

SPP BA Emergency Operating Plan V 8.1

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Approved By:		
	SME, SPP Reliability Coordinator	Date
Approved By:		
	Manager, SPP Balancing Authority	Date

1 Revision History

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1/4/2012 Version 1.5	Jim Gonzalez	Comments from EOP Task Force Meeting 12/19/2011 14:00-15:00 Removed BA issuing Directive and replaced with language agreed on from meeting on 12/19/2011.
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12/09/2013 Version 4.3	Carl Stelly	Minor reorganization.
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9/1/2015 Version 4.5	Carl Stelly	Updates based on participant and SPP staff feedback

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10/10/2016 Version 5.0	Kim Gorter, Margaret Adams, Member Input	Removed reference to WAPA RSG Agreement. Added SPC JOA Agreement. Updates to the Communication Methods section. Clarified the use of the terms Stakeholders and Market Participant. Major reorganization of Section 6. Clarified the role of SPP Corporate Communication in the Public Appeals process.
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October 1, 2018 Version 6.5	SPP Staff, BAOC	Annual review process. Updated Load Shed Testing schedule to reference ‘regularly scheduled testing’ to allow more flexibility if the dates/times change. Specified the criteria for submitting OE and NERC reports due to transmission outages. Added RC review process per EOP-011, R3. Additional changes to align with EOP-011. General clean up.
October 23, 2019 Version 7.0	SPP Staff, BAOC	Annual review process. Added reference to the Reliability Communication Tool (R-Comm). Converted Weather Alert to Resource Alert. Added expectations to Seasonal Preparedness.
September 30, 2020 Version 7.5	SPP Staff, ORWG	Annual review process. Clarifying communications related to Maximum Emergency Generation Alerts and when those are separate notifications. Alert levels reorganized based on levels of severity. Message 911 replaced with new application, xMatters. Added information about alerts issued and the media used. Added

		TOP to GOP notifications. Added clarification to EEA 2 and when BA guidance should be provided. Added ERCOT agreement to Appendix C.
October 6, 2021 Version 8.0	SPP Staff, ORWG	Added: notification opportunities for non-TOP entities who shed non-firm load, notification opportunities for operators of Behind the Meter Generation, more considerations for emergency range impacts, option to declare Conservative Ops with an end time, expectations of stakeholders during EEA. Updated: phone desk options, RTBM/RUC to RTBM/Tariff. Removed daily call requirement during Conservative Ops to allow for flexibility.
August 3 - September 7, 2022; (Sept 27 Corrected Formatting Issue with 5.1) Version 8.1	SPP Staff	Changed language from “Resource Alert” to “Resource Advisory” and Conservative Operations has become Conservative Operations Advisory. Cleaned up language to 5.1 Fuel Supply & Inventory; Updated Coal Fuel Supply to reflect Memo.

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3 Introduction

3.1 Policy and Guideline Statements

It is the policy of Southwest Power Pool (SPP) to maintain, at all times, the continued integrity of the SPP Balancing Authority Area (BAA). This includes providing the maximum amount of reasonable assistance to neighboring entities when a disturbance occurs that is external to the SPP BAA. SPP will maintain interchange and balance Resources and load in accordance with all applicable NERC Reliability Standards. Any action taken by SPP will be in accordance with Good Utility Practice, unless such actions would violate safety, equipment, regulatory or statutory requirements.

This plan is aimed at maintaining reliable power system operation associated with the Bulk Electric System. The main focus is on preventing widespread or major power outages due to insufficient generating capability. Although localized interruptions are considered beyond the scope of this document, it is important to recognize that parts of this plan will be of benefit in those situations.

At the time of posting, this plan has included all Balancing Authority (BA) components referenced in the applicable NERC Reliability Standards for Emergency Operations.

The SPP BA Emergency Operation Plan (EOP) is primarily directed toward providing the fundamental concepts that will be instrumental in mitigating emergencies as they arise. Although specific courses of action are prescribed for specific operating emergencies, it is not the objective of this document to define every possible Emergency situation. This keeps the plan dynamic and allows the SPP BA the ability to respond to any Emergency situation that may arise.

Personnel utilizing this plan shall be familiar with its content. Furthermore, all personnel involved in implementing the EOP shall have sufficient training on their internally developed procedures to perform the intended tasks. It is intended that procedures set forth in this plan will be followed sequentially for defined conditions and for reasons listed. Due to the dynamic nature of power system operations, however, it may be necessary to deviate from this plan to meet system reliability.

Any information shared between SPP and members and relevant entities deemed confidential by the submitting entity shall be protected as confidential.

3.2 Related Documents

- NERC Reliability Standards
- Required Data Specification for the SPP Reliability Coordinator and the SPP Balancing Authority (RDS)
- Satellite Phone Procedure for Southwest Power Pool
- SPP Seams Agreements

- SPP Balancing Authority Governing Documents
- SPP Integrated Marketplace Market Protocols
- SPP Operating Criteria
- SPP Planning Criteria
- SPP Reliability Coordinator and Balancing Authority Operating Instruction Communication Protocols
- SPP RC Area Restoration Plan
- SPP Tariff

4 Emergency Plan Overview

4.1 Authority and Responsibility

The SPP BA has the responsibility and clear decision-making authority to take whatever actions are determined necessary to ensure the reliability of its BAA. This includes taking specific action to alleviate emergencies that may jeopardize the integrity of the SPP BAA. In order to implement the required mitigating actions in the necessary time frame, the SPP BA System Operators have the authority to take or direct timely and appropriate real-time actions up to and including shedding firm load without approval from higher level personnel within SPP. The SPP BA System Operators have the authority to issue Operating Instructions to Stakeholders to maintain the reliable operation of the Bulk Electric System.

The SPP BA will work in coordination with the SPP Reliability Coordinator (RC) and the Transmission Operators (TOP) and Generator Operators (GOP) within the SPP BAA to ensure that the integrity of the Eastern Interconnect is not jeopardized as a result of actions taken in response to an Emergency. This includes following all Operating Instructions given by the SPP RC and TOPs within the SPP BAA.

4.2 Annual Review of Emergency Operating Plan

At a minimum, the SPP BA will review its EOP at least Annually. SPP will also provide the EOP to the SPP RC for an internal review and if any reliability-related issues are discovered, steps will be taken to correct them within a time period specified by the RC. Internal processes and procedures will be updated accordingly.

SPP will review the operating agreements, specifically, with neighboring entities in the annual review to ensure that they are still applicable in emergency conditions. If existing agreements are deemed insufficient, SPP will arrange for updated interchange agreements to ensure emergency assistance is available in the event of an emergency.

4.3 Coordination of Emergency Operating Plan

This document is maintained by the SPP Operations staff. The SPP Operating Committee will be the principal group for funneling Stakeholder-suggested edits and changes. Other SPP Stakeholder groups are given the opportunity to review and provide comments. SPP will also provide neighboring BAs and RCs with the most recent version of the plan. This document will also be posted on the SPP website. Suggested edits or changes should be submitted via RMS.

4.3.1 Communications for EOP

SPP will coordinate emergency communications and activities between Stakeholders and neighboring BAs. Public Appeals to reduce demand will be managed using the SPP Corporate Communications structure through each Participating Entity's established relationships with the public. All communications between SPP Real-time Operations staff and its Stakeholders that include Operating Instructions will adhere to the SPP Communications Protocols and comply with NERC Reliability Standard COM-002.

4.3.2 Planning Ahead

The SPP BA will consult, as needed, with Stakeholders to review forecasted load, scheduled interchange and Resources. The BA will take necessary steps to ensure sufficient Resources will be available to cover forecasted load, scheduled interchange, and Operating Reserve.

If the sum of the maximum economic high limits for generators offered in the market for the next Operating Day are forecast to be less than what is needed to cover the combined SPP BAA load, scheduled interchange and required Operating Reserve, SPP will consult with the Stakeholders within the SPP BAA to identify actions to mitigate the lack of Resources. Additional studies are run each day to assess risk to the BA beyond the Day Ahead studies. When applicable, the SPP BA may declare a Conservative Operations Advisory and/or issue a Resource Advisory, as noted in Section 6 of this document.

