

SPP Reserve Sharing Group Operating Process

Effective: 1/1/2019

1.1 Reserve Sharing Group Purpose

In the continuous operation of the electric power network, Operating Capacity is required to meet forecasted load, including an allowance for uncertainty, to provide protection against equipment failure and to provide adequate regulation of frequency and Balancing Authority Area tie line power flows. Operating Reserves are needed to regulate load changes and to support an Operating Reserve Contingency without shedding firm load or curtailing Firm Power Sales.

This Operating Process establishes standard terminology and minimum requirements governing the amount and availability of Contingency Reserves to be maintained by the distribution of Operating Reserve responsibility among members of the SPP Reserve Sharing Group (RSG).

The primary purpose of this Operating Process is to ensure a high level of reliability in the SPP Reserve Sharing Group to assure that there are capacity resources available at all times that can be used quickly to relieve stress placed on the interconnected electric system during an Operating Reserve Contingency. Another purpose of this Operating Process is to efficiently utilize the operating reserve resources of the members of the SPP Reserve Sharing Group.

This Operating Process describes practices to be followed by all SPP Reserve Sharing Group members to ensure prompt response to Operating Reserve Contingencies. The methods prescribed by this Operating Process to jointly activate Contingency Reserve are intended to ensure that the combined area control error (ACE) of the SPP Reserve Sharing Group is quickly recovered by the Reserve Sharing Group while simultaneously scheduling assistance soon after an Operating Reserve Contingency.

The SPP Reserve Sharing Group is not a “Frequency Response Sharing Group” or a “Regulation Reserve Sharing Group” as defined in the NERC Glossary of Terms.

1.2 Annual Maintenance of this Operating Process

Annually on or before September 1 of each year, SPP (as the reserve sharing group administrator) and each participating Balancing Authority will review this Operating Process. Each participating Balancing Authority shall provide SPP written confirmation of the results of this review. The results of this review shall consist of either proposed changes or confirmation that this Operating Process is agreeable to the participating Balancing Authority.

SPP or any participating Balancing Authority may propose changes to this Operating Process as a part of this annual review or at any point prior to the next scheduled annual review. Proposed changes to this Operating Process by a participating Balancing Authority must be provided in writing to SPP. SPP, as the reserve sharing

group administrator, may implement changes or decline to incorporate proposed changes by another participating Balancing Authority.

The SPP Balancing Authority Operating Committee will review and approve any proposed changes on behalf of the SPP Balancing Authority.

Annually on or before January 1 of each year, SPP shall issue an updated version of this Operating Process to all participating Balancing Authorities.

1.3 Definitions

Capitalized terms not otherwise defined herein shall have the definitions assigned by the NERC Glossary of Terms.

1.3.1 Assistance Period

Assistance Period is that time frame when any SPP Reserve Sharing Group member receives Contingency Reserve assistance from other SPP Reserve Sharing Group members. The Assistance Period will normally not exceed 60 minutes. The SPP Operating Reliability Working Group will set the ending time for Assistance Period and may change the length of the Assistance Period.

1.3.2 Assisting Areas

The Assisting Areas are defined as the other Balancing Authority Areas in the SPP Reserve Sharing Group, which are called upon to supply Contingency Reserves to the Contingency Area.

1.3.3 Balancing Authority Annual Contingency Reserve Requirement

A Balancing Authority member's share of the total SPP Reserve Sharing Group Previous Calendar Year System Peak Responsibility. The Balancing Authority's Annual Contingency Reserve Requirement Ratio shall be determined by dividing the Balancing Authority's Previous Calendar Year System Peak Responsibility by the sum of all of the RSG member Balancing Authority's Previous Calendar Year System Peak Responsibility.

1.3.4 Balancing Authority Daily Peak Load Obligation

Balancing Authority Annual Peak Load Obligation is the peak hour load plus Firm Power sales minus Firm Power purchases during the hour the SPP Reserve Sharing Group as a whole experiences its highest load.

1.3.5 Balancing Authority Minimum Daily Contingency Reserve Requirement

A Balancing Authority member's Contingency Reserve Requirement Ratio multiplied by the Reserve Sharing Group Total Contingency Reserve Requirement. Each Balancing Authority's Daily Contingency Reserve Requirement shall be rounded up to the next nearest whole MW and shall be no less than two (2) MW.

1.3.6 Contingency Area

The Contingency Area is defined as the Balancing Authority Area suffering an Operating Reserve Contingency.

1.3.7 Contingency Reserve

The provision of capacity deployed by the Balancing Authority to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Organization contingency requirements.

