Northwest Power Pool
Reserve Sharing Program Documentation

Approved Version: February 14, 2019
(see Documentation History)

Effective May 12, 2017 the NWPP RSG will begin participation with the WECC Test Waiving Enforcement of BAL-002-2a, Requirement R2 until further notice.

NWPP Reserve Sharing Documentation

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NWPP Reserve Sharing Program

A. INTRODUCTION AND OVERVIEW

Standards established by the North American Electric Reliability Corporation (NERC) and the Western Electricity Coordinating Council (WECC) require all Balancing Authorities to carry reserve for defined categories of contingencies. As permitted by NERC and WECC standards, Participating Balancing Authorities within the Northwest Power Pool (NWPP) have instituted the NWPP Reserve Sharing Program for Contingency Reserve.

By sharing Contingency Reserve, Participants are entitled to use not only their own "internal" reserve resources, but to call on other Participants for assistance if internal reserve does not fully cover a contingency. Except when communication links are down or the Reserve Sharing Computer System is not functioning, the NWPP Reserve Sharing Program is automated, operating through direct communication of data and Contingency Reserve deployment signals between the Reserve Sharing Computer System and the Participating Balancing Authorities. The NWPP Staff is responsible for preparing and submitting required NERC and WECC compliance reports, and responding to compliance audits, on behalf of the NWPP Reserve Sharing Group for BAL-002. Participants are relieved of BAL-002 compliance reporting obligations, and do not report to NERC or WECC on BAL-002 compliance individually.

This document describes how the NWPP Reserve Sharing Program works. It covers:

- key terminology for the NWPP Reserve Sharing Program (Section B),
- an overview of the key elements of the NWPP Reserve Sharing Program (Section C),
- how much Contingency Reserve each participant is required to carry (Attachment A),
- what events allow participants to deploy their own Contingency Reserve, and, if necessary, request assistance reserve, how a participant may request assistance reserve from other participants (Attachment B and Section E),
- participants' obligations to supply assistance reserve (Section F),
- eligibility to participate in reserve sharing and how eligible Balancing Authorities become participants (Section G),
- the roles and responsibilities of participants, the NWPP Staff, and others (Section H),
- general data requirements and the functions of the reserve sharing computer system (Section I),
- data requirements related to requests for assistance reserve (Section J),
- how participants settle when assistance reserve is supplied under the NWPP Reserve Sharing Program (Section K),
- tracking and reporting procedures related to the NWPP Reserve Sharing Program (Section L),

- identification of "zones" within the NWPP for delivering reserve energy, and the sequence in which assistance reserve from adjacent zones is deployed if the assistance reserve inside a given zone is insufficient to meet a contingency (Section M and Attachment C);
- backup procedures participants will use if the communication links that enable automated reserve sharing go down (Section N and Attachment E);
- procedures for addressing issues that affect the NWPP Reserve Sharing Program when the process under the *Agreement Appointing Agent and Establishing Responsibilities Related to Reserve Sharing Group Compliance with BAL-002* is insufficient (Section O);
- an explanation of why the NWPP Reserve Sharing Group does not activate Contingency Reserve during operation of BPA remedial action schemes that are designed to suspend automatic generation control (Attachment M),
- a correction table of Participants, Reliability Coordinators, and Zones.

This document includes several attachments, some of which have been noted above. The full set of attachments and their titles are as follows:

Attachment A – Calculation of Contingency Reserve Obligations; Requirements Related to WECC Operating Reserve - Spinning and WECC Operating Reserve - Supplemental

Attachment B – Qualifying Events

Attachment C – Reserve Sharing Zone and Levels

Attachment D – Transmission Mapping for NWPP Reserve Sharing Program

Attachment E – Backup Procedures for NWPP Reserve Sharing Program

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Attachment H – Balancing Authority Areas of Participating Balancing Authorities

Attachment I – NERC Standard BAL-002-2(i) Disturbance Control Performance – Contingency Reserve for Recovery from a Balancing Contingency Event

Attachment J – WECC Standard BAL-002-WECC-2(a) – Contingency Reserve

Attachment K – Northwest Power Pool Reserve Sharing Group Most Severe Single Contingency Tables

Attachment L – Transmission Facilities Making Up Cut Planes Between Reserve Sharing Zones

Attachment M – Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to NWPP Reserve Sharing Group Reporting ACE

Attachment N – Correlation Table of Participants, Reliability Coordinators, and Zones

B. KEY TERMINOLOGY

The terms identified below have the meanings given to them in this document for purposes of the NWPP Reserve Sharing Program. Most terms defined by NERC or the WECC are conformed to the NERC or WECC definitions, but some terms' definitions may not be identical to those established by NERC or the WECC.

ACE: Area Control Error, as defined in the NERC Glossary.

Actual Net Interchange (NI_A): Actual Net Interchange, as defined in the NERC Glossary.

Agency Agreement: The *Agreement Appointing Agent and Establishing Responsibilities Related to Reserve Sharing Group Compliance with BAL-002*, as initially effective on July 1, 2008, together with any subsequent amendments or restatements.

Assistance Reserve: Contingency Reserve of one Participant that is delivered to another Participant in response to a Reserve Sharing Request.

BAL-002:

- with respect to the NWPP Reserve Sharing Group, NERC standard BAL-002-2(i), as it may be revised, supplemented, or superseded from time to time in accordance with NERC procedures, as well as any corresponding or substantially similar standard adopted for the WECC, each of the foregoing as applicable to the NWPP Reserve Sharing Group; and
- with respect to a Participant, those provisions of the foregoing (or any substantially similar standard) applicable to the Participant by law or regulation.

Balancing Authority (BA): Balancing Authority, as defined in the NERC Glossary.

Balancing Authority Area: Balancing Authority Area, as defined in the NERC Glossary.

Contingency Event Recovery Period: Contingency Event Recovery Period, as defined in the NERC Glossary.

Contingency Reserve: Contingency Reserve, as defined in the NERC Glossary.

Contingency Reserve Available (CRA): Contingency Reserve committed by a Participating Balancing Authority, which the Participating Balancing Authority reports to the Reserve Sharing Computer Program, that:

- is fully deployable within ten minutes for use as Internal Reserve (except for amounts reported as already deployed for Qualifying Events);

- is fully deployable within ten minutes of a Reserve Sharing Request for delivery as Assistance Reserve (except for amounts reported as already deployed for Qualifying Events); and
- once deployed, can sustain delivery over a period of not less than 60 minutes following the start of a Qualifying Event.

Subject to the foregoing requirements, a Participating Balancing Authority's Contingency Reserve Available:

- will, for monitoring purposes, be deemed to include a Participant's Contingency Reserve reported as available for deployment as well as any portion of a Participant's Contingency Reserve reported as deployed for Qualifying Events;
- may include Contingency Reserve purchased by the Participating Balancing Authority; and
- must exclude Contingency Reserve the Participating Balancing Authority has sold to any other party.

A Participating Balancing Authority's Contingency Reserve Available (including amounts reported as deployed for Qualifying Events, together with amounts available for deployment) must be equal to or greater than its Contingency Reserve Obligation.

Contingency Reserve Obligation (CRO): As specified in Attachment A to this document, Contingency Reserve Obligation is the minimum amount of Contingency Reserve that must be carried by a particular Participant for its Balancing Authority Area(s) or by the NWPP Reserve Sharing Group as a whole (as the context requires) to respond to Qualifying Events. Although the acronym "CRO," as used in this document, may sometimes designate base calculation of a Participating Balancing Authority's Contingency Reserve Obligation (before adjustments described in Attachment A), the written term "Contingency Reserve Obligation" as used in this document refers to the total amount of Contingency Reserve that must be carried for a Participant's Balancing Authority Area(s) (or the NWPP Reserve Sharing Group as a whole), taking into account all applicable adjustments specified in Attachment A.

Firm Demand: Firm Demand, as defined in the NERC Glossary.

Internal Reserve: The Contingency Reserve of a Participating Balancing Authority when deployed to respond to a Qualifying Event on the Participating Balancing Authority's own system (as opposed to Contingency Reserve delivered as Assistance Reserve to another Participating Balancing Authority).

Most Severe Single Contingency (MSSC): The Most Severe Single Contingency, as defined in the NERC Glossary.

NERC Glossary: The NERC Glossary of Terms Used in Reliability Standards.

North American Electric Reliability Corporation (NERC): A self-regulatory nonprofit organization, subject to oversight by the U.S. Federal Energy Regulatory Commission and governmental authorities in Canada, whose mission is to ensure the reliability of the bulk power system in North America. NERC develops and enforces reliability standards, assesses reliability annually via 10-year and seasonal forecasts, monitors the bulk power system, and educates trains, and certifies industry personnel.

Northwest Power Pool (NWPP): The geographic area encompassed by the electric systems of the NWPP Agreement Signatories. There is also a separate corporation named "Northwest Power Pool," which provides staffing and other resources to support implementation of the NWPP Agreement. In general, when this document refers to the Northwest Power Pool or the NWPP, it is referring to the geographic area and the associated electric power systems of the NWPP Agreement Signatories.

NWPP Agreement: A multilateral agreement to promote cooperation among participating organizations to achieve reliable operation, coordinate generation operation and power system planning, and assist in planning of transmission within the NWPP area.

NWPP Agreement Signatory (Signatory): An entity that is a party to the NWPP Agreement.

NWPP Reserve Sharing Group: The group composed of all Participants, collectively.

NWPP Reserve Sharing Group Reporting ACE: The "Reserve Sharing Group Reporting ACE," as that term is defined in the NERC Glossary, for the NWPP Reserve Sharing Group.

NWPP Reserve Sharing Program: The procedures, data, computer programs, and related information and requirements described in this document that enable Participants to request and provide Assistance Reserve as needed to respond to Qualifying Events.

NWPP Staff: The employees of the Northwest Power Pool Corporation.

Operating Plan: Operating Plan, as defined in the NERC Glossary.

Operating Process: Operating Process, as defined in the NERC Glossary.

Operating Reserve: Operating Reserve, as defined in the NERC Glossary.

Participating Balancing Authority or Participant: An entity that (a) operates one or more Balancing Authority Areas located in the Northwest Power Pool and (b) has become a participant in the NWPP Reserve Sharing Program as described in Section G.1. The terms "Participant" and "Participating Balancing Authority" are used interchangeably in this document. Attachment H contains a list of the Balancing Authority Areas of the current Participating Balancing Authorities.

Qualifying Event: Those events designated in Attachment B of this document as Qualifying Events.

Reliability Coordinator (RC): Any one or more organizations performing the NERC-registered function (or its equivalent in Canada) of reliability coordination within the Northwest Power Pool.

Reportable Balancing Contingency Event: Reportable Balancing Contingency Event, as defined in the NERC Glossary.

Reporting ACE: Reporting ACE, as defined in the NERC Glossary.

Reserve Sharing Computer System: The software and hardware used for automated reserve sharing under the NWPP Reserve Sharing Program.

Reserve Sharing Request: A request by Participating Balancing Authority that has satisfied the conditions specified in Section E.2 for delivery of Assistance Reserve.

Reserve Sharing Zone: A designated set of Balancing Authority Area(s) within the Reserve Sharing Group that is separated from other Balancing Authority Area(s) within the Reserve Sharing Group by transmission facilities that have been shown through studies to constrain reserve deliveries, at times, between the designated set and the other Balancing Authority Areas. Attachment C to this document identifies the Reserve Sharing Zones that have been established for the NWPP Reserve Sharing Program, together with the sequence through which Assistance Reserve is deployed for each Reserve Sharing Zone.

RSG Committee: The committee established under the terms of the NWPP Agreement to administer the NWPP Reserve Sharing Program.

Scheduled Net Interchange (NIs): Scheduled Net Interchange, as defined in the NERC Glossary.

System Operator: System Operator, as defined in the NERC Glossary.

Third-Party Generation: Any generating resource that is within the metered boundaries of the Balancing Authority Area of a Participating Balancing Authority but is neither owned by nor under contract to that Participating Balancing Authority.

WECC Operating Reserve - Spinning: WECC Operating Reserve - Spinning is the portion of Operating Reserve consisting of:

- generation synchronized to the system and fully available to serve load within the Contingency Event Recovery Period following a contingency event; or
- load fully removable from the system within the Contingency Event Recovery Period following a contingency event;

provided, however, that for purposes of the NWPP Reserve Sharing Program (as required by WECC Standard BAL-002-WECC-2(a)), WECC Operating Reserve - Spinning must also be:

- immediately and automatically responsive to frequency deviations through the action of a governor or other control system; and
- capable of fully responding within ten minutes.

WECC Operating Reserve - Supplemental: WECC Operating Reserve - Supplemental is 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 Contingency Event Recovery Period following a contingency event; or
- load fully removable from the system within the Contingency Event Recovery Period following the contingency event;

provided, however, that for purposes of the NWPP Reserve Sharing Program (as required by WECC Standard BAL-002-WECC-2(a)), WECC Operating Reserve - Supplemental must also be:

- capable of fully responding within ten minutes.

Western Electricity Coordinating Council (WECC): A nonprofit corporation with the mission to foster and promote reliability and efficient coordination in the Western Interconnection.

C. OVERVIEW OF KEY RESERVE SHARING PROGRAM ELEMENTS

C.1. How Much Contingency Reserve a Participating Balancing Authority Must Carry (Contingency Reserve Obligation)

The processes for calculating how much Contingency Reserve each Participant must carry for its Balancing Authority Area(s), and the Contingency Reserve Obligation for the NWPP Reserve Sharing Group as a whole, are set forth in Attachment A to this document.

C.2. When a Participating Balancing Authority May Deploy Contingency Reserve and Request Assistance Reserve (Qualifying Events)

A Participating Balancing Authority must experience a "Qualifying Event" before it is entitled to deploy any portion of its Contingency Reserve Obligation (as Internal Reserve) or request Assistance Reserve. The definition of Qualifying Event is set forth in Attachment B to this document.

C.3. What a Participating Balancing Authority Must Do Before Requesting Assistance Reserve

Briefly stated, a Participating Balancing Authority must fully commit its Internal Reserve before requesting Assistance Reserve to respond to a Qualifying Event. This requirement is more fully explained in Section E.2 of this document. There are also requirements concerning the timing and duration of Assistance Reserve Sharing Requests, which are set forth in Section E.3.

C.4. Where to Find Additional Information on Participant Eligibility and Obligations

Eligibility

Provisions governing eligibility to participate in the NWPP Reserve Sharing Program are in Section G of this document.

Additional Operating Reserve for R3 and R4 of WECC BAL-002-WECC-2(a)

Section D.4 describes Participating Balancing Authorities' obligations to enable the NWPP Reserve Sharing Group to demonstrate compliance with Sections R3 and R4 of BAL-002-WECC-2(a).

Data Obligations

Section I contains information on the data requirements for the general operation of the NWPP Reserve Sharing Program, as well the functions of the Reserve Sharing Computer System. Section J describes data requirements for making and responding to Reserve Sharing Requests.

Providing Assistance Reserve

Participants' obligations to provide Assistance Reserve are explained in Section F.

Restoring Contingency Reserve Following Deployment

Section E.5 describes Participants' obligations to restore their Contingency Reserve following deployment (either as Internal Reserve or Assistance Reserve).

D. RESERVE REQUIREMENTS

D.1. How NWPP Reserve Sharing Program Rules Relate to BAL-002

The NWPP Reserve Sharing Program is intended to enable the NWPP Reserve Sharing Group to comply with BAL-002, as well as certain additional rules the NWPP Reserve Sharing Group has elected to adopt for itself.

Participants are required at all times to meet the requirements of BAL-002, as revised, supplemented, or superseded from time to time in accordance with applicable NERC, WECC, or regulatory procedures. BAL-002 constitutes the foundation on which the NWPP Reserve Sharing Group rules are built. Compliance with the NWPP Reserve Sharing Group rules for Contingency

Reserve is intended to ensure compliance with the BAL-002, but cannot serve to excuse any compliance failure related to the NERC or WECC standards.

NERC Standard BAL-002-2(i) (included as Attachment I) requires Balancing Authorities (or reserve sharing groups) to recover, within the Contingency Event Recovery Period, from Reportable Balancing Contingency Events (subject to certain exceptions).

WECC Standard BAL-002-WECC-2(a) (included as Attachment J) governs Contingency Reserve, but also includes requirements (set forth in Sections R3 and R4 of BAL-002-WECC-2(a)) for additional Operating Reserve that must be carried by Participants engaging in certain types of transactions involving purchases from units supplying Contingency Reserve or sales of Operating Reserve. This document addresses, at Section D.4, requirements for Participating Balancing Authorities to enable the NWPP Reserve Sharing Group to demonstrate compliance with Sections R3 and R4 of BAL-002-WECC-2(a).

D.2. Contingency Reserve Obligations and Associated Requirements Related to WECC Operating Reserve - Spinning and WECC Operating Reserve - Supplemental.

Section 1 of Attachment A to this document provides a detailed explanation of how to calculate the Contingency Reserve Obligation for each Participating Balancing Authority. Section 2 of Attachment A explains the manner in which the Participating Balancing Authorities' Contingency Reserve Obligations are combined to yield an aggregate obligation for the NWPP Reserve Sharing Group. Section 3 of Attachment A specifies what portion of Participating Balancing Authorities' Contingency Reserve Obligations must be carried as WECC Operating Reserve - Spinning, as well as permitted sources of WECC Operating Reserve - Supplemental. Every Participating Balancing Authority must include in its operating procedures provisions that require it to:

a. maintain and have available an amount of Contingency Reserve Available that is equal to or greater than its Contingency Reserve Obligation,

b. perform such calculations as may be necessary (including consideration of transmission constraints) to ensure that it can deploy Contingency Reserve reported as available, and

c. deploy its Contingency Reserve Available for Qualifying Events as provided in this document.

D.3. Additional Policies Governing Contingency Reserve

a. No Double Counting

As expressed in the policies of the RSG Committee, multiple Participants may not count the same portion of resource capacity (*e.g.*, reserves from jointly owned generation) toward any portion of their Contingency Reserve Obligations, and the NWPP Reserve Sharing Group rules do not permit this.

b. Contingency Reserve Available

All Participants must continuously calculate and update their Contingency Reserve Available. A Participant's Contingency Reserve Available must at all times equal or exceed its Contingency Reserve Obligation. Requirements associated with Contingency Reserve Available do not diminish any further requirements applicable to portions of Contingency Reserve that must be carried as WECC Operating Reserve - Spinning.

c. Purchased Power

To provide flexibility in recovering from a Qualifying Event, any Participant may use power purchased from another Participant (or another supplier) to meet its Contingency Reserve Obligation. Any Participant that uses purchased power for recovery must report the source Balancing Authority(s) of the purchased power, the time the power was purchased, the start time and ramp rate for the mutually agreed-upon purchased power (or transaction). The NWPP Staff will be responsible for determining whether a Participant providing purchased power fulfilled its obligations to deploy Contingency Reserve to enable the NWPP Reserve Sharing Group to comply with BAL-002. The requesting Participant must also arrange for transmission for delivery of the power. If the Balancing Authority from which the power was purchased is not a Participant in the NWPP Reserve Sharing Program, then any failure of the selling Balancing Authority to deliver the purchased power will be deemed, for purposes of the NWPP Reserve Sharing Program, as a failure to deliver of the Participant relying on the purchased power.

d. Aggregate Contingency Reserve Available

The aggregate Contingency Reserve Available for the NWPP Reserve Sharing Group (together with any Contingency Reserve deployed for Qualifying Events) must at all times equal or exceed both the NWPP Reserve Sharing Group's Most Severe Single Contingency and its combined Contingency Reserve Obligation.

e. RSG Committee Responsibilities; Monitoring and Follow-Up

The RSG Committee is responsible for developing guidelines and arranging for periodic reporting of the Contingency Reserve Obligation of the NWPP Reserve Sharing Group and the Contingency Reserve Available within the NWPP Reserve Sharing Group. NWPP staff monitors Participants' compliance with Contingency Reserve Obligations. The RSG Committee is responsible for addressing problems with deficient or poorly performing Participants, for developing remedies and proposed solutions, and for identifying and implementing any follow-up actions.

f. Determination of NWPP Reserve Sharing Group's Most Severe Single Contingency

Each Participant is responsible for (i) determining, based on appropriate system modeling and applicable NERC definitions and guidelines, the Most Severe Single Contingency for its Balancing Authority Area(s), (ii) reporting its Most Severe Single Contingency determinations to the NWPP Staff and making sure they are correctly reflected in Attachment K, and (iii) notifying NWPP Staff whenever previously submitted Most Severe Single Contingency determinations need to be updated. The Most Severe Single Contingency for the NWPP Reserve Sharing Group at any given time is set by whichever of the Participants' Most Severe Single Contingencies is greatest at that time. The RSG Committee will review, at each of its meetings (and in any event no less than once a year), the NWPP Reserve Sharing Group's Operating Processes and its Most Severe Single Contingency to ensure that the Most Severe Single Contingency table in Attachment K is up to date and complies with applicable NERC and WECC requirements.

g. Participants' Monitoring of Real-Time Most Severe Single Contingencies

Every Participant is responsible for determining and telemetering to the Reserve Sharing Computer System, as provided in Section I.1.g, its Most Severe Single Contingency (and any adjustments upward or downward) based on real-time operating conditions. When determining Most Severe Single Contingencies in real time, each Participant must take into account its real-time generation output and its real-time generation and transmission outages. Real-time adjustments to a Participant's Most Severe Single Contingency should be captured and updated every data scan cycle.

h. All Participants' Contingency Reserve Available Constitutes NWPP Reserve Sharing Program Contingency Reserve Available

The amount of Contingency Reserve carried by the Participants to meet the requirements of NERC, WECC, and the NWPP Reserve Sharing Program is calculated so as to meet the needs of the NWPP Reserve Sharing Group as a whole and the Contingency Reserve Available reported by each

Participant is deemed to be Contingency Reserve Available to the NWPP Reserve Sharing Program. Accordingly, if any Participant activates a portion of its Contingency Reserve to respond to a Qualifying Event, this will constitute activation of a portion of NWPP Reserve Sharing Program Contingency Reserve, including for purposes of calculating whether the Qualifying Event constitutes a Reportable Balancing Contingency Event, even if the activation of Contingency Reserve is not for a Reportable Balancing Contingency Event and even if the affected Participant does not make a Reserve Sharing Request. Any Qualifying Event affecting any Participant constitutes a Qualifying Event for the NWPP Reserve Sharing Group, and therefore, unless at the time of the Qualifying Event the affected Participant is in "non-participating" status, recovery from the Qualifying Event will be determined with respect to the NWPP Reserve Sharing Group as a whole, and not the individual Participant.

i. Participant Obligation to Respond to Reportable Balancing Contingency Events

A Participant that has experienced a Qualifying Event (within its Balancing Authority Area):

- should promptly take all commercially reasonable actions that are necessary, in its good-faith judgment, to recover from the Qualifying Event (regardless of its magnitude) and maintain or restore system reliability, and

- must, if the Qualifying Event is equal to or greater than the threshold for Reportable Balancing Contingency Events, take all commercially reasonable actions that are necessary, in its good-faith judgment, to enable the NWPP Reserve Sharing Group to recover its Reporting ACE according to the requirements of BAL-002. To fulfill this obligation, the Participant is expected, among other things, to (i) deploy its Contingency Reserve, and (ii) if the Participant meets the conditions specified in Section E.2 and cannot fully recover from the Qualifying Event with reserve capability on its own system (and any purchased reserve rights), make a Reserve Sharing Request.