The SPP BA will verify generation availability and review generation and transmission maintenance schedules for impact on the ability of the SPP BAA to have adequate Resources to meet its obligations. If Intra-Day Reliability Unit Commitment (ID RUC) or power flow studies show that cancellation or postponement of maintenance activity is advisable, the SPP BA will contact the facility owner and the SPP RC to reschedule the maintenance activity.

4.4 Operating Agreements with Neighboring Entities

SPP has operating agreements with adjacent BAs that will, at a minimum, contain:

- Provisions for emergency assistance, including provisions to obtain emergency assistance and transmission service from remote BAs.
- Arrangements for emergency interchange transactions including transmission service for the schedules.

These operating agreements shall be reviewed by SPP at least Annually.

Note: A list of agreements is included in Appendix C.

4.5 Staffing Levels for Emergencies

The SPP Shift Supervisor will determine if additional personnel are required on a case-by-case basis. These personnel are highly available by means of the SPP On-Call Process. SPP has a multi-tiered 24/7 support system in place that is fully capable of responding to emergency situations and can be called on to provide notification to additional personnel if deemed necessary.

4.6 Rendering Assistance to other Balancing Authorities

The SPP BA will render all available emergency assistance to others as requested, provided that the requested entity has implemented its comparable emergency procedures, unless such actions would violate safety, equipment, regulatory, or statutory requirements.

4.7 Communication Methods

All communications between SPP Real-time Operations staff and its Stakeholders that include Operating Instructions will adhere to the SPP Communications Protocols and comply with the applicable NERC Reliability Communication (COM) Standards.

Generally, SPP will initiate communication with the Stakeholders within its BAA to properly notify affected areas and to coordinate mitigation plans when deemed necessary.

SPP will periodically test all means of communication that are identified ‘as necessary’ to implement this plan.

These communication methods could include:

VOICE

- VOIP Telephone – This device is regularly used by on-shift Operators; no additional testing is performed.
- Blast Call – This is a SPP-initiated conference call that can be initiated via internet to any type of phone. Participants are included in pre-defined groups. This system is tested weekly.
- Cell Phones - SPP real-time Operations staff has access to cell phones located in the Operations Center, easily accessible, constantly charged and periodically tested to provide additional means of voice communications.
- Satellite Phone - SPP performs a weekly roll call and test of its Satellite phone and current participants’ Satellite phones via a blast call. An Operating Entity Status report sheet will be completed by the SPP RC with comments recorded during the test and roll call. Results will then be emailed to all participating entities.

DATA

- R-Comm (Reliability Communication Tool).
- ICCP communications.
- XML notifications and deployment instructions.

- Email/SCADA-EMS/Internet services are regularly used by on-shift Operators. No additional testing is performed.
- Text Message via xMatters. This system is tested weekly.

Note: Some of this functionality may be integrated with or initiated from the SPP Operator Log.

During an emergency situation, the SPP BA will communicate current and expected conditions to the SPP RC, neighboring BAs and TOPs.

4.7.1 Stakeholder Communication Methods

Depending upon the type of emergency situation, Stakeholders are required to communicate certain information with SPP as detailed throughout this document. Stakeholders shall communicate the required information using the following communication methods, as applicable:

- R-Comm
- Telephone the appropriate SPP Operations desk. Refer to Appendix B for a list of SPP BA Contacts.
- Email the appropriate SPP Operations desk. Refer to Appendix B for a list of SPP BA Contacts.
- CROW; updated with the outage and/or de-rates with the appropriate reason for the status change.
- ICCP
- Markets UI/API; updated to reflect any changes.
- Request Management System (RMS)

4.7.2 Notifying Operating Entities

The SPP BA will communicate with its neighboring BAs, the SPP Stakeholders, and the SPP RC as EOP sections are implemented and/or when the SPP BA operations returns to normal. SPP will notify the following groups under certain conditions:

- Stakeholders
- Neighboring BAs
- SPP RC
- TOPs
- Identified entities implementing Non-firm Load Shed (as described in 7.3.2.2) on behalf of TOPs
- GOPs
- Identified entities with Behind the Meter Generation.

Those conditions are, but are not necessarily limited to:

- Resource Advisory –Stakeholders, neighboring BAs and the SPP RC

- Conservative Operations Advisory –Stakeholders, neighboring BAs and the SPP RC
- EEA – Stakeholders, neighboring BAs and the SPP RC
- Requests for Non-firm Load Shed as part of an EEA 2 or EEA 3 – TOPs and as required identified entities implementing Non-firm Load Shed
 - **Note:** The BA may provide additional guidance regarding the timing of different forms of Non-Firm Load Shed as described in 7.3.2.2 Non-firm Load Curtailment (EEA 2).
- Requests for Behind the Meter Generation as part of EEAs – MPs, GOPs, TOPs, and as required identified entities with Behind the Meter Generation.
- Maximum Emergency Generation Notification – Stakeholders and GOPs
- Minimum Generation Notification – Stakeholders and GOPs

Notification methods may include one or more of the following:

- R-Comm
- Email
- Blast Call
- MOI Notification
- RCIS
- OASIS Posting

5 Functional Areas of the Plan

SPP requires adequate and reliable Resource fuel supply and inventory in order to reliably operate the SPP BA. SPP needs data related to limited fuel supplies, including those for switchable dual fuel generation Resources.

5.1 Fuel Supply and Inventory

Changes in fuel supply and inventory information shall be communicated by GOPs (or their designee) to SPP as soon as possible. This information should include, but not necessarily be limited to:

- Natural gas units – known limitations to firm or spot fuel purchases or transportation for the next month.
- Hydro units - limitations to hydro Resources that can impact the operation of the unit. Such limitations may include a limit on the maximum generation available or a requirement for the unit to run at certain levels due to lake levels, flood control, and/or other environmental constraints.
- Renewable units – limitations to Renewable Resources creating potential operational issues.
- Coal units - coal reserves projected to drop below 20 days at minimum output or 10 days at maximum output, if unable to replenish within 3 days.
- Nuclear units - limitations to unit output, including any known inability to operate at full power within 20 days.
- Fuel oil limitations for dual-fuel Resources.

SPP requires that data regarding fuel supply impacted by seasonal changes be available for all Resources in the BAA. On a forecasted and real-time basis, GOPs within the SPP BAA shall notify SPP via CROW and the Markets UI/API of any generation de-rates. These could result from Operational Flow Orders (OFO) or Critical Notices or any other type of fuel delivery constraints. The parties submitting the information shall indicate when the de-rate is a result of an OFO, Critical Notices, or fuel delivery constraint and indicate which pipeline(s) or delivery constraints are impacting them. Entities can utilize more appropriate communication methods, as identified in Section 4.7, if needed.

SPP will use any data related to fuel supply in conjunction with other operational data to evaluate system conditions. In the event that a Capacity and/or Energy Emergency exists or is expected to exist, the SPP BA will take whatever actions are necessary and initiate applicable communications. A list of applicable communications can be found in the section, Capacity and/or Energy Emergencies (Section 7).

SPP will treat all fuel-related data as confidential and discussions concerning individual Resources or a company's fuel statuses will only occur between SPP and the respective GOPs, or other entities that provided the data. During group discussion, SPP will only discuss what possible emergency actions are foreseen or what aggregate fuel crisis exists.

5.1.1 Seasonal Preparedness

SPP requires that each GOP in its BAA take all precautions necessary to ensure SPP BA Resources are readily available where possible, including the use of Seasonal Preparedness steps, such as winterization. GOPs will ensure SPP is provided with information, as requested by SPP, regarding these steps as well as any seasonal impacts to Resources.

