SPP's primary and secondary ICCP nodes concurrently.

In the event of an outage on ICCP Nodes:

- Planned maintenance outages should comply with the Outage Scheduling Information of the RDS (Telemetering and Control System Status). For forced or unplanned outages, the TOP or GOP should contact SPP and follow the Outage Scheduling Information of the RDS (Telemetering and Control System Status).

5.3 Synchrophasor Data Communication System – Phase I

Synchrophasor technology enables greater visibility into grid conditions by detecting and recording events that supervisory control and data acquisition (SCADA) data may miss. SPP's Synchrophasor System allows SPP to collect, analyze, and archive time-synchronized data from phasor measurement units (PMU) or other phasor measurement recording devices with similar capabilities. SPP is focused on creating a more reliable electric grid by using PMU data to gain a better understanding of the dynamic nature of the grid resulting in increased model accuracy that enables reliable and efficient use of the existing transmission assets.

In Phase I of SPP's Synchrophasor System project, the PMU devices and the associated data will be used to (a) analyze oscillation modes in the region, (b) analyze and benchmark voltage stability assessments against actual recorded data, (c) record phase angle differences to understand transmission system stress from a wide-area overview, (d) perform model validation for operations and planning system stability studies and, (e) provide enhanced insight while researching grid events in post-event analysis. Any change in use may introduce compliance impacts for member companies. The PMU devices and associated data in the SPP Synchrophasor System will not be used for any of the following purposes:

- Operational Planning Analysis;
- Real-time Assessments; or
- Real-time monitoring for purposes of making operational decisions within a 15 minute time horizon.

Prior to implementing subsequent phases of the Synchrophasor System project, this language in this section shall be updated. If SPP relies on the PMU devices for purposes of control and monitoring, it will notify SPP member companies in adherence to CIP-002-5, Attachment 1 Criteria.

6. SPP Reliability Communications Tool (R-Comm)

6.1 Connectivity Requirements

Entities required to use R-Comm for one or more of the functions described in section 6.2 shall meet the following connectivity requirements.

A) Entities shall maintain a connection to the R-Comm tool. When an entity is aware it is or will be unable to maintain a connection to the R-Comm tool, it shall inform the SPP RC without intentional delay.

B) If an entity identifies any degradation to the functionality of the R-Comm tool, it shall inform the SPP RC.

C) Entities shall utilize voice communications as an alternate means of communication in the event of the R-Comm tool being unavailable.

SPP will inform impacted entities for any actual or planned loss of connectivity.

6.2 6.2 Required R-Comm Functions

6.2.1 6.2.1 SPP BA Load Shed Instructions and Responses

The R-Comm tool shall be the primary means for responsible entities to receive and acknowledge load shed instructions issued by the SPP BA. The load shed process is defined in the SPP BA Emergency Operating Plan.

Appendix OP-1: Voltage Stability Assessment and Monitoring Methodology

Change History:

4/27/2017	**Initial Version**

Purpose

The purpose of this methodology is to provide technical requirements and criteria to Transmission Operators, Generator Operators and SPP Staff related to the voltage stability assessment and monitoring of pre- and post-contingency (single and multiple) operating conditions. Monitored scenarios will be identified using available reliability studies, real-time system information, outage schedules, and other relevant sources. During the different Operating Horizons, the pre- and post-contingency operating conditions being studied may require adjustment. The SPP RC and TOPs must determine and coordinate which Multiple Contingencies within the TOP areas are credible to be utilized for study in the operating horizon.

If the TOP or the SPP RC determine that changes are required for a pre- or post-contingency operating condition, such changes shall be communicated to the affected entities. The SPP RC will coordinate with all applicable impacted TOPs or neighboring RCs.

The use of proxy flowgate limits for voltage stability will be communicated in the same manner as other flowgate limits and information.

1. **Study Models**
    a. SPP utilizes both the EMS model and the approved Planning Base Cases for establishing, calculating and monitoring SOLs/IROLs in the operating horizons. These cases are updated periodically to reflect expected system topology changes based on reported facility outages or upgrades.
2. **Real Time and Post Contingent Voltage Stability Limits**
    a. The SPP RC will perform a voltage stability assessment for identified areas and paths that have a reasonable potential to cause real-time and post-contingency voltage instability.
    b. The SPP RC may identify and establish voltage stability limits based on the voltage stability assessment results and will coordinate the voltage stability limits with the affected TOPs. Voltage stability limits may require development of new temporary flowgates.
    c. Voltage stability real-time and single-contingency limits will include a 5% MW margin.
    d. Voltage stability multiple-contingency limits will include a 2.5 % MW margin.
    e. A voltage stability limit more restrictive than an existing SOL will be identified as the revised SOL and communicated to affected entities prior to implementation in congestion management procedures.
    f. If system conditions in conjunction with real-time voltage stability assessments are determined to be stable, conditions within the 5% MW margin of the voltage stability limit than was previously defined, then the SPP RC may adjust the limit after coordinating an agreement with the affected TOPs.
    g. The RC will coordinate with the impacted TOPs to establish necessary mitigations and operating plans.