For Qualifying Events that result from the loss of a jointly owned facility, affected Participants must use the total MW of facility output lost to determine whether the Qualifying Event is equal to or greater than the threshold for Reportable Balancing Contingency Events (rather than whatever portion of the lost output a given Participant may have scheduled or been entitled to).

j. NWPP Reserve Sharing Program Automation and Exceptions.

Every Participant is always in active status with respect to the Reserve Sharing Program. All Participants must continuously and automatically telemeter to the Reserve Sharing Computer System the data specified in Section I.1, (unless unable to do so due to failure of communications capabilities between the Participant and the Reserve Sharing Computer System). Every Participant must also indicate (unless unable to do so) whether its participation is through automatic or manual capabilities. Valid reasons for Participants to indicate manual participation mode include, but are not limited to: failure of inter-control center communications protocol (ICCP) links, suspension of automatic generation control (AGC), and system testing.

k. NWPP Reserve Sharing Group Procedures Related to Energy Emergency Alerts.

NERC Standard EOP-011-1 (as it may be revised, supplemented, or superseded from time to time in accordance with NERC procedures) calls for Reliability Coordinators to issue Energy Emergency Alerts under specified conditions, including a Balancing Authority's inability to maintain minimum levels of Contingency Reserve. Because the NWPP Reserve Sharing Program will shift Contingency Reserve allocations among Participants if necessary to compensate for a deficient Participant, the NWPP Reserve Sharing Group should, in most circumstances, have adequate Contingency Reserve Available even when one of its Participants is deficient. To help minimize unnecessary Energy Emergency Alerts (when the NWPP Reserve Sharing Group has sufficient Contingency Reserve Available even though one of its Participants is deficient), each Participant will make good faith efforts to develop and maintain, in its emergency Operating Plans, instructions for operators who are contacted by a Reliability Coordinator about potential Contingency Reserve deficiencies to:

(i) acknowledge the Reliability Coordinator's authority to determine, according to its procedures and discretion, whether and when to issue Energy Emergency Alerts for the Participant, and

(ii) explain to the Reliability Coordinator that the Participant is part of the NWPP Reserve Sharing Group, and

(iii) note that the NWPP Reserve Sharing Program will reallocate any Participant deficiencies in Contingence Reserve to remaining Participants to meet or exceed the Contingency Reserve Obligation for the NWPP Reserve Sharing Group, and

(iv) explain to the Reliability Coordinator why the Participant is deficient, as well as anticipated steps and time needed to correct the deficiency, and

(v) ask the Reliability Coordinator to consider whether (x) the total Contingency Reserve Available within the NWPP Reserve Sharing Group is sufficient to meet or exceed the Contingency Reserve Obligation for the NWPP Reserve Sharing Group and (y) an Energy Emergency Alert is necessary to protect system reliability.

If a Participant experiences a Reliability Coordinator declared Energy Emergency Alert that triggers an obligation for the Participant to submit an ACE recovery plan and a target recovery time to its Reliability Coordinator (as described in R1 part 1.3.1 of NERC BAL-002) to be excused from compliance with R1 part 1.1, the Participant must (1) maintain records demonstrating it has submitted the required information to its Reliability Coordinator, and (2) provide copies those records to the NWPP Staff upon request as needed for monitoring, compliance, or reporting purposes.

D.4. Additional Operating Reserve: Obligations Under R3 and R4 of WECC BAL-002-WECC-2(a) and Compliance Documentation

a. Participants Must Carry Required Additional Operating Reserve

Each Participating Balancing Authority must carry, in addition to its Contingency Reserve Obligation calculated in accordance with Attachment A, sufficient Operating Reserve to fulfill the requirements of R3 and R4 of BAL-002-WECC-2(a).

b. Participants Must Maintain and Provide Documentation to Demonstrate Compliance

Each Participating Balancing Authority must maintain appropriate documentation for any periods during which it has implemented

- any Interchange Transactions (as that term is defined by NERC) (i) with counterparties that are not Participants, (ii) for which it was the sink Balancing Authority, and (iii) that were designated as part of the source Balancing Authority's WECC Operating Reserve - Supplemental; or
- any Operating Reserve transactions (x) with counterparties that are not Participants, and (y) for which it was the source Balancing Authority.

The Participating Balancing Authority's documentation must be sufficient to demonstrate that, during all relevant periods, it maintained additional Operating Reserve as required by R3 and R4 of BAL-002-WECC-2(a).

Each Participating Balancing Authority must, on at least a quarterly basis, submit summaries to the NWPP Staff of transactions subject to R3 and R4 of BAL-002-WECC-2(a), in the form specified by the NWPP Staff (in consultation with the Participating Balancing Authorities). Participating Balancing Authorities that prefer to submit this information to the NWPP Staff on a more frequent basis (including through the Reserve Sharing Computer System in real-time) may do so in coordination with the NWPP Staff.

In addition, all Participating Balancing Authorities must supply copies of supporting documentation to the NWPP Reserve Sharing Group (or the NWPP Staff) promptly upon request.

c. Deployment of Additional Operating Reserve Not Restricted to Qualifying Events

Because the additional Operating Reserve necessary to comply with R3 and R4 of BAL-002-WECC-2(a) is incremental to Participants' Contingency Reserve Obligations, Participants are not limited in their use of this additional Operating Reserve to Qualifying Events. Participants are entitled to deploy this additional Operating Reserve to respond to interruption of Interchange Transactions (as described in BAL-002-WECC-2(a) R3) or fulfillment of Operating Reserve transactions (as described in BAL-002-WECC-2(a) R4) even if these do not constitute Qualifying Events.

E. REQUESTING ASSISTANCE RESERVE

E.1. Qualifying Events

The Qualifying Events that permit Participants to deploy Internal Reserve, and, if the conditions specified in Section E.2 are satisfied, request Assistance Reserve, are specified in Attachment B to this document.

E.2. Action Required Before Requesting Assistance Reserve

If a Participant experiences a Qualifying Event, that Participant (the requesting Participant) is entitled to request and schedule Assistance Reserve (if necessary, to fully recover from the Qualifying Event) through the NWPP Reserve Sharing Program **only** after the requesting Participant has made commitments to use an amount of Internal Reserve that equals or exceeds the requesting Participant's Contingency Reserve Obligation. At the time of the Participant's request for Assistance Reserve, the fulfillment of the Participant's obligation to fully commit its Contingency Reserve Obligation will be evaluated taking into account any Internal Reserve lost because of the Qualifying Event (such as the loss of a generator on which reserve was being carried, whether due to conditions affecting the generator itself or due to loss of generator interconnection or transmission facilities necessary for delivery of output from the generator). The

amount of Contingency Reserve carried by any unit that is lost due to the Qualifying Event will be considered deployed and added to the used Contingency Reserve reported.

E.3. Timing of Requests for Assistance Reserve

After experiencing a Qualifying Event and fulfilling the conditions specified in Section E.2, a Participant that requires Assistance Reserve may submit a Reserve Sharing Request, but must do so within 60 minutes following the start of the Qualifying Event. Reserve Sharing Requests must be made in whole MWs (and cannot be for less than one MW).

Even though an eligible Participant may make a Reserve Sharing Request at any time within 60 minutes following that start of a Qualifying Event, the NWPP Reserve Sharing Group may, with respect to administering the terms of the Agency Agreement, differentiate between Reserve Sharing Requests submitted promptly—that is, within four minutes following the start of the Qualifying Event—and Reserve Sharing Requests that are delayed beyond four minutes. The "four-minute rule" does not affect Participants' obligations to deliver Assistance Reserve to other Participants that have made Reserve Sharing Requests, which, as stated in Section F, applies to all Reserve Sharing Requests made within 60 minutes following the start of the Qualifying Event.

If (a) a Reserve Sharing Request is made more than four minutes following the start of the Qualifying Event, and (b) the NWPP Reserve Sharing Group's Reporting ACE does not recover from the Qualifying Event within the applicable Contingency Event Recovery Period, then for purposes of any potential compliance consequences associated with the Qualifying Event, the matter will be addressed in accordance with Sections 7.2, 7.3, 8, and 9 of the Agency Agreement.

A Participant that has made a Reserve Sharing Request may rely on Assistance Reserve for a maximum period of 60 minutes from the time of the Reserve Sharing Request. The Participant that has requested Assistance Reserve must terminate its request within 60 minutes following the start of the Qualifying Event, so as to relinquish the responding Participants' Contingency Reserve.

E.4. Accounting for Energy; Transmission for Delivery

Any Participant that requests Assistance Reserve must complete a NWPP RSG Verification Form and must account for scheduled receipt and delivery of Assistance Reserve energy as "Contingency Reserve." Tagging of Energy with respect to deliveries of Assistance Reserve energy is implemented as described in Section K.1.c. and Attachment D to this document.

The delivery of Assistance Reserve is exempt from any costs or charges associated with transmission wheeling or losses. The Reserve Sharing Computer System builds in sufficient transmission capacity for delivering Assistance Reserve. There may be incremental transmission usage between some Reserve Sharing Zones, but this usage is effectively limited in real-time up to the current System Operating Limit (SOL) of the transmission facilities making up the cut planes between Reserve Sharing Zones (subject to certain further limitations with respect to particular cut planes as described in the next two paragraphs). Participants in the NWPP Reserve Sharing Program recognize the regional benefits associated with the NWPP Reserve Sharing Program and

have agreed to waive any rights to financial settlement for any transmission needed to deliver Assistance Reserve to other Participants.

In determining how much transmission capacity is available for delivery of Assistance Reserve energy between the Participants in the Northern California Zone (Turlock Irrigation District and Balancing Authority of Northern California) and the remaining Participants, the Reserve Sharing Computer System does not merely calculate the difference between actual flows and System Operating Limits for the relevant cut plane, which consists of (a) the Captain Jack - Olinda 500 kV transmission line, (b) the Malin - Round Mountain #1 500 kV transmission line, (c) the Malin - Round Mountain #2 500 kV transmission line, and (d) the Hilltop - Bordertown 345 kV transmission line. There are other parties (not members of the NWPP Reserve Sharing Group) that own or are entitled to use portions of the transfer capability of this cut plane. Therefore, the Reserve Sharing Computer System cannot treat the full transfer capability of the cut plane as available for use by members of the NWPP Reserve Sharing Group. Accordingly, in determining the amount of capacity on the cut plane available for deliveries of Assistance Reserve energy, the calculation will be the lesser of: (i) the limit on the cut plane, as provided by the applicable parties as listed in Attachment L, minus the actual flows, or (ii) the positive difference (if any) between the maximum transmission scheduling rights available on the cut plane to the applicable Participants and the amount actually scheduled by those Participants on the cut plane during the relevant operating period. This calculation is made in both the North-to-South and South-to-North directions.

There are also unique considerations with respect to the maximum amount of Assistance Reserve energy that can be delivered to or from B.C. Hydro to or from the Alberta Electric System Operator across the B.C. - Alberta cut plane. This is due to energy import and export limitations applicable to the Alberta Electric System Operator, which, under many conditions, can be lower than the System Operating Limits for the B.C. - Alberta cut plane. In determining how much Assistance Reserve energy can be delivered from B.C. Hydro to the Alberta Electric System Operator and from the Alberta Electric System Operator to BC Hydro, the calculation will be the lesser of: (a) the System Operating Limits on the B.C. - Alberta cut plane minus the actual flows, or (b) the applicable system import/export limits for the Alberta Electric System Operator minus the actual flows.

E.5. Restoring Reserves

If a Participant uses any portion of its Contingency Reserve Obligation in response to a Qualifying Event (whether use is limited to Internal Reserve or requires additional Assistance Reserve), the Participant should take appropriate action to restore Contingency Reserve Available on its system (to at least the level of its Contingency Reserve Obligation) as promptly as practicable. A Participant may not take longer than 60 minutes (measured from the start of the Qualifying Event) to restore Contingency Reserve Available on its system to at least the level of its Contingency Reserve Obligation.

F. OBLIGATION TO PROVIDE ASSISTANCE RESERVE

Each Participant is obligated to deliver Assistance Reserve up to the full amount of its Contingency Reserve Obligation (after deducting for any capacity that has been deployed to respond to any Qualifying Events) in response to any Reserve Sharing Request that has met the requirements in Section E.2 and is made within 60 minutes following the start of the Qualifying Event. No Participant is required to make Assistance Reserve deliveries that exceed its individual Contingency Reserve Obligation, but, as further explained in Section 2 of Attachment A, if a Participant elects to report Contingency Reserve Available to the Reserve Sharing Computer System that exceeds its Contingency Reserve Obligation, it must make the full amount of its reported Contingency Reserve Available accessible to the NWPP Reserve Sharing Group for deployment in response to Qualifying Events.

If a Participant has deployed all or a portion of its Contingency Reserve Obligation to respond to a Reserve Sharing Request by another Participant and then, while the deployment is still in effect, experiences its own Qualifying Event, the responding Participant may deploy whatever portion of its Contingency Reserve Obligation is required to recover from its own Qualifying Event (and, if the conditions necessary to receive Assistance Reserve are satisfied, it may also make a Reserve Sharing Request even if one or more other Participants' Reserve Sharing Requests remain in effect). If the NWPP Reserve Sharing Group experiences sequential Qualifying Events that require one or more responding Participants to deploy Assistance Reserve that was being provided to other Participants, the Reserve Sharing Computer System will recalculate the distribution of Assistance Reserve and allocate to remaining Participants any amount necessary to replace the deployed Assistance Reserve.

G. ELIGIBILITY FOR AND PARTICIPATION IN RESERVE SHARING PROGRAM

G.1. Eligibility to Participate in the NWPP Reserve Sharing Program

All Balancing Authorities that operate Balancing Authority Areas located within the Northwest Power Pool and that elect to become NWPP Agreement Signatories must participate in the NWPP Reserve Sharing Program and must become parties to the Agency Agreement.

G.2. Treatment of Third-Party Generation

Each Participating Balancing Authority must, in calculating its Contingency Reserve Obligation, include all generation that is within its metered boundaries and for which the Participating Balancing Authority has an obligation or has agreed to provide Contingency Reserve. The term "Qualifying Event" with respect to a Participating Balancing Authority applies to any generation (including Third-Party Generation) that has been included in that Participating Balancing Authority's calculation of its Contingency Reserve Obligation.

H. ROLES AND RESPONSIBILITIES

H.1. Participant Responsibilities

Participants are responsible for abiding by the NWPP Reserve Sharing Group rules specified in this document, together with any corresponding policies adopted by the RSG Committee. These include requirements to meet Contingency Reserve Obligations, to provide Assistance Reserve when requested by another Participant, and to settle for deliveries of Assistance Reserve energy as provided in Section K.

Participants must also provide and receive data for the NWPP Reserve Sharing Program in accordance with Section I for general operation of the NWPP Reserve Sharing Program and Section J for making and responding to requests for Assistance Reserve.

H.2. NWPP Staff Monitoring and Reporting Responsibilities

The NWPP Staff is responsible for monitoring Participants' compliance with Contingency Reserve Obligations. The RSG Committee is responsible for addressing problems related to Participant deficiencies or poor performance, for developing remedies and presenting proposed solutions, and for identifying and implementing any follow-up actions. The RSG Committee is also responsible for developing guidelines and arranging for periodic reports on the Contingency Reserve Obligation of the NWPP Reserve Sharing Group and Contingency Reserve Available within the NWPP as a whole.

The NWPP Staff is responsible for receiving NWPP RSG Verification Forms from Participants that have made Reserve Sharing Requests under the NWPP Reserve Sharing Program.

Subject to appropriate confidentiality and use restrictions (as determined by the NWPP Staff), the NWPP Staff may make available, to a Participant hosting implementation of an ACE Diversity Interchange arrangement, data related to the NWPP Reserve Sharing Program for the purpose of enabling the hosting Participant to harmonize the operation of the NWPP Reserve Sharing Program and the implementation of the ACE Diversity Interchange arrangement.

H.3. Monitoring, Backup, and Reporting Responsibilities

NWPP Staff is responsible for monitoring and assisting in the implementation of the NWPP Reserve Sharing Program. Although Participants are responsible for telemetering data to the Reserve Sharing Computer System as described in Sections I.1, and I.2, if NWPP Staff notices missing information, NWPP Staff follows up with the affected Participants.

In addition, the Participating Balancing Authorities are responsible to monitor the NWPP RSG "heartbeat" (as explained in Section I.1.n). If any Participating Balancing Authority discovers the NWPP RSG heartbeat is inactive for a period of 10 minutes, that Participating Balancing Authority will contact the NWPP Staff (503.445.1079, or 503. 445.1076, or 503.445.1074) if it is during normal business hours. Outside of normal business hours Participating Balancing Authorities should contact an adjacent Participating Balancing Authority to confirm this is a system-wide

problem and not just a problem with their system or communication link.

If a Participating Balancing Authority's heartbeat appears to be inactive at the time it needs to make a Reserve Sharing Request, it should initiate the Reserve Sharing Request as described in Attachment E – *Backup Procedures for NWPP Reserve Sharing Program*.

During normal business hours the NWPP Staff can review that status of each of the individual Participating Balancing Authorities' heartbeats. If a NWPP Staff member discovers a Participating Balancing Authority heartbeat is inactive, he or she will follow up with the affected Participating Balancing Authority, and document any findings by e-mail to all Participating Balancing Authorities.

It is all Participating Balancing Authorities' responsibility to inform all other Participating Balancing Authorities and the NWPP Staff if they have discovered a problem. In addition, Participating Balancing Authorities should e-mail questions or issues to nwpprsg@nwpp.org. NWPP Staff will respond as soon as possible.

I. GENERAL DATA REQUIREMENTS

This section describes data responsibilities for Participants in the NWPP Reserve Sharing Program. Although in general all required data are relayed automatically to the Reserve Sharing Computer System, all Participants must also have the capability to enter data manually if communications between Participating Balancing Authorities and the Reserve Sharing Computer System are interrupted.

I.1. Data Telemetered from Participating Balancing Authorities to the Reserve Sharing Computer System

Each Participant must telemeter the following data to the Reserve Sharing Computer System for each of its Balancing Authority Areas within the Northwest Power Pool:

a. the portion of its Contingency Reserve Available that is WECC Operating Reserve - Spinning ($TotCSR_{CA}$) ready for use as Internal Reserve or Assistance Reserve,

b. total Contingency Reserve Available ($TotAvailCR_{CA}$) ready for use as Internal Reserve or Assistance Reserve,

c. its total Balancing Authority Area Load (LOAD), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,

d. its total Balancing Authority Area Generation (GEN), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,

e. any portion of its reported Contingency Reserve Available already in use ($UsedCR_{CA}$),

f. its raw Reporting ACE (ACE_{raw}), after taking into account corrections for telemetry errors, etc.,

g. its Most Severe Single Contingency ($MSSC_{CA}$),

h. Scheduled Net Interchange values (NET_SCHED_INT), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,

i. Actual Net Interchange values (NET_ACTUAL_INT), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,

j. its Reserve Sharing Request dynamic schedule ($RSReq_{CA}$),

k. request for Reserve Sharing Status Indication ($RSReq\_Confirmd_{CA}$)

No Request = Status Open

Assistance Requested = Status Closed,

l. reserve sharing response (RSResp),

m. indication (manually entered) of availability to provide Assistance Reserve (Participating Balancing Authorities not available to provide Assistance Reserve can still receive Assistance Reserve) (BA_Participate)

Cannot Provide Assistance Reserve = Status Open

Can Provide Assistance Reserve = Status Closed,

n. status of the communications links that enable it to participate in the NWPP Reserve Sharing Program on an automated basis, also known as its "heartbeat" (signaled by continuing changes to indicator data, which the Reserve Sharing Computer System monitors at 10-second intervals; if there is no change to the data for a period of 60 seconds, the Participating Balancing Authority is presumed to be able to participate in the NWPP Reserve Sharing Program only through manual action; when the indicator data begin to change again, the Participating Balancing Authority is presumed to have regained the ability to participate in the NWPP Reserve Sharing Program through automated action) (BA_heart_beat), and

o. for any Participating Balancing Authority with variable bias, its frequency bias setting.

I.2. Participants Responsible for Major Transmission Facility Information

Explanatory note: As used in this Section I.2, the term "cut plane" is intended generally to describe an imaginary line separating two areas within a transmission system (or two different transmission systems) to enable the evaluation of flow of electrical energy on multiple lines connecting these two areas (or systems). The cut planes referred to below are sets of multiple lines connecting Reserve Sharing Zones.

Participants that are operators of the major transfer facilities listed in Attachment L and summarized below in this Section I.2 must telemeter to the Reserve Sharing Computer System actual flow ($ACTUAL_{PATHnn}$), scheduled flow ($SCHED_{PATHnn}$), and transfer limit ($LIMIT_{PATHnn}$) for each direction of flow for the following cut planes between Reserve Sharing Zones:

a. the cut plane connecting the Alberta Reserve Sharing Zone with the British Columbia Reserve Sharing Zone,

b. the cut plane connecting the Oregon-Washington-Montana Reserve Sharing Zone with the British Columbia Reserve Sharing Zone,

c. the cut plane connecting the Idaho Reserve Sharing Zone with the Oregon-Washington-Montana Reserve Sharing Zone,

d. the cut plane connecting the Idaho Reserve Sharing Zone with the Nevada-Wyoming-Utah Reserve Sharing Zone, and

e. the cut plane connecting the Oregon-Washington-Montana Reserve Sharing Zone with the Northern California Reserve Sharing Zone.

I.3 Functions of the Reserve Sharing Computer System

Except when communications links or the necessary computer capabilities are down, the Reserve Sharing Computer System performs the tasks listed below. NWPP Staff is able to monitor the Reserve Sharing Computer System and receive all Participants' data described in Sections I.1 and I.2. If NWPP Staff notices that there is missing information, NWPP Staff will consult directly with any Participating Balancing Authorities for which information is missing to make any necessary corrections.

a. Determine the Most Severe Single Contingency for the NWPP as a whole ($MSSC_{NWPP}$).

b. Determine the aggregate Contingency Reserve Obligation for the NWPP as a whole ($TotCRO_{NWPP}$) to ensure that the Contingency Reserve Available within the NWPP Reserve Sharing Group is sufficient to cover the Contingency Reserve Obligation for the NWPP as a whole.

c. Determine the Contingency Reserve Obligation ($TotCRO_{CA}$) for each Participant's Balancing Authority Area(s), calculated in accordance with Attachment A.

d. Compute a pro rata allocation of any applicable adjustments to Contingency Reserve Obligations ($AdjCRO\_MSSC_{CA}$ and $AdjCRO\_ZONE\_MSSC_{CA}$, which together are summed into $AdjCRO_{CA}$) for each Participant's Balancing Authority Area(s) to address shortages with respect to the MSSC for the NWPP Reserve Sharing Group or within a particular Reserve Sharing Zone.

e. In calculating any potential need to carry additional Contingency Reserve within a Reserve Sharing Zone, take into account transfer limits ($LIMIT_{Pathnn}$), actual flows ($ACTUAL_{Pathnn}$), and, where applicable, scheduled flows ($SCHED_{Pathnn}$) on the transmission facilities connecting that Reserve Sharing Zone to its adjacent Reserve Sharing Zone(s). With respect to the facilities linking the Oregon-Washington-Montana Reserve Sharing Zone with the Northern California Reserve Sharing Zone, this also reflects limits on ownership rights.

f. Maintain a pro rata allocation of the Reserve Sharing delivery dynamic schedule based upon each $TotCRO_{CA}$ for each Participant's Balancing Authority Area(s) relative to the $TotCRO_{NWPP}$.

g. Upon receipt of a Reserve Sharing Request dynamic schedule from a Participating Balancing Authority that is requesting Assistance Reserve, validate and activate the pro rata sharing signal to all other Participating Balancing Authorities.

h. Whenever Assistance Reserve is being delivered across facilities connecting two different Reserve Sharing Zones, continue to monitor actual flows ($ACTUAL_{Pathnn}$) in comparison to transfer limits ($LIMIT_{Pathnn}$) between the Reserve Sharing Zones, and, to the extent actual flows fall below transfer limits, allow deliveries to increase if needed to fully respond to the Reserve Sharing Request.

i. Maintain hourly integrated Reserve Sharing Request dynamic schedules from each Participating Balancing Authority.

j. Calculate a NWPP Reserve Sharing Group Reporting ACE.