During SPP Conservative Operations Advisories and/or Resource Advisories, each GOP will assess and determine readiness and update any de-rates or Resource parameter changes in CROW and the Markets UI/API as soon as possible. If SPP or the GOPs have reliability concerns regarding Resource availability or limitations, either party will initiate a conference call to further discuss these concerns and coordinate efforts to ensure reliability during the event.

Multi-Party Communication and Coordination

SPP in its role as the RC and BA is in a unique position in terms of its need to periodically communicate with generators, fuel suppliers and/or transporters concerning reliability or planning issues. FERC in its Order No. 787 has specifically provided the explicit authority to interstate natural gas pipelines and public utilities that own, operate, or control facilities used for the transmission of electric energy in interstate commerce to share non-public, operational information with each other for the purpose of promoting reliable service or operational planning on either public utilities' or pipelines' system. TOPs are permitted to share information with each other that they deem necessary to promote the reliability and integrity of their systems. In the Order, FERC further included additional protections to ensure that any non-public, operational information shared remains confidential and that information that is shared among TOPs be done in a manner that is consistent with the prohibition of undue discrimination.

It will not be uncommon for SPP, Stakeholders, fuel suppliers and/or transporters to either individually or collectively develop more than one option to address planning or reliability concerns. For proprietary reasons, it may not be appropriate for all the options to be discussed with all parties. However; SPP will be diligent to ensure that all parties necessary to address an issue are included in communication; being mindful that it is the Stakeholders with whom SPP has the contractual obligation.

5.1.3 Forecasted Fuel Limitation

Reference the Operations of Fuel-limited Resources section (Section 5.1.5) for additional information on notification requirements for entities that have, or expect to have, Fuel-limited Resources. In the event that a GOP is anticipating, is experiencing, or otherwise has concerns regarding a fuel limitation for some future point in time, one or more of the following actions will be taken:

GOP (or their designee) Actions:

- Contact the SPP BA with the status of units and fuel. This discussion includes the maximum generation levels and needs or requirements.
- If applicable, update CROW and Markets UI/API with outage and/or de-rates with the appropriate reason for status change.
- Update emergency operating ranges, as necessary
 - If the SPP BA is in an EEA, contact the SPP BA to discuss any concerns or risks associated with operating within emergency ranges

Actions the SPP BA may take, but are not limited to:

- Make an assessment on the SPP BAA capacity requirements in relation to EEA levels.
- Monitor the generation-to-load conditions. If adjustments are needed, the SPP BA notifies the appropriate personnel with the new limitations.
- If appropriate, requests the SPP RC issue an EEA notification.
- Notify Stakeholders of any potential actions they may be required to take to resolve the situation.
- EEA notification could include making public appeals for load conservation measure. Refer to Section 7.3.2.2.1, Public Appeals (EEA 2), for more information.

5.1.4 Real-Time Fuel Limitations

In the event that a GOP is anticipating, experiencing, or otherwise has concerns regarding a fuel limitation with real-time impact, the following actions will be taken. Refer to the Operation of Fuel Limited Resources section (Section 5.1.5) below for additional information on notification requirements for entities that have, or expect to have, fuel limited Resources.

GOP (or their designee) Actions:

- Contact the SPP Balancing Coordinator desk to inform them a unit can no longer provide cleared energy or operating reserves, due to fuel limitations.
- Update CROW and Markets UI/API with outage and/or de-rates with the appropriate reason for status change.
- Update emergency operating ranges, as necessary

- If the SPP BA is in an EEA, contact the SPP BA to discuss any concerns or risks associated with operating within emergency ranges

Actions the SPP BA will take, but are not limited to:

- Disqualify unit for Contingency Reserve, as appropriate.
- Gen Dispatch notifies RTBM Operators of the new Resource limitations.
- BA to request an EEA Alert Level be issued by the SPP RC, if appropriate.

5.1.5 Operations of Fuel-limited Resources

Resources offered into the SPP Integrated Marketplace that are experiencing a limited fuel situation are to adhere to the following guidelines if the SPP BA is operating in a Conservative Operations Advisory. In the context of this document, the term “Fuel-limited Resources” should include those generating Resources that have fuel limitations as defined and underlined in the sub-sections below. The appropriate actions, if applicable, include:

5.1.5.1 Combustion Turbines

Place available Combustion Turbines in Reliability Status and update any applicable offer parameters in the Markets UI/API. Units in Reliability Status are reserved for emergency conditions when their medium term (48 hour) fuel supply is expected to last less than 16 hours at rated output or there are other known limitations that may restrict these units from operating within their reliable Resource limitations (for example, a ratable take that puts a Resource outside its typical generating ranges or environmental limitations that limit availability).

- The concept of 16 hours is predicated on the fuel being available during the two-day period and operating the Resource equal to four 4-hour peak load periods over a two day period. Depending on the situation, Resources may be forced out of service (full or partial) prior to these guidelines in order to protect plant equipment or for future system needs.

5.1.5.2 Oil-fired Steam Units

Place available oil-fired steam units in Reliability Status and update any applicable offer parameters in the Markets UI/API. Units in Reliability Status are removed from economic dispatch and reserved for emergency conditions when their fuel inventory is less than 32 hours at rated output. Smaller diesel units may be excluded from this requirement.

- The concept is that 32 hours at rated output equals two 16-hour periods over a two-day period. Depending on the situation, Resources may be forced out of service (full or partial) prior to these guidelines in order to protect plant equipment or for future system needs.

5.1.5.3 Coal-Fired Steam Units

As coal-fired steam units generally have adequate fuel reserves on site, placement of coal units in Reliability Status will be considered if coal reserves are less than 20 days at minimum generating capacity. The ultimate decision will be handled on a case-by-case basis based on system conditions and with appropriate coordination between the SPP BA and GOP or MP.

5.1.5.4 Hydro-Powered Units

Place available hydro-powered units in Reliability Status and update any applicable offer parameters in the Markets UI/API based on system and environmental conditions.

5.1.5.5 Gas-Fired Steam Units

Place available gas-fired steam units, including Combined Cycle, in Reliability Status and update any applicable offer parameters in the Markets UI/API. Units in Reliability Status are reserved for emergency conditions when their fuel supply is expected to last less than 16 hours at rated output.

- The concept of 16 hours is predicated on the fuel being available during the two-day period and operating the Resource equal to four 4-hour peak load periods over a two day period. Depending on the situation, Resources may be forced out of service (full or partial) prior to these guidelines in order to protect plant equipment or for future system needs.

Although a Resource may fulfill the requirement of being fuel-limited, the SPP BA may elect not to operate the Resource as a Fuel-limited Resource if it is determined the Resource does not impact the reliability of either the BAA or BES or is not sufficient to warrant such action. This will be handled on a case-by-case basis, coordinated between the appropriate GOP (or their designee) and the SPP BA.

5.2 Fuel Switching

Certain generating units within the SPP BAA have the ability to utilize alternate fuels. In the event of a potential shortage of one type of fuel, such as one resulting from extreme winter weather conditions, pipeline curtailments or other emergencies, the following actions are expected:

- Fuel buyers will monitor national and local weather conditions and maintain constant communication with primary and secondary fuel suppliers and transporters.
- GOP (or their designee) will routinely monitor the websites of interstate pipelines to determine if any Operational Alerts have been issued.
- Communication and coordination will be maintained between fuel procurement, GOP (or their designee), and SPP operations personnel to determine when to switch generation from primary to secondary fuels to ensure reliability of the SPP System.
- Once the fuel switch occurs, the GOP (or their designee) shall communicate with SPP any updates to its operational limits, including emergency ranges. These changes in operational limits must also be reflected correctly in the Markets UI/API. Any de-rates as a result of the fuel switching should be communicated through CROW.
 - If the SPP BA is in an EEA, contact the SPP BA to discuss any concerns or risks associated with operating within emergency ranges
- Additional secondary fuel supplies will be purchased by the GOP (or their designee) to supplement currently available secondary fuel inventories at the respective generating stations for the duration of the expected shortage of the primary fuel.
- Once the emergency has ceased, secondary fuel inventories will be replenished to ensure a back-up emergency supply is always available.
- If secondary fuel supplies are not available, GOP (or their designee) should notify SPP as soon as possible.