In addition to the NERC Glossary of Terms definition, Contingency Reserve will be defined as follows within the SPP RSG. Contingency Reserve is the sum of Operating Reserve - Spinning and Operating Reserve - Supplemental. At least half of the Contingency Reserve shall be Operating Reserve - Spinning.

1.3.8 Firm Power

Firm Power shall mean electric power which is intended to be continuously available to the buyer even under adverse conditions; i.e., power for which the seller assumes the obligation to provide capacity (including SPP defined capacity margin) and energy. Such power shall meet standards of reliability and availability as that delivered to native load customers. Power purchased shall only be considered to be Firm Power if firm transmission service is in place to the load serving member for delivery of such power. Firm Power does not include “financially firm” power.

1.3.9 Most Severe Single Contingency

The Balancing Contingency Event, due to a single contingency identified using system models maintained within the Reserve Sharing Group (RSG) or a Balancing Authority’s area that is not part of a Reserve Sharing Group, that would result in the greatest loss (measured in MW) of resource output used by the RSG or a Balancing Authority that is not participating as a member of a RSG at the time of the event to meet Firm Demand and export obligation (excluding export obligation for which Contingency Reserve obligations are being met by the Sink Balancing Authority).

1.3.10 Operating Capacity

Operating Capacity is the dispatchable capability claimed for any generating source, which will be used for supplying Operating Reserves. Operating Capacity shall include capacity purchases that can be used to supply the buyer’s Operating Reserves minus capacity sales that cannot be used to supply the seller’s Operating Reserves. Operating Capacity shall recognize any temporary de-ratings, proven loading rates, starting times and equipment limitations including transmission-operating limits. This capacity is not intended to be the tested seasonal net capability; instead it is the normal operating rating of a generator on a given day.

1.3.11 Operating Reserve

That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non-spinning reserve.

In addition to the NERC Glossary of Terms definition, Operating Reserve will be defined as follows within the SPP RSG. Operating Reserve is the sum of Regulating Reserve and Contingency Reserve.

1.3.12 Operating Reserve - Spinning

The portion of Operating Reserve consisting of:

- Generation synchronized to the system and fully available to serve load within the Disturbance Recovery Period following the contingency event; or
- Load fully removable from the system within the Disturbance Recovery Period following the contingency event.

1.3.13 Operating Reserve - Supplemental

The portion of Operating Reserve consisting of:

- Generation (synchronized or capable of being synchronized to the system) that is fully available to serve load within the Disturbance Recovery Period following the contingency event; or
- Load fully removable from the system within the Disturbance Recovery Period following the contingency event.

Operating Reserve – Supplemental may consist of any or a combination of the following that is fully able to serve load within the Disturbance Recovery Period following the contingency event:

- 1) The amount of Operating Capacity connected to the bus that will not be realized by prime-mover governor action. The realization of this capacity may require the governor speed level to be reset.
- 2) That portion of fast starting generating capacity at rest, such as hydroelectric, combustion turbines, and internal combustion engines as prime movers that can be started and synchronized.
- 3) Operating Capacity that can be realized by increasing boiler steam pressure, by removing feedwater heaters from service, and/or by decreasing station power use.
- 4) Operating Capacity and contingency reserve, provided firm transmission has been purchased, being held available under contract by another Balancing Authority above its own operating reserve requirements and available on call.
- 5) Interruptible or curtailment of loads under contract.
- 6) Power deliveries that can be recovered provided a clear understanding exists between the transacting parties to avoid both parties crediting their respective operating reserves by this transaction.
- 7) Generating units operating in a synchronous condenser mode.
- 8) Interruptible pumping load on pumped hydro units.
- 9) Operating Capacity made available by voltage reduction. The voltage reduction shall be made on the distribution system and not on the transmission system.
- 10) Operating Capacity that can be fully applied from a change in the output of a High Voltage Direct Current terminal.

1.3.14 Operating Reserve Contingency

An Operating Reserve Contingency is defined as the sudden and complete loss of a generating unit, sudden partial loss of generating capacity, loss of a capacity purchase which a Balancing Authority is unable to replace, or Other Extreme Conditions.

1.3.15 Other Extreme Conditions

Other Extreme Conditions include but are not limited to the:

- 1) Interruption of firm transmission service, or
- 2) An inability to use prescheduled firm transmission service due to any type of congestion management, or
- 3) When a RSG member Balancing Authority requires assistance to prevent shedding firm load or Firm Power sales, or
- 4) When a RSG member Balancing Authority is unable to maintain its Operating Reserves.

1.3.16 Previous Calendar Year System Peak Responsibility

The sum of a Balancing Authority's load and firm interchange at the time of the SPP Reserve Sharing Group coincident peak from the previous calendar year as determined by SPP.