Each Participating Balancing Authority should consistently review the Contingency Reserve Obligation (CRO_{CA}) value transmitted to it by the Reserve Sharing Computer System to confirm the accuracy of the calculation, and should promptly contact NWPP Staff if it suspects there may be an error in the Reserve Sharing Computer System's calculation.

I.4. Data Telemetered from the Reserve Sharing Computer System to Participating Balancing Authorities

The Reserve Sharing Computer System makes available to each Participant the following telemetered data:

a. The Reserve Sharing Computer System's calculation of total Contingency Reserve Obligation ($TotCRO_{CA}$) for the Participant's Balancing Authority Area(s), as described in Attachment A. This includes, as applicable,

- calculation of base Contingency Reserve Obligation based on three percent of load and three percent of generation (CRO_{CA}),
- any adjustment to address shortages with respect to the MSSC for the NWPP Reserve Sharing Group ($AdjCRO\_MSSC_{CA}$),
- any adjustment to address shortages within a particular Reserve Sharing Zone ($AdjCRO\_ZONE\_MSSC_{CA}$), and
- combined adjustments to Contingency Reserve Obligation ($AdjCRO_{CA}$) to address shortages with respect to the MSSC for the NWPP Reserve Sharing Group or within a particular Reserve Sharing Zone.
- total Contingency Reserve Obligation ($TotCRO_{CA}$) as adjusted to address shortages with respect to the MSSC for the NWPP Reserve Sharing Group or within a particular Reserve Sharing Zone.

b. If the total Contingency Reserve Available within the NWPP Reserve Sharing Group ($TotAvailCR_{NWPP}$) is less than to total Contingency Reserve Obligation for the NWPP Reserve Sharing Group ($TotCRO_{NWPP}$), the NWPP Reserve Sharing Computer System calculates and telemeters necessary adjustments to total Contingency Reserve Obligation ($TotCRO_{CA}$) for each Participant's Balancing Authority Area(s) to reflect the shortfall in total Contingency Reserve Available within the NWPP Reserve Sharing Group ($AdjCRO\_SHORT_{CA}$). Each Participant must carry this adjustment amount in addition to its $TotCRO_{CA}$.

c. [*Reserved.*]

d. Reserve Sharing Delivery dynamic schedule (RSDel) for Participating Balancing Authority that is delivering Assistance Reserve:[1]

$RSDel_{CA(Level\ 1)} = RSReq_{CA} * (TotCRO_{CA} / \Sigma\ TotCRO_{CA(Level\ 1)})$, limited to the portion of its Contingency Reserve Obligation ($TotCRO_{CA}$), if any, the

[1] (All "$_{CA}$" designations in these formulas refer to the particular Participating Balancing Authority to which a given value applies. References to "Levels" are to the Levels related to the Reserve Sharing Zones, as identified in Attachment C.)

Participating Balancing Authority is able to deliver at that time (after accounting for any portion of its $TotCRO_{CA}$ previously deployed)

Where,

$RSReq_{CA} \leq MW_{LOSS} - TotCRO_{CA}$

- If $\Sigma\ RSDel_{CA(Level\ 1)} < RSReq_{CA}$, then

  $RSReq_{Short} = RSReq_{CA} - \Sigma\ RSDel_{CA(Level\ 1)}$

  and,

  $RSDel_{CA(Level\ 2)} = RSReq_{Short} * (TotCRO_{CA} / \Sigma\ TotCRO_{CA(Level\ 2)})$.

- If the amount of Assistance Reserve that can be delivered from the Participating Balancing Authorities at Level 2 is insufficient to meet whatever portion of the Reserve Sharing Request remains after deliveries from Participating Balancing Authorities at Level 1, the process is repeated as described above for Level 3, and, if applicable, Level 4.
- If there are multiple requests for Assistance Reserve, the $RSDel_{CA}$ would be calculated to reflect the sum of all amounts to be delivered as Assistance Reserve to requesting Participants, but the Reserve Sharing Computer System separately tracks the amounts to be delivered to each of the requesting Balancing Authorities (so that payment and return energy obligations can be properly determined).
- Requests for Assistance Reserve are not allowed to exceed the Contingency Reserve Available for the NWPP Reserve Sharing Group as a whole (*see* Section 2 of Attachment A for an explanation of treatment of Reserve Sharing Requests that exceed the NWPP Reserve Sharing Group's aggregate Contingency Reserve Obligation).
- Transmission constraints are included the Reserve Sharing Computer System's calculation of how much Assistance Reserve can be delivered from each Level for each Reserve Sharing Zone, and so do not need to be separately computed and applied.

e. Delivery of Reserve Sharing Confirmation Flag ($RSDel\_Confirmd_{CA}$),

   No Request = Status Open

   Assistance Requested = Status Closed

f. Reserve Sharing time remaining for the requesting Balancing Authority from the most recent request for Assistance Reserve (TimeLeft)

g. Number of active Reserve Sharing Requests (RSAct)

h. The MSSC for the NWPP Reserve Sharing Group as a whole ($MSSC_{NWPP}$)

i. The Contingency Reserve Obligation for the NWPP Reserve Sharing Group as a whole ($TotCRO_{NWPP}$)

j. The Contingency Reserve Available for the NWPP Reserve Sharing Group as a whole ($TotAvailCR_{NWPP}$)

k. NWPP Reserve Sharing Group Reporting ACE (ACE_{NWPP})

l. Reportable Balancing Contingency Event (RpDist)

Where,

RpDist = the lesser of (a) 0.8 * $MSSC_{NWPP}$ or 500 MW

m. Total number of minutes remaining since the most recent request for the NWPP (RSTimRem)

n. The indication that the Reserve Sharing Computer System and associated communication links are operational is also known as the NWPP RSG "heartbeat."

o. When activity on the Reserve Sharing Computer System is due to testing rather than power system conditions, this is indicated by a testing flag. NWPP Staff will arrange for this flag to be set while testing is underway, which may include helping a Participating Balancing Authority test its system(s). (The NWPP Reserve Sharing Program is fully operational while testing is in progress and Reserve Sharing Requests may be made normally. If there is a Reserve Sharing Request during testing, the test will be terminated.)

I.5. Data Telemetered from the Reserve Sharing Computer System to the Reliability Coordinator

The Reserve Sharing Computer System telemeters to the Reliability Coordinator offices the following data every 10 seconds:

a. The MSSC for the NWPP Reserve Sharing Group as a whole ($MSSC_{NWPP}$),

b. The NWPP Reserve Sharing Group Reporting ACE,

c. The Contingency Reserve Obligation for the NWPP Reserve Sharing Group as a whole ($TotCRO_{NWPP}$),

d. The Contingency Reserve Available for the NWPP Reserve Sharing Group as a whole ($TotAvailCR_{NWPP}$), and

e. Any other data necessary to enable the Reliability Coordinator to monitor and assess the operation of the Reserve Sharing Group, as the recognized Responsible Entity for compliance with relevant provisions of BAL-002, consistent with applicable approvals or authorizations from the RSG Committee and procedures recognized by the Reliability Coordinator.

I.6. Management of Data Related to Reserve Sharing Zones

a. During the period when Peak Reliability serves as the Reliability Coordinator for the majority of the Participants, the NWPP Staff will arrange and implement a process to provide to Peak Reliability (by agreed-upon means and at agreed-upon intervals) the following information for each Reserve Sharing Zone:

- The MSSC for the Reserve Sharing Zone,
- The NWPP Reserve Sharing Group Reporting ACE,
- The Contingency Reserve Obligation for the Reserve Sharing Zone, and
- The Contingency Reserve Available for the Reserve Sharing Zone.

b. As Participants transition to Reliability Coordinators other than Peak Reliability, the NWPP Staff will arrange and implement a process to provide to each Participant (by agreed-upon means and at agreed-upon intervals) the information listed in Section I.6.a for each Reserve Sharing Zone in which the Participant has a Balancing Authority Area. It will be the responsibility of each Participant to relay to its Reliability Coordinator(s) the information listed in Section I.6.a.

J. DATA REQUIREMENTS RELATED TO RESERVE SHARING REQUESTS

The general data requirements for Participants in the NWPP Reserve Sharing Program are described in Section I. The provisions below explain the steps for making and responding to Reserve Sharing Requests.

J.1. Requesting Participant

a. A Participant that has met the conditions to make a Reserve Sharing Request (as described in Section E.2) must calculate the amount of Assistance Reserve for which it is eligible, enter the deficient amount needed into a Reserve Sharing Request dynamic schedule, and send the request, at a zero ramp span time, to the Reserve Sharing Computer System.

Where,

$RSReq_{CA} \leq MW_{LOSS} - TotCRO_{CA}$

RqstRSSI = 1.

b. At this point in time, the Participant's anticipated CR_{CA} should be at or below zero.

$TotCRO_{CA} - UsedCR_{CA} \leq 0$

c. Requesting Participants are expected to restore the Contingency Reserve Available on their systems, to at least the level of their Contingency Reserve Obligations, as promptly as practicable, but in no event longer than 60 minutes from the start of the Qualifying Event.

d. As a safeguard, the Reserve Sharing Computer System will remove the Reserve Sharing Request dynamic schedule within 65 minutes following the Reserve Sharing Request.

$RSReq_{CA}$ = 0, ten-minute ramp to zero beginning at 55 minutes after the request first started.

RqstRSSI = 0

e. If during the request the Requesting Participant detects a Reserve Sharing Computer System failure, it should assume that the Responding Participants will continue to deliver reserves for the full 65 minutes as called for in J.1.d.

f. If a Participant makes a Reserve Sharing Request for an initial Qualifying Event and, before the end of the 60 minutes during which the Participant is allowed to rely on Assistance Reserve (as provided in Section E.3 of this document), experiences one or more additional Qualifying Events for which it wishes to request Assistance Reserve, the Participant may initiate additional Reserve Sharing Requests by (1) activating the additional Reserve Sharing Request toggle on the Reserve Sharing Computer System (which indicates that the requesting Participant has two or more active Reserve Sharing Requests), then (2) revising the deficient amount needed, as calculated in accordance with Section J.1.a above, to include the additional amount of Assistance Reserve required for the additional Qualifying Event(s). The activation of any additional Reserve Sharing Request will re-set the overall event timer to 65 minutes (the permitted 60-minute reliance period plus an additional five minutes to complete ramping). While the Reserve Sharing Computer System continues to run separate event timers for each Qualifying Event, Participants are able to see only the time remaining for a Participant's last-initiated Reserve Sharing Request, and not for any of its previously initiated Reserve Sharing Requests.

J.2. Responding Participants

a. Responding Participants should initiate a response to a Reserve Sharing Delivery dynamic schedule from the Reserve Sharing Computer System by including $RSDel_{CA}$ in their ACE equation shown below. A security check on the Reserve Sharing Request dynamic schedule includes a crosscheck such that Reserve Sharing Status Indication = 1. The sign of the $RSDel_{CA}$ is negative for Participating Balancing Authorities requesting Assistance Reserve. The sign of the $RSDel_{CA}$ is positive for Participating Balancing Authorities providing Assistance Reserve.

Where,

ACE_{CA} = [actual interchange (I_a) – scheduled interchange (I_s)] – 10β (F_a – F_s) – I_{ME} +I_{ATEC}

I_s = Σ(adjacent Balancing Authority schedules) + Σ(dynamic schedules) + $RSDel_{CA}$

b. Each responding Participant will maintain an internal timer equal to $TotTmRem_{NWPP}$ and continue to count down this timer to zero if the value from the Reserve Sharing Computer System fails to decrement (indicating probable loss of data link). Whenever a responding Participant is operating in an assumed disconnected mode, $RSDel_{CA}$ is internally frozen. When the internal count-down timer reaches zero, the responding Participant should set $RSDel_{CA}$ to zero.

K. SETTLEMENT

A Participant that receives Assistance Reserve energy must compensate all Participants that deliver Assistance Reserve energy, either by return of energy or financially. Each Participant must declare in advance whether it elects to be compensated for delivery of Assistance Reserve energy by return of energy or financially. All Participants that request Assistance Reserve will settle with responding Participants according to the responding Participants' declaration of either financial or return of energy settlement.

This section explains how the data used for settlement are developed, the process through which Participants declare whether energy delivered as Assistance Reserve is to be returned as energy or settled financially, and the processes for completing financial settlement and return of energy (including responsibility for transmission arrangements).

K.1. Settlement Data

Each hour, whether or not there has been a Reserve Sharing Request, the Reserve Sharing Computer System will transmit the hour-ending integrated dynamic schedule quantities (MWh) to all Participating Balancing Authorities. These data will be referred to as "Settlement Data" and will include source/sink energy information without consideration of transmission "wheeling" through intervening systems. Settlement Data are rounded and used to develop adjacent Balancing Authority interchange schedules. Settlement Data will be used to construct the official reserve sharing energy matrix (the "Matrix").

a. Rounding

Settlement Data are rounded to whole integers to accommodate scheduling and accounting systems:

- All Settlement Data quantities less than 1 MWh will be rounded to 0 MWh (e.g., 0.7 yields 0 MWh). This practice will reduce nuisance scheduling of small quantities.
- For quantities equal to or greater than 1 MWh, conventional rounding practices will apply. Fractional quantities less than 0.5 will be rounded down (*e.g.*, 27.2 yields 27 MWh) and fractional quantities of 0.5 or greater will be rounded up (*e.g.*, 27.9 yields 28 MWh). After rounding, Settlement Data are compiled into the matrix.

b. Mapping of Energy Schedules

Energy schedules must be mapped to adjacent Balancing Authorities to allow proper energy accounting consistent with existing reliability standards and regional business practices. The Participants have agreed to the transmission mapping for reserve sharing as set forth in Attachment D. This mapping includes wheeling parties between nonadjacent Balancing Authorities, and, as further explained in Section K.1.c below, serves as the basis for templates used to create after-the-fact tags for deliveries of Assistance Reserve energy.

Attachment F describes the NWPP Reserve Sharing Group's procedure for revising the transmission mapping in Attachment B and any corresponding need to revise associated tag templates.

c. Automatic Tagging and Tag Templates

The transmission mapping set forth in Attachment D serves as the basis for tag templates associated with delivery of Assistance Reserve energy between Participating Balancing Authorities. The Northwest Power Pool Corporation has a contract with Open Access Technology International, Inc. (OATI) to produce after-the-fact energy schedule tags, using the transmission mapping in Attachment D as the basis for tag templates, for all deliveries of Assistance Reserve energy. These tags are provided to the Participants and the WECC Western Interchange Tool (WIT).

The NWPP Staff is responsible for keeping the transmission mapping attachment, and the templates used by OATI, up-to-date in accordance with requests made by Participating Balancing Authorities. Attachment D describes the process through which the NWPP Staff will arrange to revise to any reserve sharing tag templates that might be affected by changes to the transmission mapping in Attachment D.

K.2. Declarations Concerning Settlement Method

All Participants that request Assistance Reserve will settle with responding Participants according to the responding Participants' declaration of either financial or return of energy settlement. Each Participant must declare its choice of settlement method to the RSG Committee. Each Participant's declaration will be its default method of settlement until the declaring Participant notifies the RSG Committee of a change. A Participant may change its declaration of settlement method up to twice each year, on or about January 1 and on or about July 1, by providing notice to the RSG Committee. Declarations concerning settlement method will be recorded in the RSG Committee's meeting notes. Declarations made in January will become effective on February 1 and declarations made in July will become effective August 1.

Participants may agree separately to alternate procedures, provided the affected Participants can account for the transaction appropriately.

K.3. Financial Settlement

If a Participant elects to be financially reimbursed for providing Assistance Reserve energy,

a. for purposes of the NWPP Reserve Sharing Program, the "Settlement Price" will be the average of the Powerdex Mid-Columbia hourly price for (1) the hour during which the Participant first requests Assistance Reserve (the "Request Hour") and (2) each of the two hours immediately following the Request Hour; *provided, however*, that in no event will the Settlement Price be less than zero or greater than the price cap in effect for the WECC in accordance with regulations and orders of the Federal Energy Regulatory Commission (FERC) in effect as of the Request Hour; *provided further*, that if Assistance Reserve is provided in more than one hour, each hour in which Assistance Reserve is provided shall be deemed to be a Request Hour for purposes of determining the Settlement Price.

b. With respect to FERC-jurisdictional entities, the Settlement Price will be set forth in the Participant's individual tariff on file with and approved by FERC. In the event that the Settlement Price set forth in a. above is amended, such amended Settlement Price will not be effective until 90 days after the date of such amendment in order to allow FERC-jurisdictional entities time to amend their tariffs.

c. On or about July 1 of each year, the RSG Committee (or a work group or task force appointed by the RSG Committee) will review the definition of "Settlement Price," and may elect to either maintain the current definition of "Settlement Price" or propose a modified definition to be considered for approval at the next meeting of the RSG Committee. The effective date of any modification to the definition of "Settlement Price" will be coordinated to allow Participants with applicable tariffs filed with FERC to make any necessarily filings with FERC.

d. Unless the affected Participants have agreed otherwise, financial settlements will occur under the responding Participant's normal monthly billing cycle.

e. NWPP Staff will be responsible for determining and posting Settlement Prices, calculated as described in subsection (a) above of this Section K.3, in accordance with the following procedures:

    1. NWPP Staff will use the applicable hourly prices posted by Powerdex as of the first (U.S.) business day of the month following the month during which the Assistance Reserve energy was delivered (referred to in these procedures as the "lock-down date").

    2. Within three (U.S.) business days following the lock-down date, NWPP Staff will confer with designated Participants for assistance in validating the applicable prices posted by Powerdex on the lock-down date and the

computation of the relevant averages for the hours needed to calculate Settlement Prices.

3. By the end of the third (U.S.) business day following the lock-down date, NWPP Staff will post Settlement Prices for all Assistance Reserve energy delivered during the preceding month, computed as described in this subsection (e).

4. If, as of the lock-down date, information needed to compute one or more Settlement Prices has not yet been posted by Powerdex, NWPP Staff will compute and post Settlement Prices for those applicable dates and hours within three (U.S.) business days following the date on which the necessary information is first posted by Powerdex.

5. Settlement Prices that have been posted by NWPP Staff in accordance with the procedures set forth above will not be subject to further adjustment, except by agreement of all affected Participants.

K.4. Return Energy and Associated Transmission

Participants that receive Assistance Reserve energy from responding Participants that have elected to settle through return of energy must return the energy to those responding Participants within 168 hours from the time of initial delivery. The receiving Participant must return the energy during periods (On-Peak and Off-Peak "in-kind" energy) that correspond to the periods during which Assistance Reserve energy was delivered to the receiving Participant. Participants may agree to an alternate procedure, provided the affected Participants can account for the transaction appropriately.

All returns of energy under the NWPP Reserve Sharing Program must be scheduled using standard scheduling practices on the necessary transmission facilities. Any transmission costs necessary for settlement by return energy, including wheeling and losses, are to be borne by the responding Participant (*i.e.*, the Participant receiving the return energy).

L. INTERNAL NWPP RESERVE SHARING GROUP REPORTING

L.1 Obligation to Submit a NWPP RSG Verification Form

A Participant must, within two (U.S.) business days following the triggering event, prepare and submit to the NWPP Staff a completed NWPP RSG Verification Form (including Area Control Error and Net Interchange Deviation charts) whenever any one of three conditions described below occurs:

a. The Participant makes a Reserve Sharing Request under the NWPP Reserve Sharing Program (including use of backup procedures specified in Section N if the automated process fails).

b. The Participant or the NWPP Reserve Sharing Group has experienced a Qualifying Event that is equal to or greater than the lesser of (i) 500 MW, or (ii) 80% of the Most Severe Single Contingency for the NWPP Reserve Sharing Group at the time of the Qualifying Event.

c. The NWPP Staff contacts the Participant requesting a NWPP RSG Verification Form because the Participant has ownership or contractual rights in a jointly owned facility and the NWPP Staff is following up with the Participant as described in Section L.2.

NWPP RSG Verification Forms are available on the NWPP Website. Forms may be transmitted by fax (503-445-1070) or e-mail (nwpprsg@nwpp.org). The Northwest Power Pool Corporation, in its capacity as agent for the NWPP Reserve Sharing Group, is responsible for submitting periodic reports to the WECC and NERC in accordance with their requirements.

L.2 Reporting Balancing Authority Obligation to Notify NWPP Staff

A Participant that is the Reporting/Operating Balancing Authority (as specified in Attachment K) for a jointly owned facility must, as soon as feasible, but in any case within two (U.S.) business days following the triggering event, provide written notice to the NWPP Staff (which may be by electronic mail) whenever the jointly owned facility for which it is the Reporting/Operating Balancing Authority has experienced a Qualifying Event that is equal to or greater than the lesser of (a) 500 MW, or (b) 80% of the Most Severe Single Contingency for the NWPP Reserve Sharing Group at the time of the Qualifying Event.

The NWPP Staff will promptly follow up with all other Participants that have ownership or contractual rights in the jointly owned facility to request that those Participants submit completed NWPP RSG Verification Forms.

M. RESERVE SHARING ZONES

The NWPP Reserve Sharing Program takes into account the effect constrained transmission facilities can have on the ability of Participants to deliver Assistance Reserve energy to one another. When a Participating Balancing Authority (or a group of Participating Balancing Authorities) is separated from remaining Participants by constrained transmission facilities, the effect of the constraint is reflected in the establishment of Reserve Sharing Zones. Attachment C to this document identifies the Reserve Sharing Zones for the NWPP Reserve Sharing Program, together with the sequence (levels) through which Assistance Reserve is deployed for each Reserve Sharing Zone.