The GOP (or their designee) is expected to notify SPP in a timely manner if these conditions are not being met.

5.3 Environmental Constraints

If Resources within the SPP BAA are constrained due to environmental reasons during a Capacity and/or Energy Emergency, SPP will ask the appropriate entities GOP (or their designee) if a temporary waiver of these constraints is possible to enable SPP to respond to the emergency situation. Stakeholders shall update their Resource offers in the Markets UI/API with the appropriate operational limits, if a waiver is obtained.

Types of Environmental Constraints include, but are not limited to:

- Hot water discharge temps above the limit.
- Opacity readings above the limit.
- Intake water levels below minimum requirements.
- Annual limits on operating Resource (for example, maximum number of hours annually).

5.4 System Energy Use

SPP will strive to reduce its own energy use at its office and Operations Data Centers (SPP facilities) during a Capacity and/or Energy Emergency, if required to do so by the BA in which it is physically located, or if it positively impacts the emergency situation. This could include running local

generation at SPP facilities. If the Emergency is within the SPP BAA, then the BA may notify Stakeholders to reduce their energy usage.

6 Resource Availability Issues

To maximize the SPP BA's ability to operate reliably during periods of extreme and/or prolonged severe weather conditions, significant outages, wind forecast uncertainty, and/or load forecast uncertainty, procedures are necessary to keep all affected system personnel aware of the forecast and/or actual status of the system and to ensure that maximum levels of Resource availability are attained.

The purpose of this section is to explain how severe weather conditions, significant outages, wind forecast uncertainty, and/or load forecast uncertainty are identified and to describe when it is necessary to provide additional capacity and to staff the necessary generating sites for a future critical period. For example, combustion turbine startup reliability may be adversely affected by extreme cold temperatures.

SPP analysis of system conditions during severe weather conditions, significant outages, wind forecast uncertainty, and/or load forecast uncertainty considers forecasted levels of Resource unavailability. SPP uses its best judgment about the magnitude of the projected unavailability of equipment, considering the length of the forecasted and actual conditions affecting Resource availability.

GOPs (or their designee) monitor their fuel supplies and inventories and keep SPP updated about station/units that are experiencing or projected to experience fuel limitations. GOPs are expected to ensure Seasonal Preparedness of their Resources, per Section 5.1.1. If either the GOP or SPP are concerned about Resource availability during Resource Availability issues, conference calls will be initiated to review the operating situations, as appropriate.

6.1 Resource Advisory

Severe weather conditions, significant outages, wind forecast uncertainty, and/or load forecast uncertainty may prompt SPP to notify Stakeholders so they can prepare personnel and facilities for these expected system conditions. When severe weather conditions, significant outages, wind forecast uncertainty, and/or load forecast uncertainty are anticipated and expected to persist for an extended period of time, SPP will issue a Resource Advisory using Stakeholder notification via notifications listed in Section 4.7, and include the following information:

- Forecasted severe weather conditions, significant outage conditions, wind forecast uncertainty and/or load forecast uncertainty.
- Forecasted duration of the condition.

The SPP BA is particularly interested in how these conditions could impact Resource output and/or availability. As such, the SPP BA will coordinate pre-emptive measures, such as:

- Ensure adequate reserves are available.
- Ensure adequate fuel supplies are available.
- Address significant changes in the estimated operating reserve capacity for the period.

The SPP Resource Advisory will expire at the end time given unless the event is extended.

During the Resource Advisory, the SPP BA, in coordination with the SPP RC, may take actions including, but not limited to:

- Making commitments prior to Day-Ahead Market
- Committing Resources in Reliability Status.

Stakeholders are expected to:

- Implement needed Resource preparation in anticipation of severe weather, as applicable
- Ensure Resource Plans are current including:
 - Startup and runtimes
 - Emergency Limits
- Update Resource Offer parameters and CROW to reflect changes, including Emergency Limits and de-rates
- Report fuel shortages and concerns.
- TOPs report the following to SPP Shift Supervisor if due to a transmission outage:
 - Loss of >10,000 customers for an hour or more
 - Loss of >50 MW of firm load
- TOPs/GOPs coordinate with the RC (Reliability) or BC (Balancing Coordinator) operator(s) the restriction of maintenance/testing of critical transmission/generator facilities.

6.2 Conservative Operations Advisory

The need to operate the SPP BAA more conservatively in order to avoid an Emergency can be triggered by any number of weather, environmental, operational, terrorist, or cyber events, including, but not limited to:

- Forest fires/brush fires that threaten major transmission circuits.
- Weather-related events such as ice/snow/wind storms, hurricanes, tornadoes, severe thunderstorms, excessive heat, excessive cold, and floods. For extreme weather events affecting fuel, refer to Section 5.1.
- Threat of or actual terrorist attacks.
- Geomagnetic Disturbance events (GMD).
- Loss of Necessary Applications (EMS, ICCP, webSmart OASIS, WebTrans, RSS).
- Widespread fuel-related emergencies (for more information, refer to Sections 5.2 and 5.3).

During a conservative operations advisory, the SPP BA, in coordination with the SPP RC, may take actions including, but not limited to:

- Notify Stakeholders, GOPs, neighboring BAs and RCs the need to operate in a conservative operations advisory environment, via notifications listed in Section 4.7.
- Coordinate real-time and near real-time outages. This may involve SPP cancelling or postponing maintenance/testing of critical transmission/generator facilities.
- Operate to conservative transfer limit values.
- Operate to selected double-contingencies.
- Operate with greater unit commitment notification timeframes, including making commitments prior to Day Ahead Market and/or committing Resources in Reliability Status.
- Operate with increased operating reserve requirements.
- Operate with increased reliability margin.
- Bridge units if there is a significant risk to unit re-starting.
- Conduct coordination calls, as needed, to share reliability information with impacted entities.

Stakeholders are expected to:

- Implement needed Resource preparation in anticipation of severe weather, as applicable.
- Ensure Resource Plans are current including:
 - Startup and runtimes
 - Emergency Limits
- Update Resource Offer parameters and CROW to reflect changes, including Emergency Limits and de-rates.
- Report any weather-limited Resources.
- Report fuel shortages and concerns.
- TOPs report the following to SPP Shift Supervisor if due to a transmission outage:
 - Loss of >10,000 customers for an hour or more
 - Loss of >50 MW of firm load
- TOPs/GOPs coordinate with the RC (Reliability) or BC (Balancing Coordinator) operator(s) the restriction of maintenance/testing of critical transmission/generator facilities.

If known, an end time will be provided with the initial declaration of a Conservative Operations Advisory, otherwise the Conservative Operations Advisory will remain in effect with the initial declaration until further notice.

6.3 Maximum Emergency Generation Notification

The purpose of the Maximum Emergency Generation Notification is to provide an early indication that forward looking analysis and/or RUC processes indicate a need for Emergency Capacity to maintain its BA obligation as part of Emergency procedures.

The SPP BA issues a Maximum Emergency Generation notification to Generator Owners/Operators (or their designee), as defined in Section 4.7, including:

- The hours in which the Emergency ranges of any Resources are expected to be required.
- The hours in which Resources with a Commit Status of Reliability are expected to be committed.
 - **Note:** The need for Reliability resources to support SPP BA capacity are communicated via ResourceAdvisories, Conservative Operations Advisories, and/or EEAs. A separate Maximum Emergency Generation Notification will not be issued for this need. The hours in which these Reliability Resources are committed will be communicated electronically with the applicable Market Participants via normal processes.
- The hours in which non-firm fixed Export Interchange Transactions are expected to be curtailed.
 - **Note:** The curtailment of non-firm fixed Export Interchange Transactions will take place as identified in 7.3. Energy Emergency Alerts. A separate Maximum Emergency Generation Notification will not be issued for this action. The hours in which non-firm fixed Export Interchange Transactions are curtailed will be communicated electronically to the applicable entities via normal processes.