1.3.17 Regulating Reserve

An amount of reserve responsive to Automatic Generation Control, which is sufficient to provide normal regulating margin.

1.3.18 Reserve Sharing Group

A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating reserves required for each Balancing Authority's use in recovering from contingencies within the group. Scheduling energy from an Adjacent Balancing Authority to aid recovery need not constitute reserve sharing provided the transaction is ramped in over a period the supplying party could reasonably be expected to load generation in (e.g., ten minutes). If the transaction is ramped in quicker (e.g., between zero and ten minutes) then, for the purposes of disturbance control performance, the areas become a Reserve Sharing Group.

1.3.19 Reserve Sharing Group Annual Contingency Reserve Requirement

The minimum amount of Contingency Reserve that must be collectively carried by the Balancing Authorities participating in the SPP Reserve Sharing Group at a given time.

1.4 Minimum Annual Daily Contingency Reserve Requirement

The Operating Reliability Working Group (ORWG) will set the Minimum Daily Contingency Reserve Requirement for the SPP Reserve Sharing Group. The SPP Reserve Sharing Group will maintain a Minimum Daily Contingency Reserve, over and above any Regulating Reserves, equal to the generating capacity of the largest unit within the metered boundaries of any RSG member Balancing Authority plus one-half of the capacity

of the next largest generating unit within the metered boundaries of any RSG member Balancing Authority. Generation capacity is considered to be added at the first injection of test power of the generator, regardless of commercial status.

If the SPP Reliability Coordinator foresees an operating condition in which reserves are inadequate to cover the Most Severe Single Contingency (MSSC), the SPP Reliability Coordinator has the authority to increase the total SPP Reserve Sharing Group Minimum Daily Contingency Reserve Requirement to the level necessary to cover the MSSC for the duration of the operating condition.

Any increased reserves that are based on non-compliance with the NERC Disturbance Control Standard will raise the total SPP Reserve Sharing Group Minimum Annual Contingency Reserve Requirement for the SPP Reserve Sharing Group on a quarterly basis. The Operating Reliability Working Group will determine the method by which the increased reserves will be allocated among the members of the SPP Reserve Sharing Group.

Each day, by 7:00am, the SPP Reliability Coordinator will notify each member Balancing Authority of its Daily Contingency Reserve Requirement for the following operating day.

1.4.1 Minimum Annual Balancing Authority Contingency Reserve Requirement Share Calculation

A RSG member Balancing Authority's Minimum Annual Contingency Reserve Requirement is equal to a prorated amount of the total SPP Reserve Sharing Group Minimum Annual Contingency Reserve Requirement. The RSG member Balancing Authority's Minimum Annual Contingency Reserve Requirement shall be determined by dividing the Balancing Authority's Previous Calendar Year System Peak Responsibility by the sum of all of the RSG member Balancing Authority's Previous Calendar Year System Peak Responsibility and multiplying the resultant by the Reserve Sharing Group Annual Contingency Reserve Requirement. Each Balancing Authority's Annual Contingency Reserve Requirement shall be rounded up to the next nearest whole MW and shall be no less than two (2) MW.

A member Balancing Authority whose historical information used as the basis of the Minimum Annual Contingency Reserve Requirement has changed significantly due to extreme circumstances may apply to the ORWG for a temporary waiver of all or a portion of its Minimum Annual Contingency Reserve Requirement. For example, the BA may request such a waiver due to (i) the shifting of load from one BA to another or (ii) drought conditions for Balancing Authorities whose system Capacity is comprised of more than 75% hydro based generation resources. ORWG will review such requests and make a recommendation to be considered by the MOPC at its next regularly scheduled meeting.

1.4.2 Minimum Annual Contingency Reserve Requirement Review Process

By April 1 each year, each RSG member Balancing Authority will submit to the SPP Reliability Coordinator its Previous Calendar Year System Peak Responsibility. SPP will calculate the Reserve Sharing Group's Total Previous Calendar Year System Peak Responsibility and each member Balancing Authority's Annual Contingency Reserve Requirement Ratio. The results of these calculations will be presented for review and approval by the OWRG to be made effective June 1 of each year.

1.5 Procedures

All SPP Reserve Sharing Group members shall participate in this procedure to jointly activate Contingency Reserve.