N. BACKUP PROCEDURES

Reserve Sharing Requests and delivery of Assistance Reserve energy are normally implemented through the Reserve Sharing Computer System. When a Participant cannot access the Reserve Sharing Computer System (or the system is inoperable), the Participant should use the manual

backup procedures described in Attachment E to make any Reserve Sharing Requests. In these circumstances, a responding Participant is obligated to provide Assistance Reserve only up to the amount of its available transmission capacity or its Contingency Reserve Obligation, whichever is smaller. The settlement process for delivery of Assistance Reserve energy using the backup procedure is the same as for the automated reserve sharing process, except that requesting and responding Participants must agree (on a case-by-case basis) to any reserve sharing transactions instead of obtaining the information from the Reserve Sharing Computer System. This process must be in accordance with Attachment G for production of after-the-fact tags and in accordance with existing reliability standards and regional business practices.

O. PROCEDURES FOR ADDRESSING ISSUES AFFECTING RESERVE SHARING PROGRAM WHEN AGENCY AGREEMENT PROCESS IS INSUFFICIENT

To facilitate reporting and compliance activities related to NERC or WECC reliability standards that may affect the NWPP Reserve Sharing Program, the Participating Balancing Authorities have entered into the Agency Agreement. All Participating Balancing Authorities, as well as the Northwest Power Pool Corporation, are parties to the Agency Agreement. The Agency Agreement contains provisions that enable Participating Balancing Authorities to call meetings on specified prior notice and make decisions about matters concerning the Agency Agreement or the NWPP Reserve Sharing Program. Any meeting or vote under the Agency Agreement requires at least 10 days' prior notice.

If an urgent matter related to NWPP Reserve Sharing Program arises, and the NWPP Staff determines in good faith that either (1) there is insufficient time to address the matter through the procedures in the Agency Agreement or (2) the matter is outside the scope of the Agency Agreement, the NWPP Staff will:

- make commercially reasonable efforts to promptly deliver electronic notice of the matter to each designated contact for notice under the Agency Agreement;

- convene a meeting by telephone conference (with the option of in-person attendance at the offices of the Northwest Power Pool Corporation if feasible) of all available Participating Balancing Authorities, giving as much advance notice and facilitating attendance of as many Participating Balancing Authorities as feasible in view of any need for prompt action;

- seek input from the Participating Balancing Authorities as to what action should be taken, and, if appropriate in the judgment of the NWPP Staff or requested by any Participating Balancing Authority, take a vote of the Participating Balancing Authorities (on the basis that a vote of not less than two-thirds of the Participating Balancing Authorities present at the time the vote is taken will be necessary to approve an action or decision); and

- make commercially reasonable efforts to take follow-up action consistent with the input received or results of any vote taken in accordance with this Section O.

No vote of the Participating Balancing Authorities conducted in accordance with this Section O may have the effect of (a) amending this NWPP Reserve Sharing Program documentation, (b) amending the Agency Agreement, (c) authorizing settlement of any NERC or WECC compliance-related matter that will or could cause any party to incur violation(s), monetary penalties or other legal liability (unless the party or parties incurring violation(s), monetary penalties or legal liability have given their prior written consent); or (d) restricting the ability of any party to independently exercise whatever legal or procedural rights it may have to challenge action taken by or petition an Enforcement Authority (as that term is defined in the Agency Agreement) in connection with any NERC or WECC compliance-related matter.

ATTACHMENTS

Attachment A – Calculation of Contingency Reserve Obligations; Requirements Related to WECC Operating Reserve - Spinning and WECC Operating Reserve - Supplemental

Attachment B – Qualifying Events

Attachment C – Reserve Sharing Zones and Levels

Attachment D – Transmission Mapping for NWPP Reserve Sharing Program

Attachment E – Backup Procedures for NWPP Reserve Sharing Program

Attachment F – Reserve Tagging Change Process

Attachment G – Backup Process for After-the-Fact Reserve Sharing Tags

Attachment H – Balancing Authority Areas of Participating Balancing Authorities

Attachment I – NERC Standard BAL-002-2 – Disturbance Control Performance – Contingency Reserve for Recovery from a Balancing Contingency Event

Attachment J – WECC Standard BAL-002-WECC-2(a) – Contingency Reserve

Attachment K – Northwest Power Pool Reserve Sharing Group Most Severe Single Contingency Table

Attachment L – Transmission Facilities Making Up Cut Planes Between Reserve Sharing Zones

Attachment M – Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to NWPP Reserve Sharing Group Reporting ACE

Attachment N – Correlation Table of Participants, Reliability Coordinators, and Zones

Attachment A

Calculation of Contingency Reserve Obligations; Requirements Related to WECC Operating Reserve - Spinning and WECC Operating Reserve - Supplemental

1. Calculation of Participating Balancing Authority Contingency Reserve Obligation

The NWPP Reserve Sharing Group has determined that the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), as well as the Contingency Reserve Obligation for the NWPP Reserve Sharing Group as a whole, will be calculated as set forth below. The measure of the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), as well as the Contingency Reserve Obligation for the NWPP Reserve Sharing Group as a whole, will be based on real-time measurements of load and generation, which, for compliance purposes, will be used to calculate integrated hourly averages. These integrated hourly averages will be compared to hourly averages of Contingency Reserve Available (also based on real-time measurements) to determine whether the NWPP Reserve Sharing Group's Contingency Reserve Available was sufficient to meet the requirements of BAL-002. The amount of Contingency Reserve Available within the NWPP Reserve Sharing Group for each clock hour must be equal to or greater than the NWPP Reserve Sharing Group's Contingency Reserve Obligation during that same clock hour.

As described in detail in Section 1 of this Attachment A, the Reserve Sharing Computer System uses a four-step process to determine the Contingency Reserve Obligation a Participating Balancing Authority is required to meet for its Balancing Authority Area(s) under normal circumstances, using real-time measurements as described above. The Reserve Sharing Computer System completes the calculations necessary for this process (with updated real-time measurements) every data scan cycle (that is, no less frequently than every six seconds).

These calculation processes can be summarized as follows:

First, the Reserve Sharing Computer System calculates three percent of load plus three percent of generation. Next, the Reserve Sharing Computer System sums of all Participants' Contingency Reserve calculations to see whether this calculated sum is at least equal to the Most Severe Single Contingency for the NWPP Reserve Sharing Group. If it is not, the Reserve Sharing Computer System allocates, on a pro rata basis, the additional amount of Contingency Reserve necessary to cover the NWPP Reserve Sharing Group's Most Severe Single Contingency and determines the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s) as adjusted for the NWPP Reserve Sharing Group's Most Severe Single Contingency.

The third step calculates the amount of any additional Contingency Reserve that may be needed in a Reserve Sharing Zone to cover the Most Severe Single Contingency within that Reserve Sharing Zone and determines each the Total Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), reflecting both applicable adjustments for the NWPP Reserve Sharing Group's Most Severe Single Contingency and any adjustments necessary to address the Most Severe Single Contingency within a Reserve Sharing Zone.

The fourth step checks to make sure the aggregate amount of Contingency Reserve Available within the NWPP Reserve Sharing Group is at least equal to Contingency Reserve Obligation of the NWPP Reserve Sharing Group according to the requirements of BAL-002 (both the WECC and the NERC versions). If it is not, the Reserve Sharing Computer System allocates, on a pro rata basis, the additional amount of Contingency Reserve necessary to fully comply with the Contingency Reserve requirements of BAL-002. Each Participating Balancing Authority must add this adjustment amount to its total Contingency Reserve Obligations and stand ready to deploy this adjusted Contingency Reserve Obligation (excluding amounts already deployed to respond to Qualifying Events) at all times for use as Internal Reserve and Assistance Reserve.

Section 4 of this Attachment sets out the process a Participating Balancing Authority should follow to determine its Contingency Reserve Obligation(s) when communication links between the Participating Balancing Authority and the Reserve Sharing Computer System are down, or when the Reserve Sharing Computer System is unavailable.

Set forth below are explanations and formulas for each step in the process to determine the total amount of Contingency Reserve a Participating Balancing Authority is required to carry.[2] For any Participant that has more than one Balancing Authority Area within the Northwest Power Pool, the calculations below are done separately for each of its Balancing Authority Areas.

a. Step One – Calculation of Participating Balancing Authority Base Contingency Reserve Obligation:

The base Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), or "CRO_{CA}" (before the adjustments described in the remainder of Section 1 of this Attachment A), is the sum of (i) three percent of the Load (as defined below) for the Participant's Balancing Authority Area(s), plus (ii) three percent of the Generation (as defined below) for the Participant's Balancing Authority Area(s).

$$\mathbf{CRO}_{CA} = (0.03 \times \text{Generation}) + (0.03 \times \text{Load}),$$

Where,

- $\mathbf{CRO}_{CA}$ = base Contingency Reserve Obligation
- **Generation** = BAA Net Generation - Designated Dynamically Scheduled Exports + Designated Dynamically Scheduled Imports [*see* Note 1]

[2] For consistency with formulas used in the Reserve Sharing Computer System, individual Participating Balancing Authority obligations are designated by the subscript "$_{CA}$." This is because the formulas in the Reserve Sharing Computer System were established when the function roughly corresponding to a Balancing Authority was referred to as a control area.

- **Load** = BAA Net Generation - Actual Net Interchange [*see* Notes 2 and 3]
- **BAA Net Generation** = the sum of Net Generation for all generating units (whether measured by individual units or at the plant level or both) inside the Balancing Authority Area
- **Net Generation** (whether for an individual generating unit or a generating plant) = the greater of (a) the gross metered generation minus station service load, or (b) zero
- **Actual Net Interchange (NI_A)** has the meaning given to this term in the NERC Glossary
- **Scheduled Net Interchange (NI_S)** has the meaning given to this term in the NERC Glossary
- **Designated Dynamically Scheduled Exports =** all Dynamically Scheduled exports for which the sink (receiving) Balancing Authority has agreed to carry Contingency Reserve, as reflected in the Balancing Authority Area's Scheduled Net Interchange value [*see* Note 4]
- **Designated Dynamically Scheduled Imports** for which the sink (receiving) Balancing Authority has agreed to carry Contingency Reserve, as reflected in the Balancing Authority Area's Scheduled Net Interchange value [*see* Note 4]
- **Dynamically Scheduled** corresponds to the term "Dynamic Schedule," as defined in the NERC Glossary

Note 1: All generation within the Balancing Authority Area's or the NWPP Reserve Sharing Group's metered boundaries should be included in this calculation, with the only exception being generation expressly permitted to be excluded by the terms of BAL-002-WECC-2(a) (or comparable standards in jurisdictions outside the United States). Generation within a Balancing Authority Area by Pseudo-Tie (as defined in the NERC Glossary) is considered within the metered boundaries of the Balancing Authority Area into which it is Pseudo-Tied and is included in its generation calculation.

Note 2: Generation within a Balancing Authority Area by Pseudo-Tie is reflected in Actual Net Interchange in the ACE equation.

Note 3: Load within a Balancing Authority Area by Pseudo-Tie is reflected in Actual Net Interchange in the ACE equation. Load within a Balancing Authority Area by Pseudo-Tie is considered within the metered boundaries of the Balancing Authority Area into which it is Pseudo-Tied and is included in its load calculation by virtue of its inclusion in the Actual Net Interchange equation.

Note 4: This term captures net generation responsibility transferred, reflecting that Dynamically Scheduled generation exports can be subtracted from the exporting Balancing Authority's generation obligation (except when the source Balancing Authority and sink Balancing Authority have agreed otherwise), and Dynamically Scheduled generation imports should be added to the importing Balancing Authority's generation obligation (except when the source Balancing Authority and sink Balancing Authority have agreed otherwise).

b. Step Two – Check for Deficiency Related to Most Severe Single Contingency for the NWPP:

Once the Participating Balancing Authorities' base Contingency Reserve Obligations have been calculated, the second step in the process is to check for any potential deficiency, should the Most Severe Single Contingency for the NWPP exceed the sum of the Participating Balancing Authorities' Contingency Reserve Obligations as calculated in step one.

The NWPP's Most Severe Single Contingency is compared to the sum of all Participating Balancing Authorities' base Contingency Reserve Obligations. If the Most Severe Single Contingency is greater, the difference between these two figures (the "shortfall") is allocated among the Participating Balancing Authorities in proportion to their relative shares of the NWPP Reserve Sharing Group's base Contingency Reserve Obligation, as calculated in step one. This results in an upward adjustment to the base Contingency Reserve Obligation for each Participant's Balancing Authority Area(s).

The formulas for this step are as follows:

If $\Sigma\ CRO_{CA} < MSSC_{NWPP}$, then

$$CRO\_SHORT_{NWPP} = MSSC_{NWPP} - \Sigma\ CRO_{CA}$$

and

$$AdjCRO\_MSSC_{CA} = CRO\_SHORT_{NWPP} * CRO_{CA} / \Sigma\ CRO_{CA}$$

Where,

$\Sigma\ CRO_{CA}$ = sum of all Participating Balancing Authorities' base Contingency Reserve Obligations, as calculated through step one;

$MSSC_{NWPP}$ = the Most Severe Single Contingency for the NWPP Reserve Sharing Group, determined in accordance with the table set forth in Attachment K;

CRO_SHORT_{NWPP} = the amount by which the Most Severe Single Contingency for the NWPP exceeds the sum of the Participating Balancing Authorities' base Contingency Reserve Obligations;

CRO_{CA} = the Participating Balancing Authority's base Contingency Reserve Obligation as calculated in step one;

$AdjCRO\_MSSC_{CA}$ = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group.

$MSSC_{NWPP}$ is revised only if the output of the generator (or loading of the transmission line) that sets the $MSSC_{NWPP}$ increases or decreases by 30 MW or more.

d. Step Three – Check for Deficiency Related to Most Severe Single Contingency for a Reserve Sharing Zone and Sum of Adjustments:

The third step in the process is to check for any potential deficiency within a Reserve Sharing Zone if the Zone's Most Severe Single Contingency exceeds the sum of (i) the Contingency Reserve Obligation for the Zone's Participating Balancing Authorities and (ii) the amount of Contingency Reserve that can be imported from adjacent Reserve Sharing Zones. This Zone adjustment is then summed with the adjustment from step two and added to the Participant's base Contingency Reserve Obligation to give Total Contingency Reserve Obligation.

The Reserve Sharing Computer System continuously monitors transfer limits ($LIMIT_{Pathnn}$), actual flows ($ACTUAL_{Pathnn}$), and, where applicable, scheduled flows ($SCHED_{Pathnn}$) on transmission facilities connecting Reserve Sharing Zones.

If, after accounting for Contingency Reserve Obligation that can be delivered from adjacent Reserve Sharing Zones, the combined Contingency Reserve Obligations within the Zone is less than the Zone's Most Severe Single Contingency, this shortfall is allocated among the Zone's Participating Balancing Authorities in proportion to their relative shares of the aggregate Contingency Reserve Obligations (as calculated through steps one and two) for the Reserve Sharing Zone.

The formulas for adjusting Contingency Reserve Obligations, if necessary, for the Most Severe Single Contingency for a Reserve Sharing Zone are as follows:

If $\Sigma\ (CRO_{CA} + AdjCRO\_MSSC_{CA}) + ASDEL_{ZONE} < MSSC_{ZONE}$, then

$CRO\_SHORT_{ZONE} = MSSC_{ZONE} - (\Sigma\ (CRO_{CA} + AdjCRO\_MSSC_{CA}) + ASDEL_{ZONE})$

and

$AdjCRO\_ZONE\_MSSC_{CA} = CRO\_SHORT_{ZONE} * (CRO_{CA} + AdjCRO\_MSSC_{CA}) / \Sigma\ (CRO_{CA} + AdjCRO\_MSSC_{CA})$

and

$AdjCRO_{CA} = AdjCRO\_MSSC_{CA} + AdjCRO\_ZONE\_MSSC_{CA}$

and

$TotCRO_{CA} = CRO_{CA} + AdjCRO_{CA}$

Where,

$\Sigma\ CRO\_MSSC_{CA}$ = the sum of Contingency Reserve Obligations for all Participating Balancing Authorities in the Reserve Sharing Zone (as calculated through steps one and two);

CRO_MSSC_{CA} = the Contingency Reserve Obligation for a Participating Balancing Authority in the Reserve Sharing Zone, as adjusted to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group;

$ASDEL_{ZONE}$ = the amount of Assistance Reserve that can be delivered to the Reserve Sharing Zone from adjacent Reserve Sharing Zones, after accounting for relevant transfer limits, actual flows, and if applicable, scheduled flows on transmission facilities connecting Reserve Sharing Zones;

$MSSC_{ZONE}$ = the Most Severe Single Contingency for the Reserve Sharing Zone;

CRO_SHORT_{ZONE} = the amount by which the Most Severe Single Contingency for the Reserve Sharing Zone exceeds the sum of (i) the aggregate Contingency Reserve Available of the Participating Balancing Authorities in the Reserve Sharing Zone ($\Sigma\ CRO\_MSSC_{ZONE}$), plus (ii) amount of Assistance Reserve that can be

delivered to the Reserve Sharing Zone from adjacent Reserve Sharing Zones ($ASDEL_{Lim}$);

CRO_{CA} = the Participating Balancing Authority's Contingency Reserve Obligation;

$AdjCRO\_ZONE\_MSSC_{CA}$ = the additional amount of Contingency Reserve a Participating Balancing Authority needs to carry to reflect the Most Severe Single Contingency for the Reserve Sharing Zone;

$AdjCRO\_MSSC_{CA}$ = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group;

$AdjCRO_{CA}$ = the total adjustment amounts to be added to a Participant's base Contingency Reserve Obligation to reflect any applicable adjustments for the NWPP Reserve Sharing Group's Most Severe Single Contingency and the Most Severe Single Contingency for a Reserve Sharing Zone; and

$TotCRO_{CA}$ = the Participating Balancing Authority's Contingency Reserve Obligation as adjusted to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group and for its Reserve Sharing Zone.

$MSSC_{ZONE}$ is revised only if the output of the generator (or loading of the transmission line) that sets the $MSSC_{ZONE}$ increases or decreases by five MW or more.

e. <u>Step Four – Calculation of Aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group and Check for NWPP Reserve Sharing Group Shortfall</u>:

The fourth step in the process calculates the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group and makes sure the total Contingency Reserve Available within the NWPP Reserve Sharing Group is at least equal to the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group.

The aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group is calculated by summing the total Contingency Reserve Obligations (as calculated in steps one through three) for all Participants' Balancing Authority Areas.

The formula for this step is as follows:

$TotCRO_{NWPP} = \Sigma\ TotCRO_{CA}$

Where,

$TotCRO_{NWPP}$ = the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group; and

$\Sigma\ TotCRO_{CA}$ = the sum of the total Contingency Reserve Obligations of all Participating Balancing Authorities, as adjusted to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group and for applicable Reserve Sharing Zones.

If the Contingency Reserve Available within the NWPP Reserve Sharing Group is less than the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group, the difference between these two figures (the "shortfall") is allocated among the Participating Balancing Authorities in proportion to their relative shares of the NWPP Reserve Sharing Group's Contingency Reserve Obligation (without factoring in adjustments for shortfalls within a Reserve Sharing Zone). This results in an upward adjustment to the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s).

The formulas for this final check are as follows:

If $TotAvailCR_{NWPP} < TotCRO_{NWPP}$, then

$TotCRO\_SHORT_{NWPP} = TotCRO_{NWPP} - TotAvailCR_{NWPP}$

and

$AdjCRO\_SHORT_{CA} = 1.5 * (TotCRO\_SHORT_{NWPP} * (CRO_{CA} + AdjCRO\_MSSC_{CA}) / \Sigma\ (CRO_{CA} + AdjCRO\_MSSC_{CA}))$

Where,

$TotCRO_{NWPP}$ = the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group;

$TotAvailCR_{NWPP}$ = the total amount of Contingency Reserve Available in the NWPP Reserve Sharing Group;

$TotCRO\_SHORT_{NWPP}$ = the amount by which the aggregate Contingency Reserve Obligation for the NWPP Reserve Sharing Group exceeds the total Contingency Reserve Available;

CRO_{CA} = the Participating Balancing Authority's base Contingency Reserve Obligation as calculated in steps one;

$AdjCRO\_SHORT_{CA}$ = the adjustment to the Participating Balancing Authority's Contingency Reserve Obligation to reflect the shortfall in total Contingency Reserve Available; and

$AdjCRO\_MSSC_{CA}$ = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to reflect the Most Severe Single Contingency for the NWPP Reserve Sharing Group.

Each Participant must add the adjustment amount ($AdjCRO\_SHORT_{CA}$) to the total Contingency Reserve Obligation for its Balancing Authority Area(s) as calculated in step three ($TotCRO_{CA}$) and stand ready to deploy the combined amount of Contingency Reserve Available (excluding amounts already deployed to respond to a Qualifying Event) at all times for use as Internal Reserve and Assistance Reserve.

The calculation of the adjustment amount ($AdjCRO\_SHORT_{CA}$) uses a multiplier of 1.5 times the shortfall to create a "buffer" to make sure the NWPP Reserve Sharing Group fully covers the shortfall. The NWPP Reserve Sharing Group will experience a shortfall only if one or more Participants have not fully met their Contingency Reserve Obligations. Allocating an amount equal to the shortfall among all Participants would leave the NWPP Reserve Sharing Group in the position of relying on one or more Participants that are already short to contribute more Contingency Reserve to cover their own shortfalls. Using a multiplier of 1.5 to calculate the adjustment amount provides greater assurance than even a shortfall by a Participant with a large Contingency Reserve Obligation will be covered.

2. Discretion of Participating Balancing Authority to Carry More Contingency Reserve Than Required by Calculation of Minimum Contingency Reserve Obligation; Obligation to Make Available All Reported Contingency Reserve Available

While a Participating Balancing Authority may not at any time (other than when responding to a Qualifying Event) carry less than Contingency Reserve Obligation required by the calculations set forth in Section 1 of this Attachment A for its Balancing Authority Area(s), a Participating Balancing Authority may, at its discretion, carry more than its Contingency Reserve Obligation. If a Participating Balancing Authority chooses to report to the Reserve Sharing Computer System that it has Contingency Reserve Available that exceeds its Contingency Reserve Obligation, it must make available to the NWPP Reserve Sharing Group the full amount of the Contingency Reserve Available it has reported to the Reserve Sharing Computer System.

The Reserve Sharing Computer System will, however, initially allocate Reserve Sharing Requests in proportion to responding Participants' Contingency Reserve Obligations (subject to any applicable transmission constraints). The Reserve Sharing Computer System will signal for delivery of any portion of a Participant's Contingency Reserve Available that exceeds its Contingency Reserve Obligation only if the magnitude of a Reserve Sharing Request is so great that it cannot be met solely through requests for delivery of Participants' Contingency Reserve Obligations. In those instances, the Reserve Sharing Computer System will automatically signal for additional deliveries from those Participants reporting remaining Contingency Reserve Available, and allocate the deliveries in proportion to the relative Contingency Reserve Obligations of those Participants.

3. Minimum Requirements for WECC Operating Reserve - Spinning and Permitted Amounts and Types of WECC Operating Reserve - Supplemental

a. <u>Minimum WECC Operating Reserve - Spinning and Permitted Use of WECC Operating Reserve - Supplemental</u>

At least 50% of a Participating Balancing Authority's Total Contingency Reserve Obligation, as calculated in Section 1, must be WECC Operating Reserve - Spinning. The combined unit ramp rate of each Participating Balancing Authority's online, unloaded generating capacity must be capable of responding to the entire requirement for WECC Operating Reserve - Spinning for that Participating Balancing Authority's system.