The SPP BA will issue a Maximum Emergency Generation Notification when RUC processes identify the need for Emergency ranges of Resources to address SPP BA capacity needs.

The SPP BA will issue the Maximum Emergency Generation Notification, as defined in Section 4.7.

7 Capacity and/or Energy Emergencies

7.1 Responsibility

The SPP BA is responsible for declaring and communicating the existence of emergencies related to Capacity and/or Energy Emergencies, and for directing the operations of the Stakeholders within the SPP BAA as necessary to manage, alleviate, or end a Capacity and/or Energy Emergency. SPP is responsible for balancing Energy and load to resolve a Capacity and/or Energy Emergency. The SPP BA utilizes the SPP Reserve Sharing Group (RSG) and any executed agreements with neighboring BAs for the mutual provision of service to meet a Capacity and/or Energy Emergency. If a Capacity and/or Energy Emergency is recognized in the SPP BAA, the BA will request the SPP RC to issue the appropriate level EEA to notify neighboring entities of the Energy situation in the SPP BAA.

Returning to normal operations procedures (EEA 0) is performed in a controlled, deliberate manner so as to not adversely affect system reliability, while minimizing the impact of these emergency actions. The SPP BA has the authority to implement the emergency procedures in whatever order is required to ensure overall system reliability.

SPP strives to meet customer energy demands either through the use of available generating Resources, power purchases, or planned load management programs. If customer demand cannot be met with additional energy production, RSG assistance or execution of assistance agreements, emergency actions such as manual load shedding will be used.

If the SPP BAA is energy deficient, Stakeholders will jointly implement emergency procedures up to the point of a manual load shed. If manual load shed is necessary, SPP will determine how much each Participating Entity will shed and communicate this information by issuing Operating Instructions to the appropriate Participating Entity in accordance with the SPP Communications Protocols and COM-002.

If the SPP BAA is energy deficient, it will only use the assistance provided by the Eastern Interconnection frequency bias for the time needed to implement corrective actions. The SPP BA shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Transaction changes.

7.2 Capacity and/or Energy Emergency Notifications

SPP awards commitments of Resources on both a BAA and Reserve Zone level based on anticipated system changes (for example, load forecast, interchange, must-run generation) while honoring system constraints and to ensure that Energy and Operating Reserve obligations are met.

SPP operates to ensure that all reliability requirements specified in SPP Operating Criteria and SPP Integrated Marketplace Protocols relating to Operating Reserves are adhered to at all times. The SPP Integrated Marketplace will maximize economic efficiencies by supplying reserves with the most cost effective generation resources available.

The SPP BA is responsible for issuing Capacity and/or Energy Emergency notifications in order to inform the appropriate Stakeholders that emergency conditions have been forecasted. Notifications may be issued on a system-wide or Reserve Zone basis, will include the appropriate time period, and will be sent via the communication methods, as defined in Section 4.7, to pre-defined groups or to individual entities, as appropriate.

If the SPP BA determines that a Capacity and/or Energy Emergency exists, the SPP BA will follow the course of action described in the applicable NERC Reliability Standards for Emergency Operating Plans regarding Energy and Emergency Alerts.

7.3 Energy Emergency Alerts

7.3.1 Energy Emergency Alert 1 (EEA 1)

The SPP BA will request the SPP RC to issue an EEA 1 if it is experiencing conditions where all available Resources are committed to meet forecasted or actual firm load, firm transactions, and operating reserve commitments, and is concerned about sustaining Contingency Reserves. These conditions may manifest in several different ways, and SPP will respond to each accordingly.

In anticipation of requesting an EEA 1 and if time permits, the SPP BA will provide appropriate internal notifications to its Stakeholders of this potential request.

Prior to or concurrent with requesting an EEA 1, the SPP BA will take the following actions (regardless of cost):

- Identify and curtail non-firm external energy sales (other than those that are recallable to meet reserve requirements).
- Commit all available Resources.
- Request GOPs (or their designees) to bring on all available Behind the Meter Generation.
 - These entities will contact the SPP BA to discuss these resource parameters.
- Identify generation outages that can be postponed, verifying postponement times with Generation Owners/Operators. In the event that an outage is deferred or cancelled, CROW schedules and the commitment status in the Markets UI/API shall be updated to reflect the outage changes.
- Identify the pertinent transmission outages that can be recalled, verifying recall times with transmission owners and advising Transmission Owners/Operators of potential recall of outages.

GOP/MP Actions:

- Ensure Resource Plans are current including:
 - Startup and runtimes
 - Emergency Limits
- Update Resource Offer parameters and CROW to reflect changes, including resources' Emergency Limits and de-rates.
- Contact the SPP BA to discuss any concerns or risks associated with resources operating within emergency ranges
- Report fuel shortages and concerns.

SPP EEA 1 Actions:

- The SPP BA requests the SPP RC issue an EEA 1.
- The SPP BA issues an EEA 1 notification to Stakeholders, as defined in Section 4.7.
 - This notification will serve as the Maximum Emergency Generation Notification from the beginning time of the EEA 1 and future hours, until further notice.
- The SPP BA reports significant changes in the estimated operating reserve capacity to the SPP RC and to Stakeholders using the notifications, as defined in Section 4.7.
- The SPP BA will request from impacted Stakeholders periodic status updates from those impacted entities.

When the SPP BA is no longer concerned about sustaining Contingency Reserves:

- The SPP BA will request the RC to return to EEA 0.
- The SPP BA will notify Stakeholders the return to EEA 0, as defined in Section 4.7.

7.3.2 Energy Emergency Alert 2 (EEA 2)

The SPP BA will request the RC to issue an EEA 2 in the event that it is no longer capable of providing its expected Energy requirements and is now an energy deficient BA; however, the SPP BA is still able to maintain its minimum Contingency Reserve requirements. Timely communications to the impacted Stakeholders will be made when requesting an EEA 2. If time permits, all steps for an EEA 1 will have been executed before proceeding to an EEA 2. If the Emergency situation occurs suddenly and is severe enough to rise to an EEA 2, the BA may proceed directly to requesting an EEA 2 before any other EEA notifications are issued. In this case, all applicable steps in EEA 1 will be executed in coordination with the EEA 2 steps.

As time permits, the SPP BA will take actions including, but not limited to:

- Issue an EEA 2 notification to Stakeholders, as defined in Section 4.7.
 - This notification will serve as the Maximum Emergency Generation Notification from the beginning time of the EEA 2 and future hours, until further notice.
- Postpone generation outages that can be postponed, verifying postponement times with Generation Owners/Operators. In the event that an outage is deferred or cancelled, CROW

schedules and commitment status in the Markets UI/API shall be updated to reflect the outage changes.

- Invoke assistance from neighboring entities in accordance with standing Seams agreements and emergency assistance agreements. Refer to Appendix C – Emergency Operating Agreements.
- Recall any transmission outages identified in the EEA 1 process above that are adversely impacting the situation.
- Contact impacted parties and prepare for and initiate non-firm load curtailment.
- Initiate and continue all actions listed in previous alert level and will update the SPP RC of its condition every hour at minimum.

7.3.2.1 Maximizing Generator Availability (EEA 2)

During an Emergency, SPP may request planned generator outages to be deferred or cancelled (including wind and solar). In the event that an outage is deferred or cancelled, CROW schedules and the commitment status in the Markets UI/API shall be updated to reflect the planned outage changes. The SPP BA will coordinate with the appropriate MP to ensure that the Resource will submit market information to properly reflect the maximization of its output.