1.5.1 Normal Daily Operation

- 1) Each RSG Member Balancing Authority's Operating Reserve shall be distributed so as to ensure that it can be utilized without exceeding individual element ratings, transfer limitations, or a unit's capability to apply the reserve to meet the NERC DCS requirements.
- 2) Each RSG member Balancing Authority shall schedule Operating Capacity and firm obligations so its requirements for Operating Reserve are met at all times.
- 3) Energy associated with Operating Reserve - Supplemental, except Assistance Schedules, may be sold with the understanding that it is recallable to meet the NERC DCS requirements. The buyer shall therefore maintain resources to support the withdrawal of this energy in addition to meeting its Operating Reserve Requirement.
- 4) Generating capacity associated with the required Operating Reserve - Spinning shall not be sold unless allocated during an Assistance Period.
- 5) Each RSG member Balancing Authority may contract with another Balancing Authority to provide part or its entire Operating Reserve obligation, provided the Balancing Authority accepting this additional Operating Reserve obligation maintains the Operating Reserve obligation of both Balancing Authorities and the firm transmission service required to deliver Operating Reserve energy is obtained.
- 6) When a RSG member Balancing Authority foresees it will be unable to provide its Balancing Authority Minimum Daily Contingency Reserve Requirement with available resources because load is greater than anticipated, forced outages or other limitations, it shall obtain Operating Capacity and firm transmission service. Such capacity shall not be from another Balancing Authority's Balancing Authority Minimum Daily Contingency Reserve Requirement.

1.5.2 Contingency Operation

These procedures may be implemented immediately following the occurrence of an Operating Reserve Contingency of any type and magnitude, but are required to be implemented for Operating Reserve Contingencies as specified below.

- 1) A complete or partial loss of 200 MW magnitude or greater of a resource within any 60 second period, or
- 2) A loss of Operating Capacity resulting in the BA possessing less than its Balancing Authority Minimum Daily Contingency Reserve Requirement, or,
- 3) Any "Other Extreme Conditions" event.

These procedures are to be implemented in a non-discriminatory manner.

- 1) Immediately following an Operating Reserve Contingency, the Contingency Area shall report the occurrence via the SPP Reserve Sharing System. This report shall contain a description of the contingency; the net MW lost due to the contingency and any MW amount of Contingency Reserve being carried on

the contingency unit. For those generating units whose station auxiliaries do not decrease to essentially zero or increase after a unit trip, gross MWs lost shall be used instead of net MWs lost. The operating owner of jointly owned generating units shall be responsible for reporting outages and the MW amount lost by each owner.

- 2) Within the constraints described in this Operating Process, allocation magnitudes shall be determined and notices distributed to the members of the Reserve Sharing Group.
- 3) The Assistance Schedule becomes part of each Assisting Area's scheduled net interchange and shall therefore be reflected in its ACE. The schedule shall be implemented at a zero time ramp rate immediately following allocation notification. If obvious and significant errors exist in assistance schedules, the Contingency Area system operator shall dictate appropriate corrective action during the Contingency Period, and notify SPP.
- 4) Assisting Areas shall immediately acknowledge receipt of the allocation notice via the SPP Reserve Sharing System. If a Contingency Area fails to receive acknowledgment from an Assisting Area, the SPP Reliability Coordinator shall notify the Assisting Area of the assistance schedule.
- 5) The Contingency Area(s) and Assisting Areas shall provide the requested assistance within the requirements established in the Disturbance Recovery Criterion of the NERC Reliability Standards.
- 6) The Contingency Reserve Requirement of each Balancing Authority involved in the Assistance Period shall be updated to reflect the reduction of responsibility until the end of the Assistance Period.
- 7) All allocations shall be rounded to the nearest whole MW with a minimum of 2 MW and the smallest amount of energy to be allocated shall be one MWH.
- 8) After the contingency notification has been completed, the Contingency Area shall promptly make arrangements to replace the energy requirement created by the Operating Reserve Contingency (including its Contingency Reserve Allocation) prior to the end of the Assistance Period. The Contingency Area shall make a reasonable effort to purchase capacity and firm transmission service after utilization of its own resources.
- 9) If assistance is needed by the Contingency Area for a period of time longer than the initial Assistance Period, this becomes an Other Extreme Condition and shall be reported as a separate contingency.
- 10) For each reportable contingency (as defined per section 7.4.4), the Contingency Area and Assisting Areas will send to SPP upon request, an electronic data file in a SPP specified format that records ACE, Frequency Deviation, Net Tie Deviation, and Net Interchange for 10 minutes prior to until 30 minutes after the contingency within two days of the SPP request for this data.
- 11) If assistance is needed by the Contingency Area for a period of time longer than the initial Assistance Period, this becomes an Other Extreme Condition and shall be reported as a separate contingency.
- 12) Each transmission provider shall immediately notify the SPP of the loss of transmission interconnection capability affecting its interchange transfer capability. The SPP shall update Group assignments for use during subsequent Assistance Periods. Each transmission provider is responsible for notifying the SPP once the contingency loss in the interchange transfer capability has been restored so that Group assignments can be updated.
- 13) For each reportable contingency (as defined by the Operating Reliability Working Group), the Contingency Area and Assisting Areas will send to SPP an electronic data file in a SPP specified format that records ACE, Frequency Deviation, Net Tie Deviation, and Net Interchange for 10 minutes prior to until 30 minutes after the contingency within two days of the SPP request for this data. If electronic data is not available, this data will be supplied on the NERC required charts.