The remainder of a Participating Balancing Authority's Contingency Reserve Obligation(s) (that is, any portion other than the 50% that must be WECC Operating Reserve - Spinning) may be met with either WECC Operating Reserve - Spinning or WECC Operating Reserve - Supplemental, provided that any WECC Operating Reserve - Supplemental applied to a Participating Balancing Authority's Contingency Reserve Obligation can be made fully effective within 10 minutes.

b. Permitted Sources of WECC Operating Reserve - Supplemental

To the extent a Participating Balancing Authority is permitted to use WECC Operating Reserve - Supplemental to meet a portion of its Contingency Reserve Obligation(s) calculated in accordance with Section 1 of this Attachment A, the following may be used as sources of WECC Operating Reserve - Supplemental:

1. WECC Operating Reserve - Spinning,

2. WECC Operating Reserve - Supplemental,

3. Interchange Transactions designated by the Source Balancing Authority as WECC Operating Reserve - Supplemental,

4. Reserve held by other entities by agreement that is deliverable on Firm Transmission Service,

5. A resource, other than generation or load, that can provide energy or reduce energy consumption,

6. Load, including demand response resources, demand-side management resources, direct control load management, interruptible load or interruptible demand, or any other load made available for curtailment by the Participating Balancing Authority or the NWPP Reserve Sharing Group via contract or agreement, and

7. All other load, not identified in the foregoing items, once a Reliability Coordinator for the Northwest Power Pool has declared an energy emergency alert signifying that interruption of Firm Demand is imminent or in progress.

4. Participating Balancing Authority Calculation of Contingency Reserve Obligation(s) When Communications with Reserve Sharing Computer System Are Disrupted

During periods when communication links between a Participating Balancing Authority and the Reserve Sharing Computer System are down, or when the Reserve Sharing Computer System is unavailable, responsibility for calculating Contingency Reserve Obligations shifts to the Participating Balancing Authority. Any Participating Balancing Authority that is unable to access the Reserve Sharing Computer System's calculation of its Contingency Reserve Obligations should use good-faith estimates of the inputs needed to determine its Contingency Reserve Obligation, based on the last available input data known to be valid, and apply as many of the steps described in Section 1 of this Attachment A as it can, consistent with good utility practice. The Participating Balancing Authority should continue this process, adjusting as appropriate for relevant changes to system conditions, until availability of and communications with the Reserve Sharing Computer System are restored.

Attachment B

Qualifying Events

A "Qualifying Event" is any single event described in subsections (A), (B), (C), or (D) below, or any series of such otherwise single events, with each separated from the next by one minute or less. Any capitalized term used below that is not defined within this document has the meaning given to it in the NERC Glossary. This Attachment B may be modified from time to time by action of the RSG Committee.

(A) **Sudden Loss of Generation:**

- Sudden loss of generation
  - due to
    - unit tripping (*see note 1 below*), or
    - loss of generator Facility resulting in isolation of the generator from the Bulk Electric System or from the responsible entity's System, or
    - sudden unplanned outage of transmission Facility;

  and
  - that causes an unexpected change to the responsible entity's ACE.

(B) **Sudden Loss of an Import:**

- Sudden loss of an import, due to forced outage of transmission equipment that causes an unexpected imbalance between generation and Demand on the Interconnection. (*See note 2 below.*)

(C) **Sudden Restoration of a Demand:**

- Sudden restoration of a Demand that was used as a resource that causes an unexpected change to the responsible entity's ACE.

(D) **Energy Emergency Alert:**

- a Participating Balancing Authority's inability to meet firm Demand such that the Participating Balancing Authority has requested its Reliability Coordinator to declare, and the Reliability Coordinator has declared (or confirmed that it will declare) an Energy Emergency (as described in NERC Standard EOP-011-1 or a successor standard).

Note 1:

For purposes of this Attachment B, the term "unit tripping" means:

(1) the automatic operation of a device or capability designed to protect a power-producing resource from damage, or

(2) the unexpected failure of a power-producing resource to maintain, increase, or remain available due to equipment failure, or

(3) the unexpected failure of a power-producing resource to start (a) due to equipment failure, and (b) not associated with the failure to procure fuel,

which, in all cases, results in loss of MW output serving (or needed to serve) one or more Participants' Demand obligations.

Note 2:

Given typical operating practices followed in the Western Interconnection, the loss of an import would generally be expected to result in a corresponding adjustment to generation.

Attachment C

Reserve Sharing Zones and Levels

Each Reserve Sharing Zone identified below has multiple levels for providing Assistance Reserve. Level 1 is the list of initial providers. If there is insufficient Assistance Reserve at Level 1 or there are transmission constraints between Reserve Sharing Zones, additional zones will be included by moving out one level at a time until there is sufficient Assistance Reserve or all Participating Balancing Authorities are included.

The third page of this Attachment C contains a schematic representation of the Northwest Power Pool Reserve Sharing Program Reserve Sharing Zones.

Alberta Electric System Operator (AESO)

Level 1: BCHA
Level 2: BCHA + PNW
Level 3: BCHA + PNW + IPCO + NCal
Level 4: BCHA + PNW + IPCO + NEVP-PACE + NCal

B.C. Hydro and Power Authority (BCHA)

Level 1: AESO + PNW
Level 2: AESO + PNW + IPCO + NCal
Level 3: AESO + PNW + IPCO + NEVP-PACE + NCal

Oregon-Washington-Montana – Pacific Northwest (PNW) Zone

Level 1: PNW
Level 2: PNW + IPCO + BCHA + NCal
Level 3: PNW + IPCO + BCHA + NEVP-PACE + AESO + NCal

Idaho Power Company (IPCO)

Level 1: PNW + NEVP-PACE
Level 2: PNW + NEVP-PACE + BCHA + NCal
Level 3: PNW + NEVP-PACE + BCHA + AESO + NCal

Nevada Power– PacifiCorp East (NEVP-PACE) Zone

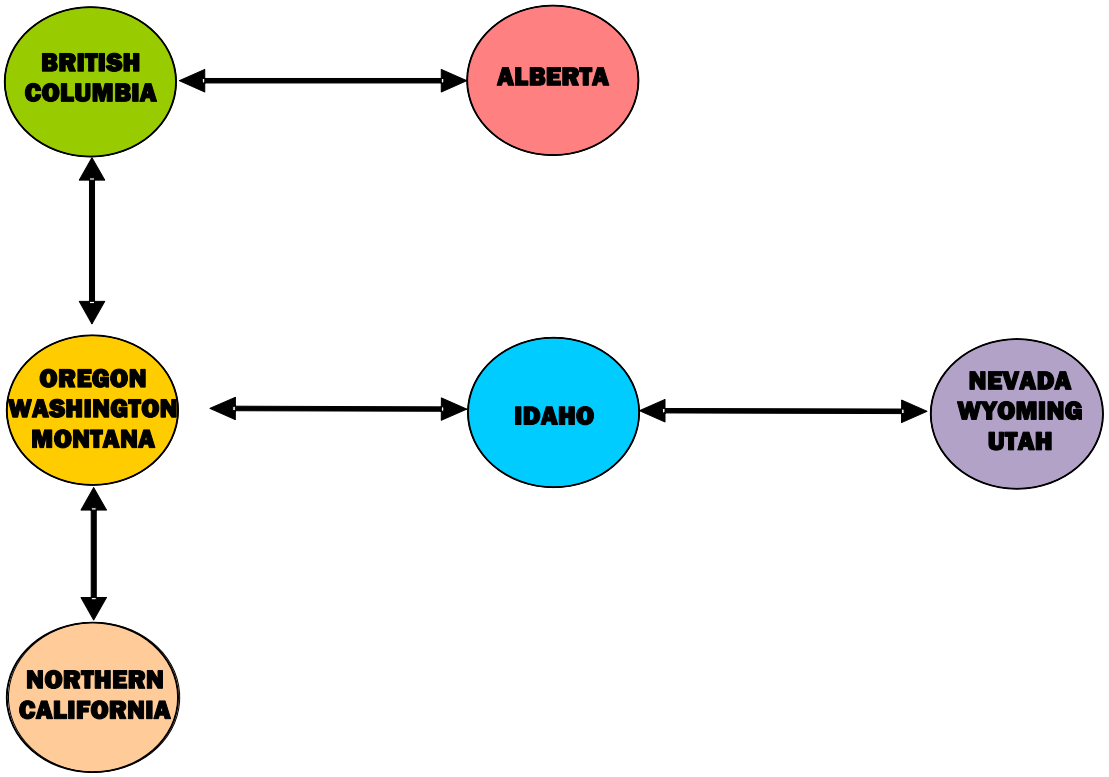
Level 1: NEVP-PACE + IPCO + PNW*
Level 2: NEVP-PACE + IPCO + PNW + BCHA
Level 3: NEVP-PACE + IPCO + PNW + BCHA + AESO+ NCal

* Note that, even though for other purposes (and as portrayed in the diagram on the last page of this Attachment C), the PNW (or "Oregon/Washington/Montana") Zone is considered to be separated from the NEVP-PACE (or "Nevada/Wyoming/Utah") Zone by an intervening Zone (the IPCO or "Idaho" Zone), both the IPCO Zone and the PNW Zone are treated as "Level 1" with respect to the NEVP-PACE Zone.

Northern California (NCal)

Level 1: NCal
Level 2: NCal + PNW
Level 3: NCal +PNW + IPCO + BCHA
Level 4: NCal + PNW+ IPCO + NEVP-PACE + BCHA + AESO

Reserve Sharing Zones



Attachment D

Transmission Mapping for NWPP Reserve Sharing Program

This Attachment D may be revised upon request to the NWPP Staff by a Participant, provided that all Participants affected by the requested change and the Northwest Power Pool Corporation agree to the proposed revisions. Attachment F, *Transmission Mapping and Tag Template Change Process*, sets forth the process for implanting revisions to the transmission mapping specified in this Attachment D and for corresponding revisions to tag templates for delivery of Assistance Reserve energy if they are needed.

Alberta Electric System Operator (AESO)

Level 1: BCHA

Requesting party	*Path*	*Delivering Party*
AESO	Direct	BCHA

Level 2: BCHA + PNW

Additional accounts for Level 2

Requesting party	*Path*	*Delivering Party*
AESO	BCHA-BPAT	AVA
AESO	BCHA-BPAT	AVRN
AESO	BCHA	BPAT
AESO	BCHA-BPAT	CHPD
AESO	BCHA-BPAT	GRID
AESO	BCHA-BPAT	DOPD
AESO	BCHA-BPAT	GCPD
AESO	BCHA-BPAT	NWMT
AESO	BCHA-BPAT	PACW
AESO	BCHA-BPAT	PGE
AESO	BCHA-BPAT	PSEI
AESO	BCHA-BPAT	SCL
AESO	BCHA-BPAT	TPWR
AESO	BCHA-BPAT-NWMT	WAUW
AESO	BCHA-BPAT-NWMT	GWA
AESO	BCHA-BPAT-NWMT	WWA

Level 3: BCHA + PNW + IPCO + NCal

Additional Accounts for Level 3

Requesting party	*Path*	*Delivering Party*
AESO	BCHA-BPAT	IPCO
AESO	BCHA-BPAT-BANC	TID
AESO	BCHA-BPAT	BANC

Level 4: BCHA + PNW + IPCO + NEVP-PACE + NCal

Additional Accounts for Level 4

Requesting party	*Path*	*Delivering Party*
AESO	BCHA-BPAT-IPCO	NEVP
AESO	BCHA-BPAT-IPCO	PACE

B.C. Hydro (BCHA)

Level 1: AESO + PNW

Requesting party	*Path*	*Delivering Party*
BCHA	Direct	AESO
BCHA	BPAT	AVA
BCHA	BPAT	AVRN
BCHA	Direct	BPAT
BCHA	BPAT	CHPD
BCHA	BPAT	GRID
BCHA	BPAT	DOPD
BCHA	BPAT	GCPD
BCHA	BPAT	NWMT
BCHA	BPAT	PACW
BCHA	BPAT	PGE
BCHA	BPAT	PSEI
BCHA	BPAT	SCL
BCHA	BPAT	TPWR
BCHA	BPAT-NWMT	WAUW
BCHA	BPAT-NWMT	GWA
BCHA	BPAT-NWMT	WWA

Level 2: AESO + PNW + IPCO + NCal

Additional accounts for level 2

Requesting party	*Path*	*Delivering Party*
BCHA	BPAT	IPCO
BCHA	BPAT	BANC
BCHA	BPAT-BANC	TID

Level 3: AESO + PNW + IPCO + NEVP-PACE + NCal

Additional accounts for level 3

Requesting party	*Path*	*Delivering Party*
BCHA	BPAT-IPCO	NEVP
BCHA	BPAT-IPCO	PACE

Oregon-Washington-Montana – Pacific Northwest (PNW) Zone

Level 1: PNW Zone

Requesting party	*Path*	*Delivering Party*
AVA	BPAT	AVRN
AVA	Direct	BPAT
AVA	Direct	CHPD
AVA	BPAT	GRID
AVA	Direct	DOPD
AVA	Direct	GCPD
AVA	Direct	NWMT
AVA	Direct	PACW
AVA	Direct	PGE
AVA	Direct	PSEI
AVA	BPAT	SCL
AVA	BPAT	TPWR
AVA	NWMT	WAUW
AVA	NWMT	GWA
AVA	NWMT	WWA
AVRN	BPAT	AVA
AVRN	Direct	BPAT
AVRN	BPAT	CHPD
AVRN	BPAT	GRID
AVRN	BPAT	DOPD
AVRN	BPAT	GCPD
AVRN	BPAT	NWMT
AVRN	BPAT	PACW
AVRN	BPAT	PGE
AVRN	BPAT	PSEI
AVRN	BPAT	SCL
AVRN	BPAT	TPWR
AVRN	BPAT-NWMT	WAUW
AVRN	BPAT-NWMT	GWA
AVRN	BPAT-NWMT	WWA
BPAT	Direct	AVA
BPAT	Direct	AVRN
BPAT	Direct	CHPD
BPAT	Direct	GRID
BPAT	Direct	DOPD
BPAT	Direct	GCPD
BPAT	Direct	NWMT
BPAT	Direct	PACW
BPAT	Direct	PGE
BPAT	Direct	PSEI
BPAT	Direct	SCL
BPAT	Direct	TPWR
BPAT	NWMT	WAUW
BPAT	NWMT	GWA
BPAT	NWMT	WWA

CHPD	Direct	AVA
CHPD	BPAT	AVRN
CHPD	Direct	BPAT
CHPD	BPAT	GRID
CHPD	Direct	DOPD
CHPD	Direct	GCPD
CHPD	BPAT	NWMT
CHPD	Direct	PACW
CHPD	Direct	PGE
CHPD	Direct	PSEI
CHPD	BPAT	SCL
CHPD	BPAT	TPWR
CHPD	BPAT-NWMT	WAUW
CHPD	BPAT-NWMT	GWA
CHPD	BPAT-NWMT	WWA
DOPD	Direct	AVA
DOPD	BPAT	AVRN
DOPD	Direct	BPAT
DOPD	Direct	CHPD
DOPD	BPAT	GRID
DOPD	Direct	GCPD
DOPD	BPAT	NWMT
DOPD	Direct	PACW
DOPD	Direct	PGE
DOPD	Direct	PSEI
DOPD	BPAT	SCL
DOPD	BPAT	TPWR
DOPD	BPAT-NWMT	WAUW
DOPD	BPAT-NWMT	GWA
DOPD	BPAT-NWMT	WWA
GCPD	Direct	AVA
GCPD	BPAT	AVRN
GCPD	Direct	BPAT
GCPD	Direct	CHPD
GCPD	BPAT	GRID
GCPD	Direct	DOPD
GCPD	BPAT	NWMT
GCPD	Direct	PACW
GCPD	Direct	PGE
GCPD	Direct	PSEI
GCPD	BPAT	SCL
GCPD	BPAT	TPWR
GCPD	BPAT-NWMT	WAUW
GCPD	BPAT-NWMT	GWA
GCPD	BPAT-NWMT	WWA
GRID	BPAT	AVA
GRID	BPAT	AVRN

GRID	Direct	BPAT
GRID	BPAT	CHPD
GRID	BPAT	DOPD
GRID	BPAT	GCPD
GRID	BPAT	NWMT
GRID	BPAT	PACW
GRID	BPAT	PGE
GRID	BPAT	PSEI
GRID	BPAT	SCL
GRID	BPAT	TPWR
GRID	BPAT-NWMT	WAUW
GRID	BPAT-NWMT	GWA
GRID	BPAT-NWMT	WWA
GWA	NWMT	AVA
GWA	NWMT- BPAT	AVRN
GWA	NWMT	BPAT
GWA	NWMT-BPAT	CHPD
GWA	NWMT-BPAT	GRID
GWA	NWMT-BPAT	DOPD
GWA	NWMT-BPAT	GCPD
GWA	NWMT-BPAT	PACW
GWA	NWMT	PGE
GWA	NWMT-BPAT	PSEI
GWA	NWMT-BPAT	SCL
GWA	NWMT-BPAT	TPWR
GWA	NWMT	WAUW
GWA	NWMT	WWA
NWMT	Direct	AVA
NWMT	BPAT	AVRN
NWMT	Direct	BPAT
NWMT	BPAT	CHPD
NWMT	BPAT	GRID
NWMT	BPAT	DOPD
NWMT	BPAT	GCPD
NWMT	BPAT	PACW
NWMT	BPAT	PGE
NWMT	BPAT	PSEI
NWMT	BPAT	SCL
NWMT	BPAT	TPWR
NWMT	Direct	WAUW
NWMT	Direct	GWA
NWMT	Direct	WWA
PACW	Direct	AVA
PACW	BPAT	AVRN
PACW	Direct	BPAT
PACW	Direct	CHPD
PACW	Direct	DOPD
PACW	BPAT-NWMT	GWA

PACW	Direct	GCPD
PACW	BPAT	GRID
PACW	BPAT	NWMT
PACW	Direct	PGE
PACW	Direct	PSEI
PACW	BPAT	SCL
PACW	BPAT	TPWR
PACW	BPAT-NWMT	WAUW
PACW	BPAT-NWMT	WWA
PGE	Direct	AVA
PGE	BPAT	AVRN
PGE	Direct	BPAT
PGE	Direct	CHPD
PGE	BPAT	GRID
PGE	Direct	DOPD
PGE	Direct	GCPD
PGE	BPAT	NWMT
PGE	Direct	PACW
PGE	Direct	PSEI
PGE	BPAT	SCL
PGE	BPAT	TPWR
PGE	NWMT	WAUW
PGE	NWMT	GWA
PGE	NWMT	WWA
PSEI	Direct	AVA
PSEI	BPAT	AVRN
PSEI	Direct	BPAT
PSEI	Direct	CHPD
PSEI	BPAT	GRID
PSEI	Direct	DOPD
PSEI	Direct	GCPD
PSEI	BPAT	NWMT
PSEI	Direct	PACW
PSEI	Direct	PGE
PSEI	Direct	SCL
PSEI	BPAT	TPWR
PSEI	BPAT-NWMT	WAUW
PSEI	BPAT-NWMT	GWA
PSEI	BPAT-NWMT	WWA
SCL	BPAT	AVA
SCL	BPAT	AVRN
SCL	Direct	BPAT
SCL	BPAT	CHPD
SCL	BPAT	GRID
SCL	BPAT	DOPD
SCL	BPAT	GCPD
SCL	BPAT	NWMT
SCL	BPAT	PACW

SCL	BPAT	PGE
SCL	Direct	PSEI
SCL	BPAT	TPWR
SCL	BPAT-NWMT	WAUW
SCL	BPAT-NWMT	GWA
SCL	BPAT-NWMT	WWA
TPWR	BPAT	AVA
TWPR	BPAT	AVRN
TPWR	Direct	BPAT
TPWR	BPAT	CHPD
TPWR	BPAT	GRID
TPWR	BPAT	DOPD
TPWR	BPAT	GCPD
TPWR	BPAT	NWMT
TPWR	BPAT	PACW
TPWR	BPAT	PGE
TPWR	BPAT	PSEI
TPWR	BPAT	SCL
TPWR	BPAT-NWMT	WAUW
TPWR	BPAT-NWMT	GWA
TPWR	BPAT-NWMT	WWA
WAUW	NWMT	AVA
WAUW	NWMT-BPAT	AVRN
WAUW	NWMT	BPAT
WAUW	NWMT-BPAT	CHPD
WAUW	NWMT-BPAT	GRID
WAUW	NWMT-BPAT	DOPD
WAUW	NWMT-BPAT	GCPD
WAUW	NWMT-BPAT	PACW
WAUW	NWMT	PGE
WAUW	NWMT-BPAT	PSEI
WAUW	NWMT-BPAT	SCL
WAUW	NWMT-BPAT	TPWR
WAUW	NWMT	GWA
WAUW	NWMT	WWA
WWA	NWMT	AVA
WWA	NWMT-BPAT	AVRN
WWA	NWMT	BPAT
WWA	NWMT-BPAT	CHPD
WWA	NWMT-BPAT	GRID
WWA	NWMT-BPAT	DOPD
WWA	NWMT-BPAT	GCPD
WWA	NWMT-BPAT	PACW
WWA	NWMT	PGE
WWA	NWMT-BPAT	PSEI
WWA	NWMT-BPAT	SCL
WWA	NWMT-BPAT	TPWR
WWA	NWMT	WAUW

WWA	NWMT	GWA

Level 2: PNW + IPCO + BCHA + NCal

Additional Accounts for Level 2

Requesting party	*Path*	*Delivering Party*
AVA	Direct	IPCO
AVA	BPAT	BCHA
AVA	BPAT-BANC	TID
AVA	BPAT	BANC
AVRN	BPAT	IPCO
AVRN	BPAT	BCHA
AVRN	BPAT-BANC	TID
AVRN	BPAT	BANC
BPAT	Direct	IPCO
BPAT	Direct	BCHA
BPAT	BANC	TID
BPAT	Direct	BANC
CHPD	BPAT	IPCO
CHPD	BPAT	BCHA
CHPD	BPAT-BANC	TID
CHPD	BPAT	BANC
GRID	BPAT	IPCO
GRID	BPAT	BCHA
GRID	BPAT-BANC	TID
GRID	BPAT	BANC
DOPD	BPAT	IPCO
DOPD	BPAT	BCHA
DOPD	BPAT-BANC	TID
DOPD	BPAT	BANC
GCPD	BPAT	IPCO
GCPD	BPAT	BCHA
GCPD	BPAT-BANC	TID
GCPD	BPAT	BANC
GWA	NWMT-PACE	IPCO
GWA	NWMT-BPAT	BCHA
GWA	NWMT-BPAT-BANC	TID
GWA	NWMT-BPAT	BANC
NWMT	PACE	IPCO
NWMT	BPAT	BCHA
NWMT	BPAT-BANC	TID
NWMT	BPAT	BANC