7.3.2.2 Non-firm Load Curtailment (EEA 2)

This notification alerts Stakeholders that SPP is experiencing conditions where SPP may instruct the use of non-firm load curtailment by its impacted Stakeholders. For an EEA 2 event, this includes, but is not limited to, impacted Stakeholders:

- Reducing load through use of public appeals.
- Implementing voltage reduction.
- Interrupting interruptible load, curtailable load and demand response.
- Contacting Governmental Agencies, which are their customers, to reduce their demand.
- Reducing internal utility energy use.
- Invoking any other load reduction capability available, up to but excluding firm load curtailment.

This notification will be issued to Stakeholders, as defined in Section 4.7. If there is a need to vary the timing and amount of non-firm load curtailment, the instructions will be issued to impacted Stakeholders individually.

7.3.2.2.1 Public Appeals (EEA 2)

Public appeals to reduce demand will be managed using the SPP Corporate Communications structure through the Participating Entities' established relationship with the public. SPP's Participating Entities shall implement their plans for public appeals in their local areas upon receiving a request from SPP to make public appeals.

To better facilitate Emergency Assistance with neighboring entities, the SPP BA will also request the SPP Corporate Communications Department to activate the plan with neighboring entities outside the SPP BAA to make public appeals.

7.3.2.2.2 Voltage Reduction (EEA 2)

The SPP BA will communicate with Stakeholders within the SPP BAA that are capable of providing Load Management by means of voltage reduction in an adequate timeframe to allow the respective Stakeholder to implement the desired relief. Any Stakeholder capable of reducing load by means of voltage reduction shall provide SPP a realistic time to implement voltage reduction on their respective systems and the expected effect on load.

7.3.2.2.3 Interruptible and Curtailable Loads (EEA 2)

Various Stakeholders within the SPP BAA have contracts in place with large industrial customers where load may be interrupted at the Stakeholder's request. Since these contracts are unique and have specific notification requirements and conditions associated with them, the SPP BA will rely on the individual Stakeholders to maintain real-time awareness of what interruptible load is available within their system.

Each SPP Stakeholder, if applicable, shall provide the SPP BA a list of the loads and methods they use to manage those loads during real-time emergencies. The Stakeholders shall update the list when management methods or load configurations change substantially and the list shall be reviewed at least Annually.

Time permitting and depending on the circumstances, the SPP BA will evaluate the availability of interruptible and curtailable load response for the foreseeable EEA condition. This is to help ensure this relief which may be needed in a later interval will be available, but may not be available then per Stakeholder contract if utilized too early. Depending on the circumstance, the SPP BA may instruct Stakeholders individually to interrupt their interruptible and curtailable loads within the SPP BAA as shown below.

- Curtail (or recall) all non-firm external sales transactions.
- Interrupt non-firm end use loads, in accordance with applicable contracts.
- Implement Demand-side management.
- Implement Utility load conservation measures.

Note: SPP Staff has compiled information on each type of interruptible and curtailable load from the Stakeholders with estimates of how much load is interruptible, how often they can be interrupted and conditions under which they can be interrupted.

7.3.2.2.4 Appeals to Customers to Use Alternative Fuels (EEA 2)

In a Capacity and/or Energy Emergency (EEA 2), SPP shall request Stakeholders to make appeals to large industrial and commercial customers to reduce non-essential energy use and maximize the use

of customer-owned generation that rely on fuels other than the one in short supply. SPP will request Stakeholders make appeals to their customers to utilize alternative fuels. However, if these alternative fuels are in short supply and are necessary for generation, Stakeholders should consider these risks before making such appeals and communicate such conditions to SPP.

7.3.3 Energy Emergency Alert 3 (EEA 3)

If time permits, all steps in the previous EEAs will have been executed before proceeding to an EEA 3. If the Emergency situation occurs suddenly and is severe enough to rise to an EEA 3, the BA may proceed directly to requesting an EEA 3 before any other EEA notifications are issued. In this case, all applicable steps in EEA 1 and EEA 2 will be executed in coordination with the EEA 3 steps.

The SPP BA will request an EEA 3 when it is unable to meet minimum Contingency Reserve Requirements. As an energy deficient BA in an EEA3, SPP will initiate all steps available including issuing Operating Instructions to Participating Entities for firm load interruption.

The SPP BA will request the SPP RC to issue the alert for EEA 3. As part of EEA 3, the SPP BA will:

- Issue an EEA 3 to Stakeholders using the notifications defined in Section 4.7.
 - This notification will serve as the Maximum Emergency Generation Notification from the beginning time of the EEA 3 and future hours, until further notice.
- Initiate and continue all actions listed in previous alert levels and will update the SPP RC of its condition every hour at minimum.
- Provide updates to Participating Entities regarding load shedding plan.
- Issue Operating Instructions to Participating Entities to shed load as needed.
- Submit an Other Extreme Conditions (OEC) event, as needed.

7.3.3.1 Firm Load Shed (EEA 3)

The purpose of manual Firm Load Shed is to curtail firm load when all other possible means of supplying internal SPP BAA load have been used to address a Capacity and/or Energy Emergency within the SPP BAA, or to maintain ACE so as to not jeopardize the reliability of the Bulk Electric System. Examples of such conditions may include, but are not limited to:

- The SPP BA cannot provide adequate capacity to meet the SPP BA requirements.
- Low frequency operation during an islanding event.

Participating Entities shall have plans for Operator-controlled manual firm load shedding to respond to real-time Emergencies. These entities shall be capable of implementing the firm load shedding plan within a timeframe adequate for responding to the Emergency. SPP will issue an Operating Instruction to each impacted Participating Entity to shed a specific MW amount of load.

During a real-time manual firm load shed, each Participating Entity will:

- Receive notification that the SPP BA is following emergency procedures and conducting an actual manual firm load shed.
- Receive and acknowledge an Operating Instruction from the SPP BA to shed its pro-rata MW amount of load, per the SPP Communications Protocols.
- Perform the load shed or inform the SPP BA immediately upon awareness if unable to shed the amount requested.
- Inform the SPP BA when load shed is complete and provide an estimate of actual load shed achieved.

Participating Entities are required to respond to a real-time event as quickly as possible.

In order to simulate the manual firm load shed communication process, Load Shed Tests are conducted on regularly scheduled approved dates. During the Load Shed Tests, participation is encouraged for all Participating Entities.

All communication between SPP real-time Operations Staff and its Stakeholders will adhere to the SPP Communications Protocols and comply with NERC Reliability Standard COM-002.

7.3.3.2 Monitoring Energy Emergency Alert Level

The SPP BA will review the status of an EEA situation at least every hour. The SPP BA will also determine if the reserves are sufficient.

If the SPP BA determines it can request a lower level EEA, it will request the SPP RC downgrade to an EEA 2 or 1. When the SPP BA determines it will be able to supply its load and Operating Reserve requirements, it shall request the SPP RC to terminate the EEA (EEA 0).

7.4 Emergency Actions for BAAL and DCS Deviation

Operators will use tools, including RTGEN (AGC) and Operator situational awareness tools, to monitor both real time and long-term control performance. If the SPP BA cannot comply with the Control Performance and Disturbance Control Standards as described in the NERC Reliability Standards, then it shall immediately implement remedies to do so.

For Energy shortage conditions, the SPP BA will follow the steps listed in Section 7.3.1. If these steps cannot be completed in sufficient time to resolve the control performance or disturbance control issue, the SPP BA shall coordinate with the SPP RC to declare the appropriate EEA level and perform the necessary steps, up to and including Manual Firm Load Shed.

For Energy surplus conditions, possible actions the SPP BA will take include, but are not limited to:

- Resources not cleared for Regulation-Down in the Integrated Marketplace that do not have a Dispatch Status of Fixed will be dispatched down to their Minimum Emergency Capacity Operating Limits.
- Any remaining Resources that were Self-Committed following the Day-Ahead Reliability Unit Commitment process will be de-committed.
- Curtail any remaining fixed Import Interchange Transactions pro-rata.
- Reduce Resources with a non-dispatchable status, including Variable Energy Resources down to their Minimum Emergency Capacity Operating Limit.
- If additional de-commitments are necessary, SPP will consider unit parameters when selecting Resources to de-commit.