1.5.3 Subsequent Contingencies

In the event that a subsequent Operating Reserve Contingency occurs during a period when assistance is already in progress, the same procedures shall be followed to allocate responsibility for the additional Operating Reserve Contingency. Response to multiple Contingencies may be limited if the combined MW loss exceeds the Most Severe Single Contingency.

1.5.4 Assistance Reports

Energy and transmission service reports shall be issued following the Assistance Period. These reports shall be used as verification of associated energy schedules and transmission service reservations. The Operating Reliability Working Group shall distribute monthly summary reports of Other Extreme Conditions activity for use.

SPP Staff will report to NERC quarterly the performance of the SPP Reserve Sharing Group. Performance will be calculated based on the data that Balancing Authorities provide and any additional data required for each reportable contingency. At a minimum, reportable contingencies will be of a magnitude between 80% and 100% of the capacity of the largest generating unit scheduled to be on-line within the SPP each day. The Operating Reliability Working Group may lower the 80% factor in order to better monitor the performance of the SPP Reserve Sharing Group.

1.5.5 Other Extreme Conditions Events

Other Extreme Conditions (OEC) Events may be requested by any Balancing Authority member of the SPP Reserve Sharing Group. OECs may be implemented for any of the following reasons, but shall be implemented when the requesting Balancing Authority has used all or a portion of its reserve obligation due to the event:

- 1) Loss of a Capacity Import Schedule;
- 2) Loss of Contingency Reserves;
- 3) Initial or additional assistance is required and no other mechanism is available within the confines of the SPP computer communication system.

Any SPP Reserve Sharing Group member not having their Balancing Authority Minimum Daily Contingency Reserve Requirement shall enter an Other Extreme Conditions for the amount of the deficiency. A NERC Energy Emergency Alert (EEA) may or may not be required. If the Balancing Authority determines an EEA must be issued, the Balancing Authority shall notify the Reliability Coordinator. If the OEC is requested along with an EEA, the Balancing Authority shall be prepared to demonstrate the emergency condition by taking the steps required by the EEA.

The SPP Reserve Sharing Group member submitting an Other Extreme Conditions event shall submit a written report to OECEEARports@spp.org within 2 business days of the event. The written report will describe the operating conditions that precipitated the event. Other Extreme Conditions shall be investigated as required by the SPP Operating Reliability Working Group to ensure compliance with the SPP Reserve Sharing Group Operating Process and NERC Reliability Standards.

1.6 Compensation for Assistance

1.6.1 Energy Charge

The charge for energy assistance delivered by Assisting Areas under the application of this Operating Process shall be determined by interchange agreements between the members involved in the Reserve Sharing Group.

1.6.2 Accounting

All compensation for energy associated with the application of this Operating Process shall be handled by contractual agreements and standard accounting procedures being utilized by the SPP Reserve Sharing Group members.

1.6.3 Transmission Service

All compensation for transmission service shall be in accordance with the appropriate transmission service tariffs. The SPP staff shall be responsible for all billings for transmission service provided under the SPP Regional Transmission Tariff. The individual transmission provider shall be responsible for all billings under the transmission provider's transmission tariff. It shall be the SPP staff's responsibility to provide the required transmission service information to the transmission provider for all transmission service under an individual transmission provider's transmission tariff.

1.7 Responsibilities

1.7.1 Balancing Authorities

It shall be the responsibility of each Balancing Authority to observe the policies and procedures contained herein; maintaining Operating Reserve, ensuring connectivity to the SPP computer communications system, reporting daily information, identifying and reporting an Operating Reserve Contingency within its Balancing Authority Area, acknowledging schedules and supplying assistance to members of the SPP Reserve Sharing Group.

1.7.2 Operating Reliability Working Group

In order to review the adequacy in SPP Reserve Sharing Group, reports shall be compiled and distributed by SPP for review by SPP Reserve Sharing Group members and the Operating Reliability Working Group. These reports shall contain compliance information and a summary of Assistance Period events.