PACW	Direct	IPCO
PACW	BPAT	BCHA
PACW	BPAT-BANC	TID
PACW	BPAT	BANC
PGE	BPAT	IPCO
PGE	BPAT	BCHA
PGE	BPAT-BANC	TID
PGE	BPAT	BANC
PSEI	BPAT	IPCO
PSEI	BPAT	BCHA
PSEI	BPAT-BANC	TID
PSEI	BPAT	BANC
SCL	BPAT	IPCO
SCL	BPAT	BCHA
SCL	BPAT-BANC	TID
SCL	BPAT	BANC
TPWR	BPAT	IPCO
TPWR	BPAT	BCHA
TPWR	BPAT-BANC	TID
TPWR	BPAT	BANC
WAUW	NWMT-PACE	IPCO
WAUW	NWMT-BPAT	BCHA
WAUW	NWMT-BPAT-BANC	TID
WAUW	NWMT-BPAT	BANC
WWA	NWMT-PACE	IPCO
WWA	NWMT-BPAT	BCHA
WWA	NWMT-BPAT-BANC	TID
WWA	NWMT-BPAT	BANC

Level 3: PNW + IPCO + BCHA + NEVP-PACE + AESO + NCal

Additional Accounts for Level 3

Requesting party	*Path*	*Delivering Party*
AVA	IPCO	NEVP
AVA	IPCO	PACE
AVA	BPAT-BCHA	AESO
AVRN	BPAT-IPCO	NEVP
AVRN	BPAT-IPCO	PACE
AVRN	BPAT-BCHA	AESO
BPAT	IPCO	NEVP
BPAT	IPCO	PACE

BPAT	BCHA	AESO
CHPD	BPAT-IPCO	NEVP
CHPD	BPAT-IPCO	PACE
CHPD	BPAT-BCHA	AESO
GRID	BPAT-IPCO	NEVP
GRID	BPAT-IPCO	PACE
GRID	BPAT-BCHA	AESO
DOPD	BPAT-IPCO	NEVP
DOPD	BPAT-IPCO	PACE
DOPD	BPAT-BCHA	AESO
GCPD	BPAT-IPCO	NEVP
GCPD	BPAT-IPCO	PACE
GCPD	BPAT-BCHA	AESO
GWA	NWMT-PACE-IPCO	NEVP
GWA	NWMT-PACE-IPCO	PACE
GWA	NWMT-BPAT-BCHA	AESO
NWMT	PACE-IPCO	NEVP
NWMT	PACE-IPCO	PACE
NWMT	BPAT-BCHA	AESO
PACW	IPCO	NEVP
PACW	IPCO	PACE
PACW	BPAT-BCHA	AESO
PGE	BPAT-IPCO	NEVP
PGE	BPAT-IPCO	PACE
PGE	BPAT-BCHA	AESO
PSEI	BPAT-IPCO	NEVP
PSEI	BPAT-IPCO	PACE
PSEI	BPAT-BCHA	AESO
SCL	BPAT-IPCO	NEVP
SCL	BPAT-IPCO	PACE
SCL	BPAT-BCHA	AESO
TPWR	BPAT-IPCO	NEVP
TPWR	BPAT-IPCO	PACE
TPWR	BPAT-BCHA	AESO
WAUW	NWMT- PACE-IPCO	NEVP
WAUW	NWMT-PACE-IPCO	PACE
WAUW	NWMT-BPAT-BCHA	AESO
WWA	NWMT-PACE-IPCO	NEVP

WWA	NWMT-PACE-IPCO	PACE
WWA	NWMT-BPAT-BCHA	AESO

Idaho Power Company (IPCO)

Level 1: PNW + NEVP-PACE

Requesting party	*Path*	*Delivering Party*
IPCO	Direct	AVA
IPCO	BPAT	AVRN
IPCO	Direct	BPAT
IPCO	BPAT	CHPD
IPCO	BPAT	GRID
IPCO	BPAT	DOPD
IPCO	BPAT	GCPD
IPCO	PACE	NWMT
IPCO	Direct	PACW
IPCO	BPAT	PGE
IPCO	BPAT	PSEI
IPCO	BPAT	SCL
IPCO	BPAT	TPWR
IPCO	Direct	PACE
IPCO	Direct	NEVP
IPCO	PACE-NWMT	WAUW
IPCO	PACE-NWMT	GWA
IPCO	PACE-NWMT	WWA

Level 2: PNW + NEVP-PACE + BCHA + NCal

Additional accounts for level 2

Requesting party	*Path*	*Delivering Party*
IPCO	BPAT	BCHA
IPCO	BPAT-BANC	TID
IPCO	BPAT	BANC

Level 3: PNW + NEVP-PACE + BCHA + AESO + NCal

Additional accounts for level 3

Requesting party	*Path*	*Delivering Party*
IPCO	BPAT-BCHA	AESO

Nevada Power (NEVP)

Level 1: IPCO + PNW + PACE

Requesting party	*Path*	*Delivering Party*
NEVP	Direct	IPCO
NEVP	IPCO	AVA

NEVP	IPCO-BPAT	AVRN
NEVP	IPCO	BPAT
NEVP	IPCO-BPAT	CHPD
NEVP	IPCO-BPAT	GRID
NEVP	IPCO-BPAT	DOPD
NEVP	IPCO-BPAT	GCPD
NEVP	IPCO-PACE	NWMT
NEVP	IPCO	PACW
NEVP	IPCO-BPAT	PGE
NEVP	IPCO-BPAT	PSEI
NEVP	IPCO-BPAT	SCL
NEVP	IPCO-BPAT	TPWR
NEVP	Direct	PACE
NEVP	IPCO-PACE-NWMT	WAUW
NEVP	IPCO-PACE-NWMT	GWA
NEVP	IPCO-PACE-NWMT	WWA

Level 2: IPCO + PNW + PACE + BCHA + NCal

Additional Accounts for Level 2

Requesting party	*Path*	*Delivering Party*
NEVP	IPCO-BPAT	BCHA
NEVP	IPCO-BPAT-BANC	TID
NEVP	IPCO-BPAT	BANC

Level 3: IPCO + PNW + PACE + BCHA + AESO + NCal

Additional Accounts for Level 3

Requesting party	*Path*	*Delivering Party*
NEVP	IPCO-BPAT-BCHA	AESO

PacifiCorp East (PACE)

Level 1: IPCO + PNW + NEVP

Requesting party	*Path*	*Delivering Party*
PACE	Direct	IPCO
PACE	IPCO	AVA
PACE	IPCO-BPAT	AVRN
PACE	IPCO	BPAT
PACE	IPCO-BPAT	CHPD
PACE	IPCO-BPAT	GRID
PACE	IPCO-BPAT	DOPD
PACE	IPCO-BPAT	GCPD
PACE	IPCO-PACE	NWMT
PACE	IPCO	PACW
PACE	IPCO-BPAT	PGE
PACE	IPCO-BPAT	PSEI
PACE	IPCO-BPAT	SCL

PACE	IPCO-BPAT	TPWR
PACE	Direct	NEVP
PACE	IPCO-PACE-NWMT	WAUW
PACE	IPCO-PACE-NWMT	GWA
PACE	IPCO-PACE-NWMT	WWA

Level 2: IPCO + PNW + NEVP+ BCHA + NCal

Additional Accounts for Level 2

Requesting party	*Path*	*Delivering Party*
PACE	IPCO-BPAT	BCHA
PACE	IPCO-BPAT-BANC	TID
PACE	IPCO-BPAT	BANC

Level 3: IPCO + PNW + NEVP+ BCHA +NCal + AESO

Additional Accounts for Level 3

Requesting party	*Path*	*Delivering Party*
PACE	IPCO-BPAT-BCHA	AESO

Turlock Irrigation District (TID)

Level 1: BANC

Requesting party	*Path*	*Delivering Party*
TID	Direct	BANC

Level 2: BANC + PNW

Additional accounts for Level 2

Requesting party	*Path*	*Delivering Party*
TID	BANC-BPAT	AVA
TID	BANC-BPAT	AVRN
TID	BANC	BPAT
TID	BANC-BPAT	CHPD
TID	BANC-BPAT	GRID
TID	BANC-BPAT	DOPD
TID	BANC-BPAT	GCPD
TID	BANC-BPAT	NWMT
TID	BANC-BPAT	PACW
TID	BANC-BPAT	PGE
TID	BANC-BPAT	PSEI
TID	BANC-BPAT	SCL
TID	BANC-BPAT	TPWR
TID	BANC-BPAT-NWMT	WAUW
TID	BANC-BPAT-NWMT	GWA
TID	BANC-BPAT-NWMT	WWA

Level 3: BANC + PNW + IPCO + BCHA

Additional Accounts for Level 3

Requesting party	*Path*	*Delivering Party*
TID	BANC-BPAT	IPCO
TID	BANC-BPAT	BCHA
TID	BANC-BPAT-IPCO	NEVP
TID	BANC-BPAT-IPCO	PACE

Level 4: BANC + PNW + IPCO + NEVP-PACE + BCHA + AESO

Additional Accounts for Level 4

Requesting party	*Path*	*Delivering Party*
TID	BANC-BPAT-BCHA	AESO

Balancing Authority of Northern California (BANC)

Level 1: TID

Requesting party	*Path*	*Delivering Party*
BANC	Direct	TID

Level 2: TID + PNW

Additional accounts for Level 2

Requesting party	*Path*	*Delivering Party*
BANC	BPAT	AVA
BANC	BPAT	AVRN
BANC	Direct	BPAT
BANC	BPAT	CHPD
BANC	BPAT	GRID
BANC	BPAT	DOPD
BANC	BPAT	GCPD
BANC	BPAT	NWMT
BANC	BPAT	PACW
BANC	BPAT	PGE
BANC	BPAT	PSEI
BANC	BPAT	SCL
BANC	BPAT	TPWR
BANC	BPAT-NWMT	WAUW
BANC	BPAT-NWMT	GWA
BANC	BPAT-NWMT	WWA

Level 3: TID + PNW + IPCO + BCHA

Additional accounts for level 3

Requesting party	*Path*	*Delivering Party*
BANC	BPAT	IPCO
BANC	BPAT	BCHA

Level 4: TID + PNW + IPCO + NEVP-PACE + BCHA + AESO

Additional accounts for level 4

Requesting party	*Path*	*Delivering Party*
BANC	BPAT-IPCO	NEVP
BANC	BPAT-IPCO	PACE
BANC	BPAT-BCHA	AESO

Attachment E

BACKUP PROCEDURES FOR RESERVE SHARING PROGRAM

1. Participant Cannot Access Reserve Sharing Computer System or Reserve Sharing Computer System Is Inoperable

Reserve Sharing Requests and delivery of Assistance Reserve are normally implemented through the Reserve Sharing Computer System. When the Reserve Sharing Computer System is inoperable or inaccessible, a Participant that needs to make a Reserve Sharing Request should contact other Participants by telephone to request Assistance Reserve. The provisions below (Sections 2.a, 2.b, and 2.c) will apply for the manual backup procedure. The settlement process for delivery of Assistance Reserve using the backup procedure is the same as for the automated reserve sharing process, except that requesting and responding Participants must agree (on a case-by-case basis) to any reserve sharing transactions instead of obtaining the information from the Reserve Sharing Computer System. This process must be in accordance with Attachment G for production of after-the-fact tags and in accordance with existing reliability standards and regional business practices.

a. Transmission Limitations; Adjacent Utilities

To minimize potential transmission problems, whenever possible a Participant that needs to request Assistance Reserve by telephone should contact an adjacent Participant first.

b. Backup Reserve Sharing Procedure – Telephone Requests

Because NERC BAL-002-2 requires recovery of Reporting ACE within 15 minutes, the number of telephoned assistance requests that a Participant's dispatcher can make is limited. To enhance Participants' ability to meet this standard, Participants may use the following procedure (and Participants may use any economic arrangements under existing contracts by mutual agreement at any point in the following sequence):

(1) As provided in Section E.2, a Participant must commit its Internal Reserve up to the full amount of its Contingency Reserve Obligation before requesting Assistance Reserve.

(2) If a Participant that has deployed its Contingency Reserve Obligation and needs additional capacity to meet the 15-minute criterion, that Participant may call another Participant for assistance. The responding Participant will make available its unused Contingency Reserve Available up to its Contingency Reserve Obligation.

The caller must:

(a) state that the purpose of the call is to make a Reserve Sharing Request,

(b) identify who is making the request,

(c) identify the Qualifying Event it has experienced and the start time of the event,

(d) confirm that it committed to use Contingency Reserve up to the full amount of its Contingency Reserve Obligation to respond to the event,

(e) state the amount of Assistance Reserve that is required to make up the remaining deficiency, and

(f) agree with the responding Participant on the amount, start-time, and end-time of the Contingency Reserve delivery to be entered into the AGC controller total. The end-time may be shortened thereafter, if the requesting Participant determines that it does not need Assistance Reserve through the original end-time.

(3) If the Assistance Reserve made available and delivered from the responding Participant is insufficient to cover the Qualifying Event, the requesting Participant will cover the remaining deficit by requesting Assistance Reserve from another Participant.

(4) As soon as possible, the requesting Participant must notify any intermediate wheeling Balancing Authority(s) of the scheduled delivery of Assistance Reserve and its duration. Each Participating Balancing Authority that is needed for intermediate wheeling will make transmission capacity available up to its maximum operating limit by any means necessary including the curtailment of interruptible schedules.

(5) The Participant requesting assistance must re-establish its Contingency Reserve Available that is ready for deployment (to at least the level of its Contingency Reserve Obligation) as soon as possible by adding generation, adjusting interchange schedules, or dropping load. As provided in Section F.3, a Participant that requests Assistance Reserve must relinquish the Assistance Reserve within 60 minutes following the start of the Qualifying Event.

(6) Any Participant that requests Assistance Reserve must contact the party within its organization that is responsible for energy scheduling and notify that party of the actions taken to request Assistance Reserve. The party responsible for scheduling must then contact its counterpart from the responding Participant to determine an agreed-upon hourly energy transaction and to agree on transaction wheeling amounts in accordance with the paths identified in Attachment D of this document.

c. Backup Reserve Sharing Procedure – Telephone Responses

The following responses may be appropriate for a Participant that receives a Reserve Sharing Request by telephone:

(1) If a Participant that has deployed its Contingency Reserve needs additional capacity to meet the 15-minute criterion, that Participant may call another Participant for assistance.

The responding Participant will make available its unused Contingency Reserve up to its Contingency Reserve Obligation.

(2) The Participant that is being asked to provide Assistance Reserve may make the following responses:

(a) confirm that the purpose of the call is to make a Reserve Sharing Request,

(b) confirm who is making the request,

(c) confirm the reason for the request (*e.g.*, identify the Qualifying Event and the start time of the event),

(d) confirm that the requesting Participant has committed to use Contingency Reserve Available up to the full amount of its Contingency Reserve Obligation to respond to the event,

(e) state the amount of Assistance Reserve available to the requesting Participant,

(f) agree with the requesting Participant on the amount, start-time, and end-time of the Assistance Reserve to be entered into the AGC controller total.

(3) As soon as possible, the responding Participant should notify any intermediate wheeling Balancing Authority(s) of the scheduled delivery of Assistance Reserve energy and its duration. Each Participating Balancing Authority that is needed for intermediate wheeling will make transmission capacity available up to its maximum operating limit by any means necessary including the curtailment of interruptible schedules.

(4) Any Participant that provides Assistance Reserve must contact the party within its organization that is responsible for energy scheduling and notify that party of the actions taken to provide Assistance Reserve. The party responsible for scheduling must then contact its counterpart from the requesting Participant to determine an agreed-upon hourly energy transaction.

3. Documentation

Any Participant that requests Assistance Reserve using the backup procedures in this Attachment E must document its load, generation, Contingency Reserve Obligation, and Contingency Reserve Available immediately before the Qualifying Event. It must document the amount of its capacity lost or other characteristics of the Qualifying Event, the amount and components of Contingency Reserve deployed, and the amount of Assistance Reserve requested and received. The requesting Participant must also comply with Attachment G, Backup Process for After-the Fact Reserve Sharing Tags.

NWPP RSG Verification Forms are available on the NWPP Website. The requesting Participant must send this documentation to all responding Participants, and to the NWPP Staff, on the next working day.

Attachment F

TRANSMISSION MAPPING AND TAG TEMPLATE CHANGE PROCESS

A. Process for Changing Delivery Paths Between NWPP Reserve Sharing Participants

1. Any Participant that wishes to request a change to the transmission mapping set forth in Attachment D must first obtain the agreement of all other Participants that would be affected by the requested change.
2. Participants must submit requests for changes to Attachment D to the NWPP Staff.
3. NWPP Staff will prepare and propose a revised draft of Attachment D.
4. The Participant(s) requesting the change must confirm with the NWPP Staff that the proposed revisions to Attachment D are as agreed.
5. All affected Participants must be given adequate time to make any software changes to downstream or legacy scheduling systems.
6. Participant(s) requesting the change must complete any necessary registrations (or updates to registrations) related to the NAESB Electric Industry Registry (EIR) and Western Interchange Tool (WIT) Registry, or any successor industry registration systems.
7. The affected Participants must also request that the NWPP Staff arrange for any necessary revisions to tag templates corresponding to any changes to the transmission mapping in Attachment D.
8. NWPP Staff will communicate any approved tag template changes to Open Access Technology International, Inc. (OATI) once any revised tag templates have been approved by all affected Participants.
9. OATI will coordinate testing of the new or revised tag templates and confirm that the templates will pass WIT Registry validations.
10. NWPP Staff and the affected Participants will coordinate with OATI to determine an implementation date and time for the new templates.
11. NWPP Staff will advise all Participants of the implementation date for the revised templates.
12. OATI will make appropriate tag template changes effective as of the implementation date and time.

B. Process for Changing Tag Templates with No Change to Delivery Paths

(No Impact to Other Balancing Authorities)

1. The Participant with changes will notify the NWPP Staff and provide NWPP Staff with required changes to its tag templates.
2. The Participant with changes will complete any necessary EIR and WIT registrations or updates.
3. NWPP Staff will communicate the requested changes to OATI.
4. OATI will coordinate testing of new or revised tag templates and confirm that the templates will pass WIT validations.
5. NWPP Staff and the requesting Participant will determine an implementation date and time for the new tag templates.
6. OATI will make appropriate tag template changes effective as of the implementation date and time.
7. OATI will provide the NWPP with the most current workbook of NWPP tag templates.

C. Process for Adding a New Participant to NWPP Reserve Sharing Program

1. A newly admitted Participant must submit a request to the NWPP Staff for changes as provided in Section A of this Attachment F. If a new Reserve Sharing Zone is required, Attachment C will be revised to reflect the addition of a new Reserve Sharing Zone as well.
2. NWPP Staff will provide New Participant(s) with blank tag templates for further development to reflect the inclusion of the new Participant(s).
3. The New Participant(s) will provide the completed tag templates to NWPP Staff.
4. NWPP Staff will distribute these new tag templates to all Participants for review.
5. Participant(s) must review the new templates and implement any necessary changes to their own accounting and billing systems.
6. NWPP Staff will communicate approved new templates to OATI.
7. OATI will coordinate testing of the new tag templates and confirm that the templates will pass WIT validations.
8. NWPP Staff and all Participants will determine an implementation date and time for the new templates.
9. NWPP Staff will advise all Participants of the implementation date and time for the new templates.
10. OATI will make the new tag templates effective as of the implementation date and time.

Attachment G

Backup Process for After-The-Fact Reserve Sharing Tags

A. Failure of Participant Internal Program or Reserve Sharing Computer System

If a Participant that has requested Assistance Reserve (or is providing Assistance Reserve) experiences a failure of any internal program related to reserve sharing, or if a Reserve Sharing Request is made or in effect during a time when the Reserve Sharing Computer System is not functioning, then the Participants receiving and providing Assistance Reserve energy will be responsible for all necessary after-the-fact tagging.

B. Failure of Automated After-the-Fact Tagging Process

If the automated tag creation process fails,

1. NWPP Staff will
    a. contact OATI and coordinate the next possible time OATI can rerun automated tag creation for the event;
    b. make reasonable efforts (and request that OATI make reasonable efforts) to give Participants at least 24 hours' advance notice before the reissuing of the tags, and if this is not possible, attempt to give notice as far in advance as feasible; and
    c. notify Participants by e-mail distribution of the re-issuance of the tags.
2. If the affected Participants anticipate that the automated tag creation process will not be able to reissue the tags before the after-the-fact tagging deadline, the sink Participant will coordinate with the source Participants to facilitate the sink Participant's efforts to manually issue after-the-fact tags according to the most recent reserve sharing tag templates.
3. Participants shall contact NWPP Staff to resolve failure of the automated tag creation process during normal business hours.

C. Replacing Denied Reserve Sharing Tags

1. If one Participant denies an after-the-fact the tag (properly or not), the denying Participant will coordinate with all other Participants to facilitate the denying Participant's efforts to manually reissue the after-the-fact tag(s).

a. If the problem with the original tag was due to an error in the tag template, the denying Participant will immediately notify all other Participants listed in the template of the necessary correction.

b. Participants needing to correct a tag template will follow the appropriate procedures specified in Attachment F to make changes to the tag template.

2. If more than one Participant denies a tag, the sink Participant will coordinate with all other affected Participants to facilitate the sink Participant's efforts to manually reissue the after-the-fact tag.

c. If the problem with the original tag was due to an error in the tag template, the denying Participants will immediately notify all other Participants listed in the template of the necessary correction.

d. Participants needing to correct a tag template will follow the appropriate procedures specified in Attachment F to make changes to the tag template.

Attachment H

Balancing Authority Areas of the
Participating Balancing Authorities

Alberta Electric System Operator (AESO)
Avangrid Renewables, LLC (AVRN)
Avista Corporation (AVA)
Balancing Authority of Northern California (BANC)
British Columbia Hydro and Power Authority (BCHA)
Bonneville Power Administration (BPAT)
Chelan County Public Utility District (CHPD)
Douglas County Public Utility District (DOPD)
Grant County Public Utility District (GCPD)
Gridforce Energy Management, LLC (GRID)
Idaho Power Company (IPCO)
NaturEner Power Watch, LLC (GWA)
NaturEner Wind Watch, LLC (WWA)
Nevada Power (NEVP)
NorthWestern (NWMT)
PacifiCorp East (PACE)
PacifiCorp West (PACW)
Portland General Electric (PGE)
Puget Sound Energy (PSE)
Seattle City Light (SCL)
Tacoma Power (TPWR)
Turlock Irrigation District (TID)
Western Area Power Administration Upper Great Plains West (WAUW)

Attachment I

NERC Standard BAL-002-2(i) – Disturbance Control Performance – Contingency Reserve for Recovery from a Balancing Contingency Event

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

A. Introduction

1. **Title:** Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

2. **Number:** BAL-002-2(i)

3. **Purpose:** To ensure the Balancing Authority or Reserve Sharing Group balances resources and demand and returns the Balancing Authority's or Reserve Sharing Group's Area Control Error to defined values (subject to applicable limits) following a Reportable Balancing Contingency Event.

4. **Applicability:**

   4.1. Responsible Entity

   4.1.1. Balancing Authority

   4.1.1.1. A Balancing Authority that is a member of a Reserve Sharing Group is the Responsible Entity only in periods during which the Balancing Authority is not in active status under the applicable agreement or governing rules for the Reserve Sharing Group.