7.5 Forecast Minimum Generation Notification

The Forecast Minimum Generation Notification informs Stakeholders and Generator Owners/Operators that SPP foresees a possible need to operate resources below their Minimum Economic Capacity Operating limit or de-commit capacity in order to maintain system reliability for the Operating Day in question.

The SPP BA issues a Forecast Minimum Generation Notification to Stakeholders and Generator Owners/Operators (or their designee), as defined in Section 4.7 including:

- The hours in which the Emergency ranges of any Resources are expected to be required.
- The hours in which Resources are expected to be de-committed.
- The hours in which fixed Import Interchange Transactions are expected to be curtailed.

8 System Restoration

8.1 System Restoration

The SPP BA will rely on the individual SPP TOP system restoration plans and the SPP RC Area Restoration Plan in the event of a partial (islanding) or total system black out.

The SPP BA will assist the SPP RC in coordinating information exchange between the SPP Stakeholders and will adhere to SPP Operating Criteria and NERC Reliability Standards dealing with system restoration.

As stated within Section 8 of the SPP RC Area Restoration Plan, SPP BA will initiate a call with all TOPs to coordinate the transition of operations and authority back to the SPP BA. TOPs will not transfer operations and authority back until instructed by the SPP BA.

8.2 Islanding Within the SPP BAA

8.2.1 Identifying Islands

The SPP RC and SPP BA will assess potential islanding events. SPP Operations staff will utilize the Energy Management System (EMS), frequency measurements from throughout the SPP BAA, and other operator system awareness tools, to assess the integrity of the SPP BAA and identify potential islands within the SPP BAA.

The SPP BA will consider the following action including, but not limited to:

- Use EMS island control and situational awareness overview to identify islanding.
- Determine boundaries of the islands and set tie lines not connected to the main island to *Off*.
- Notify entities of the islanding condition.
- Monitor island generation in EMS and coordinate with TOPs and GOPs as needed.

8.2.2 Maintaining the SPP BAA Island Boundaries

When the SPP BAA contains multiple islands, SPP BA will do the following:

- Determine if any changes need to be made to tie lines in EMS as restoration proceeds and make changes.
- Determine if any changes to schedules are needed and make necessary changes to the schedules.
- Notifying RC and neighboring entities at least hourly of the islanding condition as the situation changes.

8.3 System Restoration from Blackstart Resources

System Restoration from Blackstart Resources will be coordinated by the RC and TOP to bring on generation, close breakers to create cranking paths to other generators and restore back-up power to Nuclear Plants. Generators will be synced and transmission lines closed to build the island(s) and restore minimum amounts of firm load. The BA will monitor the progress of system restoration up to the point that the SPP RC Area Restoration Plan criteria has been met for returning balancing control back to the SPP BA.

9 Automatic Load Shed

9.1 Automatic Load Shed

The SPP BA will utilize the individual Stakeholder plans for automatic load shedding for under-frequency and under-voltage protection. As these protection schemes are automated, the SPP BA will only require the TOPs within the SPP BAA to alert the SPP BA when the protection schemes have either been disabled/re-enabled or if the automatic protection schemes have operated.

In the event that automatic load shedding occurs as a result of under-frequency or under-voltage, the RC, along with the applicable Transmission Operator, shall immediately assess the system situation to determine whether or not separation has occurred from the Eastern Interconnection (refer to Section 8 – System Restoration). This status should be communicated to the SPP BA as soon as possible.

10 Other System Reliability Issues

10.1 Geomagnetic Disturbances (GMD)

Geomagnetically-Induced Currents (GIC) caused by the GMD flow through the power system equipment and facilities may result in major increases in system reactive requirements, equipment damage, and disruption of interconnected system operation. The RC notifies the SPP BA and TOPs of the GMDs using the methods defined in Section 4.7. Depending on the potential impacts of the GMD to the reliability of the SPP BAA, SPP could initiate a Conservative Operations Advisory if the expected conditions warrant such measures.

10.2 Optimize Fuel Supply

In the event of a fuel shortage that could potentially impact the ability of the SPP BAA to meet the forecasted demand, SPP will initiate a fuel optimization call to GOPs (or their designee). SPP will communicate data needs from individual GOPs and will coordinate to ensure the MPs will update Resource offers in the Markets UI/API to reflect any directed conservation of fuel supply. Entities may utilize other communication methods identified in Section 4.7, if more appropriate.

Actions taken to optimize fuel supply will include, but are not limited to:

- Conserve fuel in short supply by de-committing Resources and coordinating equipment outages.
- Update CROW schedules and commitment statuses in the Markets UI/API to reflect these changes, as needed
- Appeals to Stakeholders to use alternative fuels.
- Optimize hydro operations for availability of generation.
- Optimize units that have limited operations hours (i.e. some combustion and peaking units).

10.3 Loss of Necessary Applications

The SPP BA depends upon various systems and electronics to perform its duties. SPP has plans in place to continue business in the case where a complete or partial outage of these systems occur.

Communications Systems and data quality are critical. Interruptions to electronic communications can result in inaccurate analysis, inefficient dispatch and potential unreliable operations. Effective Operator-to-Operator or Operator-to-support staff communication is essential to ensure reliable operations and to quickly restore data communications.

11 Event Reporting

The SPP BA has the responsibility to periodically report issues and disturbances to certain governmental agencies. For SPP BA-wide events, such as public appeals during EEAs, the SPP BA will ensure these events are reported per the applicable NERC Reliability Standard for Event Reporting (EOP-004) and to applicable Regional Entities. These reports are in addition to any separate reporting required by the individual Stakeholders.

Reporting includes:

Reporting System Disturbances to the Department of Energy (DOE)

Under certain defined conditions, the SPP BA and/or its Stakeholders are required to report the details of System Disturbances to the Department of Energy. SPP follows the DOE rules and requirements for reporting.

Reporting System Disturbances to NERC

Under certain defined conditions, the SPP BA is required to report the details of System Disturbances to NERC. The SPP BA follows the NERC reporting criteria and instructions for filing the reports to NERC as required in the applicable NERC Reliability Standard for Event Reporting.

The proper authorities at NERC, DOE and FERC and other regulatory bodies are notified of any major changes in the status of the SPP transmission system per regulatory requirements. Depending on the situation, Stakeholders and SPP may each have responsibilities to notify Local, State or Federal agencies.

12 Appendix A: Glossary

The intention of this glossary is to ensure capitalized terms used within this document are defined. For clarification of capitalized terms used within the glossary definitions, refer to the SPP Tariff, NERC Glossary of Terms Used in NERC Reliability Standards, or SPP Integrated Marketplace Market Protocols.

Annually – Refers to a review period of 12 months but not to exceed 15 months.

Balancing Authority (BA) - As defined in the NERC Glossary of Terms.

Balancing Authority Area (BAA) - As defined in the NERC Glossary of Terms.

Balancing Coordinator (BC) - Integrates Resource plans ahead of time, maintains load-interchange-generation balance within the SPP Balancing Authority Area, and supports Interconnection frequency in real-time in order to maintain Area Control Error.

Behind the Meter Generation - A generation unit that is connected on the load side of a load Meter Settlement Location and is used by the load Market Participant that is the registered owner for the Meter Settlement Location to serve all or part of its capacity, Energy or Ancillary Service needs.

Bulk Electric System (BES) - As defined in the NERC Glossary of Terms.

Contingency Reserve – As defined in SPP Operating Criteria.

CROW - Control Room Operations Window – The web-based tool used for Outage submission and coordination in the SPP Balancing Authority.

Day-Ahead Market (DA Market) – The financially binding market for Energy and Operating Reserve that is conducted on the day prior to the Operating Day.

Day-Ahead Reliability Unit Commitment (Day-Ahead RUC) – The process performed by SPP following the close of the DA Market and prior to the Operating Day to assess Resource and Operating Reserve adequacy for the Operating Day, commit and/or de-commit Resources as necessary to meet all necessary reliability requirements, and communicate commitment or de-commitment of Resources to the appropriate Market Participants as necessary.