   4.1.2. Reserve Sharing Group

5. **Effective Date:** See the Implementation Plan for BAL-002-2.

6. **Background:**

   Reliably balancing an Interconnection requires frequency management and all of its aspects. Inputs to frequency management include Tie-Line Bias Control, Area Control Error (ACE), and the various Requirements in NERC Resource and Demand Balancing Standards, specifically BAL-001-2 Real Power Balancing Control Performance and BAL-003-1 Frequency Response and Frequency Bias Setting.

B. Requirements and Measures

R1. The Responsible Entity experiencing a Reportable Balancing Contingency Event shall: *[Violation Risk Factor: High] [Time Horizon: Real-time Operations]*

1.1. within the Contingency Event Recovery Period, demonstrate recovery by returning its Reporting ACE to at least the recovery value of:

- zero (if its Pre-Reporting Contingency Event ACE Value was positive or equal to zero); however, any Balancing Contingency Event that occurs during the Contingency Event Recovery Period shall reduce the required recovery: (i) beginning at the time of, and (ii) by the magnitude of, such individual Balancing Contingency Event,

or,

- its Pre-Reporting Contingency Event ACE Value (if its Pre-Reporting Contingency Event ACE Value was negative); however, any Balancing

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

Contingency Event that occurs during the Contingency Event Recovery Period shall reduce the required recovery: (i) beginning at the time of, and (ii) by the magnitude of, such individual Balancing Contingency Event.

1.2. document all Reportable Balancing Contingency Events using CR Form 1.

1.3. deploy Contingency Reserve, within system constraints, to respond to all Reportable Balancing Contingency Events, however, it is not subject to compliance with Requirement R1 part 1.1 if:

1.3.1 the Responsible Entity:

- is a Balancing Authority experiencing a Reliability Coordinator declared Energy Emergency Alert Level or is a Reserve Sharing Group whose member, or members, are experiencing a Reliability Coordinator declared Energy Emergency Alert level, and
- is utilizing its Contingency Reserve to mitigate an operating emergency in accordance with its emergency Operating Plan, and
- has depleted its Contingency Reserve to a level below its Most Severe Single Contingency

or,

1.3.2 the Responsible Entity experiences:

- multiple Contingencies where the combined MW loss exceeds its Most Severe Single Contingency and that are defined as a single Balancing Contingency Event, or
- multiple Balancing Contingency Events within the sum of the time periods defined by the Contingency Event Recovery Period and Contingency Reserve Restoration Period whose combined magnitude exceeds the Responsible Entity's Most Severe Single Contingency.

M1. Each Responsible Entity shall have, and provide upon request, as evidence, a CR Form 1 with date and time of occurrence to show compliance with Requirement R1. If Requirement R1 part 1.3 applies, then dated documentation that demonstrates compliance with Requirement R1 part 1.3 must also be provided.

R2. Each Responsible Entity shall develop, review and maintain annually, and implement an Operating Process as part of its Operating Plan to determine its Most Severe Single Contingency and make preparations to have Contingency Reserve equal to, or greater than the Responsible Entity's Most Severe Single Contingency available for maintaining system reliability. *[Violation Risk Factor: High] [Time Horizon: Operations Planning]*

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

M2. Each Responsible Entity will have the following documentation to show compliance with Requirement R2:

- a dated Operating Process;
- evidence to indicate that the Operating Process has been reviewed and maintained annually; and,
- evidence such as Operating Plans or other operator documentation that demonstrate that the entity determines its Most Severe Single Contingency and that Contingency Reserves equal to or greater than its Most Severe Single Contingency are included in this process.

R3. Each Responsible Entity, following a Reportable Balancing Contingency Event, shall restore its Contingency Reserve to at least its Most Severe Single Contingency, before the end of the Contingency Reserve Restoration Period, but any Balancing Contingency Event that occurs before the end of a Contingency Reserve Restoration Period resets the beginning of the Contingency Event Recovery Period. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]*

M3. Each Responsible Entity will have documentation demonstrating its Contingency Reserve was restored within the Contingency Reserve Restoration Period, such as historical data, computer logs or operator logs.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority" means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall retain data or evidence to show compliance for the current year, plus three previous calendar years, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

If a Responsible Entity is found noncompliant, it shall keep information related to the noncompliance until found compliant, or for the time period specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all subsequent requested and submitted records.

1.3. Compliance Monitoring and Assessment Processes:
As defined in the NERC Rules of Procedure, "Compliance Monitoring and Assessment Processes" refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

1.4. Additional Compliance Information
The Responsible Entity may use Contingency Reserve for any Balancing Contingency Event and as required for any other applicable standards.

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

Table of Compliance Elements

R #	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	Real-time Operations	High	The Responsible Entity achieved less than 100% but at least 90% of required recovery from a Reportable Balancing Contingency Event during the Contingency Event Recovery Period OR The Responsible Entity failed to use CR Form 1 to document a Reportable Balancing Contingency Event.	The Responsible Entity achieved less than 90% but at least 80% of required recovery from a Reportable Balancing Contingency Event during the Contingency Event Recovery Period.	The Responsible Entity achieved less than 80% but at least 70% of required recovery from a Reportable Balancing Contingency Event during the Contingency Event Recovery Period.	The Responsible Entity achieved less than 70% of required recovery from a Reportable Balancing Contingency Event during the Contingency Event Recovery Period.
R2.	Operations Planning	High	The Responsible Entity developed and implemented an Operating Process to determine its Most Severe Single Contingency and to have Contingency Reserve equal to, or	N/A	The Responsible Entity developed an Operating Process to determine its Most Severe Single Contingency and to have Contingency Reserve equal to, or greater than the	The Responsible Entity failed to develop an Operating Process to determine its Most Severe Single Contingency and to have Contingency Reserve equal to, or greater than the

			greater than the Responsible Entity's Most Severe Single Contingency but failed to maintain annually the Operating Process.		Responsible Entity's Most Severe Single Contingency but failed to implement the Operating Process.	Responsible Entity's Most Severe Single Contingency..
R3	**Real-time Operations**	**Medium**	The Responsible Entity restored less than 100% but at least 90% of required Contingency Reserve following a Reportable Balancing Contingency Event during the Contingency Event Restoration Period.	The Responsible Entity restored less than 90% but at least 80% of required Contingency Reserve following a Reportable Balancing Contingency Event during the Contingency Event Restoration Period.	The Responsible Entity restored less than 80% but at least 70% of required Contingency Reserve following a Reportable Balancing Contingency Event during the Contingency Event Restoration Period.	The Responsible Entity restored less than 70% of required Contingency Reserve following a Reportable Balancing Contingency Event during the Contingency Event Restoration Period.

D. Regional Variances

None.

E. Interpretations

None.

F. Associated Documents

BAL-002-2 Contingency Reserve for Recovery from a Balancing Contingency Event Background Document

CR Form 1

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed "Proposed" from Effective Date	Errata
0	February 14, 2006	Revised graph on page 3, "10 min." to "Recovery time." Removed fourth bullet.	Errata
1	September 9, 2010	Filed petition for revisions to BAL-002 Version 1 with the Commission	Revision
1	January 10, 2011	FERC letter ordered in Docket No. RD10-15-00 approving BAL-002-1	
1	April 1, 2012	Effective Date of BAL-002-1	
1a	November 7, 2012	Interpretation adopted by the NERC Board of Trustees	
1a	February 12, 2013	Interpretation submitted to FERC	
2	November 5, 2015	Adopted by NERC Board of Trustees	Complete revision
2	January 19, 2017	FERC Order approved BAL-002-2. Docket No. RM16-7-000	
2(i)	August 10, 2017	Adopted by NERC Board of Trustees	Modified Requirements R1 and R2 VRF to "High"

BAL-002-2(i) – Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

Supplemental Material

Rationale

During development of this standard, text boxes were embedded within the standard to explain the rationale for various parts of the standard. Upon BOT adoption, the text from the rationale text boxes was moved to this section.

Rationale for Requirement R1:
Requirement R1 reflects the operating principles first established by NERC Policy 1 (Generation Control and Performance). Its objective is to assure the Responsible Entity balances resources and demand and returns its Reporting Area Control Error (ACE) to defined values (subject to applicable limits) following a Reportable Balancing Contingency Event. It requires the Responsible Entity to recover from events that would be less than or equal to the Responsible Entity's MSSC. It establishes the amount of Contingency Reserve and recovery and restoration timeframes the Responsible Entity must demonstrate in a compliance evaluation. It is intended to eliminate the ambiguities and questions associated with the existing standard. In addition, it allows Responsible Entities to have a clear way to demonstrate compliance and support the Interconnection to the full extent of its MSSC.

Requirement R1 does not apply when an entity experiences a Balancing Contingency Event that exceeds its MSSC (which includes multiple Balancing Contingency Events as described in R1 part 1.3.2 below) because a fundamental goal of the SDT is to assure the Responsible Entity has enough flexibility to maintain service to Demand while managing reliability. The SDT's intent is to eliminate any potential overlap or conflict with any other NERC Reliability Standard to eliminate duplicative reporting, and other issues.

Commenters suggested a Quarterly Compliance similar to the current reports sent to NERC. The drafting team attempted to draft measurement language and VSL's for quarterly monitoring of compliance to R1. But the drafting team found that the VSL levels developed were likely to place smaller BA's and RSGs in a severe violation regardless of the size of the failure. Therefore, the drafting team has not adopted a quarterly compliance calculation. Also, the proposed requirement and compliance process meets the directive in Paragraph 354 of Order 693.

Finally, commenters have suggested that the language in R1 part 1.3 be changed to specifically state under which EEA level the exclusion applies. The drafting team disagrees with this proposal. NERC is in the process of changing the EEA levels and what is expected in each level. The current EEA levels suggest that when an entity is experiencing an EEA Level 2 or 3 it is short of Contingency Reserves as normally defined to exclude readiness to curtail a specific amount of Firm Demand. Under the proposed EEA process, this would only be during an EEA Level 3. In order to reduce the need for consequent modifications of the BAL-002 standard, the drafting team has developed the proposed language in Requirement 1 Part 1.3.1 such that it addresses both current and future EEA process. In addition, the drafting team has added some clarifying language to 1.3.1 since comments were presented in previous postings expressing a concern only a Balancing Authority may request declaration of an EEA and a RSG cannot request an EEA. The standard drafting team's intent has always been if a BA is experiencing an EEA event under

Supplemental Material

which its contingency reserve has been activated, the RSG in which it resides would also be considered to be exempt from R1 compliance.

Rationale for Requirement R2:
R2 establishes the need to actively plan in the near term (e.g., day-ahead) for expected Reportable Balancing Contingency Events. This requirement is similar to the current standard which requires an entity to have available a level of contingency reserves equal to or greater than its Most Severe Single Contingency.

Rationale for Requirement R3:
This requirement is similar to the existing requirement that an entity that has experienced an event shall restore its Contingency Reserves within 105 minutes of the event. Note that if an entity is experiencing an EEA it may need to depend on potential availability (or make ready for potential curtailment) of its firm loads to restore Contingency Reserve. This is the reason for the changes to the definition of Contingency Reserve in the posting.

*** FOR INFORMATIONAL PURPOSES ONLY ***

Effective Date of Standard: BAL-002-2(i) — Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event

United States

Standard	Requirement	Effective Date of Standard	Phased In Implementation Date (if applicable)	Inactive Date
BAL-002-2(i)	All	01/01/2018		

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Attachment J

WECC STANDARD BAL-002-WECC-2(a) – Contingency Reserve

WECC Standard BAL-002-WECC-2a — Contingency Reserve

A. Introduction

1. **Title:** **Contingency Reserve**

2. **Number:** BAL-002-WECC-2a

3. **Purpose:** To specify the quantity and types of Contingency Reserve required to ensure reliability under normal and abnormal conditions.

4. **Applicability:**

   4.1 Balancing Authority

   4.1.1. The Balancing Authority is the responsible entity unless the Balancing Authority is a member of a Reserve Sharing Group, in which case, the Reserve Sharing Group becomes the responsible entity.

   4.2 Reserve Sharing Group

   4.2.1. The Reserve Sharing Group when comprised of a Source Balancing Authority becomes the source Reserve Sharing Group.

   4.2.2. The Reserve Sharing Group when comprised of a Sink Balancing Authority becomes the sink Reserve Sharing Group.

5. **Effective Date:** See Implementation Plan.

B. Requirements and Measures

R1. Each Balancing Authority and each Reserve Sharing Group shall maintain a minimum amount of Contingency Reserve, except within the first sixty minutes following an event requiring the activation of Contingency Reserve, that is: [*Violation Risk Factor: High] [Time Horizon: Real-time operations]*

1.1 The greater of either:

- The amount of Contingency Reserve equal to the loss of the most severe single contingency;
- The amount of Contingency Reserve equal to the sum of three percent of hourly integrated Load plus three percent of hourly integrated generation.

1.2 Comprised of any combination of the reserve types specified below:

- Operating Reserve – Spinning

WECC Standard BAL-002-WECC-2a — Contingency Reserve

- Operating Reserve - Supplemental
- Interchange Transactions designated by the Source Balancing Authority as Operating Reserve – Supplemental
- Reserve held by other entities by agreement that is deliverable on Firm Transmission Service
- A resource, other than generation or load, that can provide energy or reduce energy consumption
- Load, including demand response resources, Demand-Side Management resources, Direct Control Load Management, Interruptible Load or Interruptible Demand, or any other Load made available for curtailment by the Balancing Authority or the Reserve Sharing Group via contract or agreement.
- All other load, not identified above, once the Reliability Coordinator has declared an energy emergency alert signifying that firm load interruption is imminent or in progress.

1.3 Based on real-time hourly load and generating energy values averaged over each Clock Hour (excluding Qualifying Facilities covered in 18 C.F.R.§ 292.101, as addressed in FERC Order 464).

1.4 An amount of capacity from a resource that is deployable within ten minutes.

M1. Each Balancing Authority and each Reserve Sharing Group will have documentation demonstrating its Contingency Reserve was maintained, except within the first sixty minutes following an event requiring the activation of Contingency Reserve.

Part 1.1

Each Balancing Authority and each Reserve Sharing Group will have dated documentation that demonstrates its Contingency Reserve was maintained in accordance with the amounts identified in Requirement R1, Part 1.1, except within the first sixty minutes following an event requiring the activation of Contingency Reserve.

Attachment A is a practical illustration showing how the generation amount may be calculated under Requirement R1.

- Where Dynamic Schedules are used as part of the generation amount upon which Contingency Reserve is predicated, additional evidence of compliance with Requirement R1, Part 1.1 may include, but is not limited to, documentation showing a reciprocal acknowledgement as to which entity is carrying the reserves. This transfer may be all or some portion of

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the physical generator and is not limited to the entire physical capability of the generator.

- Where Pseudo-Ties are used as part of the generation amount upon which Contingency Reserve is predicated, additional evidence of compliance with Requirement R1, Part 1.1, may include, but is not limited to, documentation accounting for the transfers included in the Pseudo-Ties.

Part 1.2

Each Balancing Authority and each Reserve Sharing Group will have dated documentation that demonstrates compliance with Requirement R1, Part 1.2. Evidence may include, but is not limited to, documentation that reserves were comprised of the types listed in Requirement R1, Part 1.2 for purposes of meeting the Contingency Reserve obligation of Requirement R1. Additionally, for purposes of the last bullet of Requirement R1, Part 1.2, evidence of compliance may include, but is not limited to, documentation that the reliability coordinator had issued an energy emergency alert, indicating that firm Load interruption was imminent or was in progress.

Part 1.3

Each Balancing Authority and each Reserve Sharing Group will have dated documentation that demonstrates compliance with Requirement R1, Part 1.3. Evidence of compliance with Requirement R1, Part 1.3 may include, but is not limited to, documentation that Contingency Reserve amounts are based upon load and generating data averaged over each Clock Hour and excludes Qualifying Facilities covered in 18 C.F.R.§ 292.101, as addressed in FERC Order 464.

Part 1.4

Evidence of compliance with Requirement R1, Part 1.4 may include, but is not limited to, documentation that the reserves maintained to comply with Requirement R1, Part 1.4 are fully deployable within ten minutes.

R2. Each Balancing Authority and each Reserve Sharing Group shall maintain at least half of its minimum amount of Contingency Reserve identified in Requirement R1, as Operating Reserve – Spinning that meets both of the following reserve characteristics. *[Violation Risk Factor: High] [Time Horizon: Real-time operations]*

2.1 Reserve that is immediately and automatically responsive to frequency deviations through the action of a governor or other control system;

2.2 Reserve that is capable of fully responding within ten minutes.

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M2. Each Balancing Authority and each Reserve Sharing Group will have dated documentation that demonstrates it maintained at least half of the Contingency Reserve identified in Requirement R1 as Operating Reserve – Spinning, averaged over each Clock Hour, that met both of the reserve characteristics identified in Requirement R2, Part 2.1 and Requirement R2, Part 2.2.

R3. Each Sink Balancing Authority and each sink Reserve Sharing Group shall maintain an amount of Operating Reserve, in addition to the minimum Contingency Reserve in Requirement R1, equal to the amount of Operating Reserve–Supplemental for any Interchange Transaction designated as part of the Source Balancing Authority's Operating Reserve–Supplemental or source Reserve Sharing Group's Operating Reserve–Supplemental, except within the first sixty minutes following an event requiring the activation of Contingency Reserve. *[Violation Risk Factor: High] [Time Horizon: Real-time operations]*

M3. Each Sink Balancing Authority and each sink Reserve Sharing Group will have dated documentation demonstrating it maintained an amount of Operating Reserve, in addition to the Contingency Reserve identified in Requirement R1, equal to the amount of Operating Reserve–Supplemental for any Interchange Transaction designated as part of the Source Balancing Authority's Operating Reserve–Supplemental or source Reserve Sharing Group's Operating Reserve–Supplemental, for the entire period of the transaction, except within the first sixty minutes following an event requiring the activation of Contingency Reserves, in accordance with Requirement 3.

R4. Each Source Balancing Authority and each source Reserve Sharing Group shall maintain an amount of Operating Reserve, in addition to the minimum Contingency Reserve amounts identified in Requirement R1, equal to the amount and type of Operating Reserves for any Operating Reserve transactions for which it is the Source Balancing Authority or source Reserve Sharing Group. *[Violation Risk Factor: High] [Time Horizon: Real-time operations]*

M4. Each Source Balancing Authority and each source Reserve Sharing Group will have dated documentation that demonstrates it maintained an amount of additional Operating Reserves identified in Requirement R1, greater than or equal to the amount and type of that identified in Requirement 4, for the entire period of the transaction.

C. Compliance

1. Compliance Monitoring Process

1.1 Compliance Enforcement Authority

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

For Reliability Coordinators and other functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

For responsible entities that are also Regional Entities, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.

1.2 Compliance Monitoring and Assessment Processes:

Compliance Audit

Self-Certification

Spot Checking

Compliance Investigation

Self-Reporting

Complaint

1.3 Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Each Balancing Authority and each Reserve Sharing Group shall keep evidence for Requirement R1 through R4 for three years plus calendar current.

1.4. Additional Compliance Information

1.4.1. This Standard shall apply to each Balancing Authority and each Reserve Sharing Group that has registered with WECC as provided in Part 1.4.2 of Section C.

Each Balancing Authority identified in the registration with WECC as provided in Part 1.4.2 of Section C shall be responsible for compliance with this Standard through its participation in the Reserve Sharing Group and not on an individual basis.

1.4.2. A Reserve Sharing Group may register as the Responsible Entity for purposes of compliance with this Standard by providing written notice to

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the WECC: 1) indicating that the Reserve Sharing Group is registering as the Responsible Entity for purposes of compliance with this Standard, 2) identifying each Balancing Authority that is a member of the Reserve Sharing Group, and 3) identifying the person or organization that will serve as agent on behalf of the Reserve Sharing Group for purposes of communications and data submissions related to or required by this Standard.

1.4.3. If an agent properly designated in accordance with Part 1.4.2 of Section C identifies individual Balancing Authorities within the Reserve Sharing Group responsible for noncompliance at the time of data submission, together with the percentage of responsibility attributable to each identified Balancing Authority, then, except as may otherwise be finally determined through a duly conducted review or appeal of the initial finding of noncompliance: 1) any penalties assessed for noncompliance by the Reserve Sharing Group shall be allocated to the individual Balancing Authorities identified in the applicable data submission in proportion to their respective percentages of responsibility as specified in the data submission, 2) each Balancing Authority shall be solely responsible for all penalties allocated to it according to its percentage of responsibility as provided in subsection 1) of this Part 1.4.3 of Section C, and 3) neither the Reserve Sharing Group nor any member of the Reserve Sharing Group shall be responsible for any portion of a penalty assessed against another member of the Reserve Sharing Group in accordance with subsection 1) of this Part 1.4.3 of Section C (even if the member of Reserve Sharing Group against which the penalty is assessed is not subject to or otherwise fails to pay its allocated share of the penalty).

1.4.4. If an agent properly designated in accordance with Part 1.4.2 of Section C fails to identify individual Balancing Authorities within the Reserve Sharing Group responsible for noncompliance at the time of data submission or fails to specify percentages of responsibility attributable to each identified Balancing Authority, any penalties for noncompliance shall be assessed against the agent on behalf of the Reserve Sharing Group, and it shall be the responsibility of the members of the Reserve Sharing Group to allocate responsibility for such noncompliance.

1.4.5. Any Balancing Authority that is a member of a Reserve Sharing Group that has failed to register as provided in Part 1.4.2 of Section C shall be subject to this Standard on an individual basis.

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Table of Compliance Elements

R	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Real-time Operations	High	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve is less than 100% but greater than or equal to 90% of the required Contingency Reserve amount, with the characteristics specified in Requirement R1.	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve is less than 90% but greater than or equal to 80% of the required Contingency Reserve amount, with the characteristics specified in Requirement R1.	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve is less than 80% but greater than or equal to 70% of the required Contingency Reserve amount, with the characteristics specified in Requirement R1.	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve is less than 70% of the required Contingency Reserve amount, with the characteristics specified in Requirement R1.
R2	Real-time Operations	High	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve Operating Reserve - Spinning is less than 100% but greater than or equal to 90% of	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve Operating Reserve - Spinning is less than 90% but greater than or	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve Operating Reserve - Spinning is less than 80% but greater than or	The Balancing Authority or the Reserve Sharing Group that incurs one Clock Hour, during a calendar month, in which Contingency Reserve Operating Reserve - Spinning is less than 70% of the required

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R	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
			the required Operating Reserve–Spinning amount specified in Requirement R2, and both characteristics were met.	equal to 80% of the required Operating Reserve–Spinning amount specified in Requirement R2, and both characteristics were met.	equal to 70% of the required Operating Reserve–Spinning amount specified in Requirement R2, and both characteristics were met.	Operating Reserve–Spinning amount specified in Requirement R2, and both characteristics were met.
R3	Real-time Operations	High	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve is less than 100% but greater than or equal to 90% of the required Operating Reserve amount specified in Requirement R3.	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve is less than 90% but greater than or equal to 80% of the required Operating Reserve amount specified in Requirement R3.	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve is less than 80% but greater than or equal to 70% of the required Operating Reserve amount specified in Requirement R3.	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve is less than 70% of the required Operating Reserve amount specified in Requirement R3.
R4	Real-time Operations	High	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve	The Balancing Authority or the Reserve Sharing Group that incurs one hour, during a calendar month, in which Contingency Reserve

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R	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
			Operating Reserve is less than 100% but greater than or equal to 90% of the required Operating Reserve amount specified in Requirement R4.	Operating Reserve is less than 90% but greater than or equal to 80% of the required Operating Reserve amount specified in Requirement R4.	Operating Reserve is less than 80% but greater than or equal to 70% of the required Operating Reserve amount specified in Requirement R4.	Operating Reserve is less than 70% of the required Operating Reserve amount specified in Requirement R4.