Dispatch Status – A parameter submitted as part of the Resource Offer that specifies the option under which the Resource is to be dispatched once the Resource has been committed and becomes a Synchronized Resource.

Eastern Interconnect - One of the North American Interconnections commonly referred to as the Eastern Interconnection roughly described as the Bulk Electric System east of the Rocky Mountains excluding the core of Texas and the Province of Québec.

Emergency – As defined in the NERC Glossary of Terms.

Emergency Operating Plan (EOP) - This document and all appendices.

Energy – An amount of electricity that is Bid or Offered, produced, purchased, consumed, sold or transmitted over a period of time, which is measured or calculated in megawatt hours (MWh).

Export Interchange Transaction – A Market Participant schedule for exporting Energy out of the SPP Balancing Authority Area.

Fuel-limited Resource - Generation facility that is restricted from normal operation due to a fuel-related issue.

Good Utility Practice - As defined in SPP Open Access Tariff.

Import Interchange Transaction – A Market Participant schedule for importing Energy into the Balancing Authority Area.

Independent Power Producers - As defined by FERC.

Interchange Transaction – Any Energy transaction that is crossing the boundary of the SPP Balancing Authority Area and requires checkout with one or more external Balancing Authority Areas. This includes any Import Interchange Transaction, Export Interchange Transaction and/or Through Interchange Transaction.

Integrated Marketplace - As a Regional Transmission Organization, SPP is mandated by the Federal Energy Regulatory Commission to ensure reliable supplies of power, adequate transmission infrastructure, and competitive wholesale prices of electricity. In order to ensure reliable operations and competitive wholesale electricity prices, SPP operates and administers Energy and Operating Reserve Markets and Transmission Congestion Rights Markets. The SPP Integrated Marketplace does not supersede any Market Participants' obligations with respect to any other capacity or ancillary service obligations. The responsibilities in regards to capacity adequacy, reserves, and other reliability-based concerns do not change as a result of this market.

Market Participant (MP) - As defined in SPP Open Access Tariff

Market Protocols - As defined in SPP Open Access Tariff

Minimum Emergency Capacity Operating Limit – The minimum MW level at which a Resource other than a Block Demand Response Resource may operate under Emergency system conditions.

Operating Day – A daily period beginning at midnight.

Operating Instruction – As defined in the NERC Glossary of Terms.

Operating Reserve – As defined in the SPP Integrated Marketplace Market Protocols.

Participating Entity – A TOP or other designated entity not subject to a TOP (e.g., Distribution Provider, DP) which has connected load within the SPP BAA and has agreed to participate in manual firm load shed during SPP BA events requiring firm load shed.

R-Comm – A real-time, secure, web-based and two-way Reliability communications tool.

Real-Time Balancing Market (RTBM) - Balances real-time load and generation operated by the Transmission Provider on a continuous 5-minute basis through deployment of Energy, and to clear Regulation-Up, Regulation-Down, Spinning Reserve and Supplemental Reserve using SCED, to ensure results are physically feasible.

Regulation-Down - As defined in the SPP Tariff.

Regulation-Up - As defined in the SPP Tariff.

Reliability Coordinator (RC) - Monitors the SPP Reliability Area and reacts as needed to maintain the stability and reliability of the Bulk Electric System, resolving potential reliability conflicts.

Reliability Unit Commitment (RUC) - The process performed by SPP to assess Resource and operating reserve adequacy for the Operating Day, commit and/or de-commit Resource as necessary, and communicate commitment or de-commitment of Resources to the appropriate Market Participants as necessary.

Reserve Zone – A zone containing a specific group of Price Nodes for which a minimum and maximum Operating Reserve requirement is established in order to ensure deliverability of Operating Reserve within the Balancing Authority Area.

Stakeholder – As it pertains to this document - Generator Operators (GOPs), Transmission Operators (TOPs), Load-Serving Entities (LSEs), Distribution Providers (DPs), and Market Participants (MP) that are registered in the SPP BA Area.

Variable Energy Resource – A device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and, (3) has variability that is beyond the control of the facility owner or operator.

13 Appendix B: SPP BA Contact List

Stakeholders can provide information to a single desk when they call the operations center. This information will then be disseminated to the appropriate desks via voice communication and also through the use of a smart logging system. The various different types of issues will require contacting a different initial desk but once the information is given to SPP, it will be forwarded to all the desks to which it pertains.

This table below is referring to the verbal passing of information to SPP. This does not supersede the need to submit Resource plan changes and outages in CROW.

Issue	Initial SPP Contact	Which desk the information is relayed to
AVR Status	Reliability Coordinator	Shift Engineer, Balancing Coordinator
Back up Control Center Operations	Reliability Coordinator	Shift Supervisor
Capacitor/Reactor Issues	Reliability Coordinator	Balancing Coordinator, Shift Engineer
Disturbance Reporting	Reliability Coordinator	SPP Reliability Entity, SPP RTO Compliance and SPP Operations Management via sppRCSA@spp.org
Emergency Operations Plans	emeroplans@spp.org	Balancing Coordinator, Shift Engineer
Frequency Meter Issues	Balancing Coordinator	Reliability Coordinator, Shift Engineer
Generation Outages/ De-rates	Balancing Coordinator	
Generator Fuel Supply issue	Balancing Coordinator	
Geomagnetic Disturbance Plans	GMDplans@spp.org	Balancing Coordinator, Shift Engineer
ICCP Issues	FIRST Team	Balancing Coordinator, Real-Time Balancing/RUC

Issue	Initial SPP Contact	Which desk the information is relayed to
Inability to Follow RC Operating Instructions	Reliability Coordinator	Balancing Coordinator, Shift Engineer
Intra-hour Resource Plan Changes	RTBM/Tariff	
<ul style="list-style-type: none"> ○ Loss of >10,000 customers for an hour or more ○ Loss of >50 MW of firm load 	SPP Shift Supervisors	Balancing Coordinator, Shift Engineer
Pre and Post Contingent Transmission Equipment Loading	Reliability Coordinator	Shift Engineer, Balancing Coordinator
Resource Commitment Orders	Balancing Coordinator	
Resource Deployment Questions	RTBM/Tariff	
Restoration Activities	Reliability Coordinator	Balancing Coordinator, Shift Engineer, RTBM/Tariff
Restoration Plans	Reliability Coordinator, RestorationPlans@spp.org	Balancing Coordinator, Shift Engineer
Scheduling Issues	Tariff/Interchange	RTBM/Tariff
Special Protection System/Remedial Action Scheme Operation or availability	Reliability Coordinator, Protectionchanges@spp.org	Balancing Coordinator, Shift Engineer,
Tie Line Meter Issues	Balancing Coordinator	Shift Engineer
Transmission Equipment Rating Change	Shift Engineer	Reliability Coordinator, Balancing Coordinator

Issue	Initial SPP Contact	Which desk the information is relayed to
Transmission Outages/RTS/Testing/Issues	Reliability Coordinator	Balancing Coordinator, Shift Engineer
Transmission Service Request questions	Tariff/Interchange	
Unit Startup Issues	Balancing Coordinator	
Voice Communications Issues	Reliability Coordinator	All desks
Voltage Issues	Reliability Coordinator	Balancing Coordinator, Shift Engineer

14 Appendix C: Emergency Operating Agreements

The current versions of the RSG, JOA and Seams Agreements are located on the SPP.org website.

Entity	Agreement
AECI	SPP AECI Reserve Sharing Group Agreement (RSG)
CAISO	CAISO SPP RC-RC Agreement
ERCOT	SPP ERCOT Coordination Plan
MISO	SPP MISO Joint Operating Agreement (JOA)
SPA	SPP SPA Reserve Sharing Group Agreement (RSG)
SPC	SPP SPC Joint Operating Agreement (JOA)