D. Regional Variances
None.

E. Interpretations

Interpretation Requested

Arizona Public Service (APS) sought clarification that for purposes of BAL-002-WECC-2, Requirement R2, APS and other Balancing Authorities and/or Reserve Sharing Groups can include "technologies, such as batteries, both contemplated and not yet contemplated…as potential resources [to meet the Operating Reserve – Spinning requirement of BAL-002-WECC-2, Requirement R2] – so long as the…resource can meet the response characteristics described in the standard."

A standards interpretation team comprised of members of the original BAL drafting team concluded that APS' understanding was correct.

"[N]on-traditional resources, including electric storage facilities, may qualify as "Operating Reserve – Spinning" so long as they meet the technical and performance requirements in Requirement R2 (i.e., that the resources must be immediately and automatically responsive to frequency deviations through the action of a control system and capable of fully responding within ten minutes).[1]

[1] FERC Order 789, P47. July 18, 2013.

See also FERC Order 740, Section E, Demand-Side Management as a Resource, at P 50:
"The Commission clarified that the purpose of this directive was to ensure comparable treatment of demand-side management with conventional generation or any other technology and to allow demand-side management

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In Order 789, Paragraph 48, the Federal Energy Regulatory Commission (Commission) responded to the California Independent System Operator that:

> **Commission Determination**
>
> 48. The Commission determines that non-traditional resources, including electric storage facilities, may qualify as "Operating Reserve – Spinning" provided those resources satisfy the technical and performance requirements in Requirement R2. Our determination is supported by the standard drafting team's response to a comment during the standard drafting process where the standard drafting team stated that "technologies, such as batteries, both contemplated and not yet contemplated are included in the standard as potential resources – so long as the undefined resource can meet the response characteristics described in the standard …The language does not preclude any specific technology; rather, the language delineates how that technology must [] respond."[2] We also note that non-traditional resources could contribute to contingency reserve under the regional Reliability Standard if they are resources, "other than generation or load, that can provide energy or reduce energy consumption."

to be considered as a resource for contingency reserves on this basis without requiring the use of any particular contingency reserve option."

[2] "Fn 44 Petition, Exhibit C at 20."

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F. Associated Documents
None.

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Attachment A

Attachment A is illustrative only; it is not a requirement. Requirement R1 calls for an amount of Contingency Reserve to be maintained, predicated on an amount of generation and load required in Requirement R1, Part 1.1., specifically:

> **"1.1** The greater of either:
>
> - The amount of Contingency Reserve equal to the loss of the most severe single contingency;
> - The amount of Contingency Reserve equal to the sum of three percent of hourly integrated Load plus three percent of hourly integrated generation."

Attachment A illustrates one possible way to account for and calculate the amount of generation upon which the Contingency Reserve amount is predicated.

Below is a practical illustration showing how the generation amount may be calculated under Requirement R1 for Balancing Authorities (BA) and Reserve Sharing Groups (RSG).

BA1 / RSG 1	**Generation**	**Part of Generator**
Generator 1	300 MWs online	Yes
Generator 2	200 MWs online	Yes
Generator 3 (Pseudo-Tied out to BA2)	100 MWs online	No
Generator 4 QF (has backup contract)	10 MWs online	No
Generator 5 QF in EMS	10 MWs online	Yes
Generator 6	0 MWs online	Yes

Dynamic Schedule to BA2 from BA1[3]	(50 MWs)	
Generation	620 MWs	(The sum of gen 1-6)
BA generation (EMS)	510 MWs	(The sum of gen 1, 2, and 5)
Generation to use Under BAL-002-WECC-1	460 MWs**	(The sum of gen 1, 2 and 5 minus Dynamic Schedule)

** Assumes BA1 and BA2 agree on Dynamic Schedule treatment. If no agreement, BA1 would maintain reserves based on 510 MWs Generation.

BA2 / RSG2	**Generation**	**Part of Generator**
Generator 11	100 MWs	Yes
Generator 12	100 MWs	Yes
Generator 3 (Pseudo-Tied in from BA1)	100 MWs	Yes

[3] Note: This Dynamic Schedule is not the same as the Generator 3 Pseudo-Tie.

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Dynamic Schedule from BA1 to BA2	50 MWs	Yes
Generation	300 MWs	(The sum of gen 11, 12 and 3.)
BA generation (EMS)	300 MWs	(The sum of gen 11, 12 and 3)
Generation to use Under BAL-002-WECC-1	350 MWs**	(The sum of gen 11, 12 and 3 plus Dynamic Schedule)

** Assumes BA1 and BA2 agree on Dynamic Schedule treatment. If no agreement, BA1 would have to maintain reserves based on 510MWs Generation and BA2 would determine its generation to be 300 MWs.

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Guideline and Technical Basis

A Guidance Document addressing implementation of this standard has been filed with this standard.

Version History

Version	Date	Action	Change Tracking
1	October 29, 2008	Adopted by NERC Board of Trustees	
1	October 21, 2010	Order issued remanding BAL-002-WECC-1	
2	November 7, 2012	Adopted by NERC Board of Trustees	
2	November 21, 2013	FERC Order issued approving BAL-002-WECC-2. (Order becomes effective 1/28/14.)	
2a	December 1, 2015	Approved by WECC Board of Directors	Clarified resources available for use in Requirement R2
2a	November 2, 2016	Approved by NERC Board of Trustees	
2a	January 24, 2017	FERC letter Order approving BAL-002-WECC-2a. Docket No. RD17-3-000	

*** FOR INFORMATIONAL PURPOSES ONLY ***

Effective Date of Standard: BAL-002-WECC-2a — Contingency Reserve

United States

Standard	Requirement	Effective Date of Standard	Phased In Implementation Date (if applicable)	Inactive Date
BAL-002-WECC-2a	All	01/24/2017		

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Attachment K

Northwest Power Pool Reserve Sharing Group
Most Severe Single Contingency Tables

TABLE 1

Resource(s)	Reporting/ Operating BA	MSSC MW	Plant Capability MW	BALANCING AUTHORITIES PARTICIPATING JOINTLY IN DYNAMICALLY TRANSFERRED GENERATION													
				AVA	BPA	CHPD	DOPD	GCPD	GRID	IPC	NWMT	PACW	PGE	PSE	SCL	NEVP	TPWR
Rock Island	CHPD	216	606	✓		✓			✓					✓			
Rocky Reach - River Crossing 7-8-9	CHPD	384	1,272	✓		✓	✓		✓					✓			
Wells	DOPD	168	840	✓			✓						✓	✓			
Priest Rapids - 4 units	GCPD	372	930	✓				✓				✓	✓	✓	✓		✓
Wanapum - 4 units	GCPD	388	970	✓				✓				✓	✓	✓			
Colstrip	NWMT	740	2,094	222							751	148	296	677			
Jim Bridger - 2 units	PACW	1,100	2,120							707		1,413					
Hermiston /Perennial	PACW	474	474						237			237					
Boardman + Carty	PGE	1090	1090							61			1029				

TABLE 2

Resource(s)	Reporting/ Operating BA	MSSC MW	Plant Capability MW	BALANCING AUTHORITIES PARTICIPATING JOINTLY IN GENERATION NOT DYNAMICALLY SIGNALLED													
				AVA	BPA	CHPD	DOPD	GCPD	GRID	IPC	NWMT	PACW	PGE	PSE	SCL	NEVP	TPWR
Valmy	NEVP	268	522							261						261	

TABLE 3

Resources(s)	Reporting BA	Typically Reported MSSC MW	Plant Capability MW	Modeled Outage
Genesse #3	**AESO**	466	1,266	Boiler Generator
Noxon Plant RAS Trip	**AVA**	540	550	Nox 230 East Bus with RAS armed.
Schoolhouse	**AVRN**	598	598	Loss of John Day 230/500 kV transformer
Cosumnes	**BANC**	298	596	1X1 Generator Outage, Gen Tie to plant
Revelstoke - 3 units	**BCHA**	1,505	2,505	Revelstoke 500 kV main bus, three units (5MB2)
Columbia Generating Station	**BPAT**	1,150	1,150	CGS Unit Outage
Rocky Reach - River Crossing 7-8-9	**CHPD**	384	1,272	River Crossing 7-8-9
Wells	**DOPD**	168	840	Loss of one Generator Step-Up Transformer (T1-T5) at Wells
Wanapum - 4 Units	**GCPD**	388	970	Trip of Wanapum Powerhouse #1 line/ #2 line
Centralia	**GRID**	685	1370	Loss of either generating unit
NaturEner Power Watch	**GWA**	106	210	GW1 115/34kV transformer
Langley Gulch	**IPC**	300	329	Unit trip of Langley Gulch – various issues
Chuck Lenzie PB1 / PB2	**NEVP**	560	1120	Outage of PB lead line for either PB1 or PB2
Colstrip	**NWMT**	740	2,094	Loss of generator or generator lead line
Lakeside #2	**PACE**	645	645	Radial Transmission Line
Jim Bridger - 2 units on RAS	**PACW**	1,100	2,120	RAS Action
Boardman + Carty	**PGE**	1,090	1,090	Loss of Grassland – Slatt 500 KV generator lead line
Poison Springs - Wind Ridge Wind Ridge - Wanapum	**PSE**	260	364	Loss of 230kV Poison Springs – Wind Ridge line / 230 kV Wind Ridge – Wanapum line
Boundary	**SCL**	223	1,064	Boundary Generator Unit 55 or 56
Walnut Energy Center	**TID**	129	258	Loss of generator @ TID Walnut Energy Center
Mossyrock	**TPWR**	203	378	Generator – Transmission Outage
Fort Peck	**WAUW**	44	64	Loss of Generation
NaturEner Rim Rock	**WWA**	189	189	Loss of Hay Lake – Rim Rock East & West 230 kV generation tie line

Attachment L

Transmission Facilities Making Up Cut Planes Between Reserve Sharing Zones

a. The facilities associated with the cut plane connecting the Alberta Reserve Sharing Zone with the British Columbia Reserve Sharing Zone are the following (defined by Alberta Electric System Operator):

1201L from Alberta to British Columbia boundary to Bennett
887L from Alberta to British Columbia boundary to Pocaterra
786L from Alberta to British Columbia boundary to Coleman
799S AltaLink Colman Substation
941L from Montana to Alberta
120S Enbridge Substation

b. The facilities associated with the cut plane connecting the Oregon-Washington-Montana Reserve Sharing Zone with the British Columbia Reserve Sharing Zone are the following (defined by British Columbia Hydro and Power Authority and the Bonneville Power Administration):

Custer - Ingledow #1 500kV / 5L51
Custer - Ingledow #2 500kV / 5L52
Boundary - Nelway 230kV / 2L112
Boundary - Waneta 230kV / 71L

c. The facilities associated with the cut plane connecting the Idaho Reserve Sharing Zone with the Oregon-Washington-Montana Reserve Sharing Zone are as follows (defined by Idaho Power Company):

Hemingway - Summer Lake 500 KV
Imnaha - Lolo 230 KV
Hells Canyon - Hurricane 230 KV
North Power - LaGrande 230 KV
Hines - Harney 115 KV
Total Brownlee East Lines:
- Hemingway - Summer Lake 500 KV
- Brownlee - Boise Bench #1 230 KV
- Brownlee - Boise Bench #2 230 KV
- Brownlee - Boise Bench #3 230 KV
- Brownlee - Horse Flat #4 230 KV

Brownlee - Ontario 230 KV
Oxbow - Starkey 138 KV
Quartz - Ontario 138 KV

d. The facilities associated with the cut plane connecting the Idaho Reserve Sharing Zone with the Nevada-Wyoming-Utah Reserve Sharing Zone, are as follows (defined by PacifiCorp and NV Energy):

Malad - American Falls 138 kV
Ben Lomond - Populus #1 & #2 345kV
Terminal - Populus 345 kV
Treasureton - SunBeam - Brady 230 kV
FishCreek - Goshen 161kV
Threemile Knoll 138/345 kV transformer
Threemile Knoll 138/115 kV transformer (future)
Humboldt - Midpoint 345 kV
Osceola-Black Rock 230 kV - Pavant Gonder 230 kV leg only
Harry Allen - Red Butte 345 kV

e. The facilities associated with the cut plane connecting the Oregon-Washington-Montana Reserve Sharing Zone with the Northern California Reserve Sharing Zone are as follows (defined by Balancing Authority of Northern California):

Captain Jack - Olinda 500 kV line (metered at Captain Jack)
Malin - Round Mountain #1 500 kV line (metered at Malin)
Malin - Round Mountain #2 500 kV line (metered at Malin)
Hilltop - Bordertown 345 kV line (metered at Bordertown)

Attachment M

Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to NWPP Reserve Sharing Group Reporting ACE

Background:

This attachment (1) describes the operation and purposes of BPA Remedial Action Schemes (as defined in the NERC Glossary; also known as RAS) that are designed to drop generation and intentionally suspend Automatic Generation Control (AGC) actions to achieve the required flow mitigation effects of the RAS for transmission line outages that have large impacts to the integrity of the Western Interconnection, (2) explains why efforts by a Participating Balancing Authority or by the NWPP Reserve Sharing Group to immediately recover NWPP Reserve Sharing Group Reporting ACE following operation of this category of RAS would undermine the designed reliability benefits of the RAS, and (3) explains that the change in NWPP Reserve Sharing Group Reporting ACE that results from the planned, intentional generation dropping of these RAS is not unexpected and therefore does not meet the definition of a Reporting Balancing Contingency Event.

RAS Description:

For certain types of potential exceedances of System Operating Limits and Interconnection Reliability Operating Limits (SOL/IROL), BPA has designed RAS to intentionally drop generation and suspend related AGC actions. This category of RAS is intended to mitigate flow and stability impacts associated with various contingency events on transmission facilities. These transmission facilities are designed to operate at maximum transfer levels that rely on protection provided by the associated RAS. For example, RAS for the California-Oregon Intertie system (COI) and Pacific Direct Current Intertie system (PDCI) are in this category. There are other transmission facilities in the Northwest that also rely on this category of RAS to maximize transfer capability. Additional remedial actions for this category of RAS may include other actions such as fast switching of reactive devices and insertion of dynamic braking resistors.

This category of RAS intentionally suspends AGC within the BPA Balancing Authority and any other host Balancing Authorities of the associated generating units to avoid counteracting the intended flow mitigation benefit of the RAS. Even with AGC suspended, active governors of synchronized generators will continue to respond to the changed load-resource balance and resulting frequency drop. The Bulk Electric System within the Western Interconnection, including the affected areas, will perform according to the BAL-003 requirements and immediately provide primary frequency control through governor action to arrest the frequency decline and stabilize the system.

Overall system recovery continues as the affected systems adjust transfers and generation or deploy contingency reserves, and the affected systems rebalance for the new level of transfers

associated with the SOL/IROL. Each affected Balancing Authority restores its AGC once transfers are adjusted. Generation then ramps up (receiving areas with imports curtailed) or down (sending areas with exports curtailed) to the new required levels, which enables each affected Balancing Authority to recover its Reporting ACE.

The Significance of BPA RAS in Relation to Reporting ACE:

Because certain planned generation dropping through RAS action is intended to protect affected transmission facilities within the NWPP from overloads, instability, or cascading outages, any action by Participants in the NWPP Reserve Sharing Group to immediately recover Reporting ACE following these specific RAS events would adversely affect reliability of the Bulk Electric System. Changes to the NWPP Reserve Sharing Group's Reporting ACE due to RAS actions are expected and, as such, are not Reportable Balancing Contingency Events. Generation is dispatched appropriately to accommodate the post-RAS system configuration, which may take more than 15 minutes.

BPA is responsible for notifying the NWPP Staff whenever an event involving operation of this category of RAS has occurred, and therefore 15-minute recovery of NWPP Reserve Sharing Group Reporting ACE is not expected for that event.

Attachment N

Correlation Table of Participants, Reliability Coordinators, and Zones

Participant	Reliability Coordinator	Zone
AESO	AESO	AESO
BCHA	BCHA	BCHA
AVA	RC West	PNW
AVRN	RC West	PNW
BPAT	RC West	PNW
CHPD	RC West	PNW
DOPD	RC West	PNW
GCPD	RC West	PNW
GRID	GRID	PNW
GWA	RC West	PNW
NWMT	RC West	PNW
PACW	RC West	PNW
PGE	RC West	PNW
PSEI	RC West	PNW
SCL	RC West	PNW
TPWR	RC West	PNW
WAUW	SPP	PNW
WWA	GRID	PNW
IPC	RC West	IPCO
NVE	RC West	NEVP-PACE
PACE	RC West	NEVP-PACE
TID	RC West	NCal
BANC	RC West	NCal

DOCUMENTATION HISTORY

Updates:	Date:
NWPP Reserve Sharing Program	1-18-2006
Accommodation for new Balancing Authorities: SMUD & TID	6-07-2007
Combining of SPP and PACE zones into SPP-PACE zone	3-31-2008
Update of section D.3 for jointly owned generation	5-18-2008
Accommodation for new Balancing Authorities: GWA	10-13-2008
Updated terminology and addition of Attachments F, G, and H.	1-30-2009
Update of Attachment D to reflect tag template updates	3-31-2009
Update for requirement omission from 10-13-2008 version to 01-30-2009 version	3-31-2009
Clarity to sections I.5.l and H.2	4-8-2009
Update for computer failure, continuance to deliver reserve for full 60 minutes	4-8-2009
Clarification to Attachment B – Covered contingencies	5-12-2009
Update to Attachment B – Loss of wind generation due to temperature	7-1-2009
Grammar revision to definition of "Reportable Disturbance"	7-30-2009
Accommodation of information for the ACE Diversity Interchange (ADI) program	10-15-2009
Update of Attachment D – transmission mapping between NWMT and PGE	11-1-2009
Clarifying revisions and reorganization throughout; addition of language to Attachment B specifying Operating Committee authority to designate additional "Qualifying Events"; addition of Attachment K	10-18-2010
British Columbia Hydro and Power Authority NERC Registry acronym change from BCTC to BCHA	12-1-2010
Addition of definition of "RSG Committee"; replacement of most references to Operating Committee and all references to NWPP Reserve Sharing Subcommittee with references to RSG Committee; Updates of Attachment K	4-6-2011
Revision to Attachment B – addition of energy emergency as a Qualifying Event	10-5-2011
Update to section K.3. Financial Settlement with Powerdex Mid-Columbia Hourly	1-1-2012
Update to definition of Single Contingency, Section J.1.f with additional request language, and Section K.3. Financial Settlement clarification	6-7-2012
Revisions to Section 1.a of Attachment A to incorporate new requirements for photovoltaic and other types of generation; threshold in second bullet of definition	

of "Reportable Disturbance" lowered from 190 MW to 170 MW and updates to Attachment K Tables 1 and 3 1-10-2013

Clarifying updates throughout document including the addition of Section D.3.f, revisions to Sections E.2, E.4, F and updates to Attachments B, C, F and K 4-4-2013

Update to Attachment B and removal of (e) Unexpected loss of Contingency Reserve with new language to section (c) 6-6-2013

Updates to Attachments D, H, and K for incorporation of NaturEner Wind Watch BA, WWA into program documentation 10-30-2013

Updates to Attachments D, H, and K for incorporation of the Constellation Energy Control and Dispatch BA, WWA into program documentation along with other clarifying updates throughout the document 11-25-2013

Updates to Attachments C, D, H, and K to reflect Nevada Power Company (NEVP), as operator of the consolidated Balancing Authority Area encompassing the Balancing Authority Areas previously operated separately by Sierra Pacific Power Company (SPPC) and Nevada Power Company (NEVP) 1-9-2014

Revisions throughout document to reflect implementation of WECC Standard BAL-002-WECC-2, to incorporate terms governing Loss of a Unit-Contingent Purchase, and to reflect the name change of the organization formerly known as Constellation Energy Control and Dispatch (CSTO) to Gridforce Energy Management, LLC (GRID) 8-15-2014 – Effective 10-1-2014

Revisions to incorporate language concerning RSG compliance with R3 and R4 of WECC BAL-002-WECC-2 8-22-2014 – Effective 10-1-2014

Clarifying revisions to the description of Contingency Reserve Obligation calculation in Attachment A, with conforming changes in body of document and other minor clean-up items 1-8-2015

Clarifying revisions to timing of requests for assistance reserve in section E.3; changes to section I.2, Major Transmission Facility Information; Attachment A, revisions regarding Balancing Authority Calculation of Contingency Reserve Obligation When Communications with Reserve Sharing Computer System Are Disrupted; and a new Attachment L, Transmission Facilities Making up Cut Planes Between Reserve Sharing Zones 4-2-2015

Clarifying revisions to section K.3.e to address how and when the NWPP Staff will complete and post calculations of applicable settlement prices 4-17-2015 – Effective 5-1-2015

Revisions to "Introduction and Overview" section to clarify that NWPP Staff are responsible for compliance reporting, not individual Participants; revisions to Section D.4.b to require at least quarterly reporting of data for R.3. and R.4 of WECC Standard BAL-002-WECC-2	10-8-2015
Addition and incorporation of the defined term "Contingency Reserve Available" and editorial cleanup revisions	4-1-2016
Clarifications related to NWPP Reserve Sharing Program participation status, determining real-time Most Severe Single Contingency, and reflection of NWPP Reserve Sharing Program requirements in Participant operating procedures	10-13-2016
Removal of language in Attachment B Qualifying Events, (d) Declaration of Energy Emergency Alert 2 or 3	05-12-2017
Effective May 12, 2017 - Participation in WECC Field Test Waiving Enforcement of BAL-002-WECC-2a, Requirement R2	05-12-2017
Revisions to harmonize definitions and other relevant provisions to NERC Standard BAL-002-2(i) and the NERC Glossary; miscellaneous cleanup and clarifying revisions	10-25-2017
Newly added definition for Operating Plan, clarifying changes to MSSC definition, and conforming changes sections D. 3., E.4. and L.	11-30-2017
Clarifying changes to term Reserve Sharing Zone, addition of terms: System Operator, BAA Net Generation, Net Generation, Actual Net Interchange, Scheduled Net Interchange; clarifying changes to Sections D.3.j, revisions to Section I.1,, addition of Section I.5.d., clarifying changes to Attachment A of BAA Net Generation, Net Generation, Actual Net Interchange, Scheduled Net Interchange; revisions to Attachments D, H, and K to reflect addition of Avangrid Renewables as a new Participant. Changes to update the WECC and NERC BAL-002 standards to conform through the entire document.	5-10-2018
Clarifying changes to section D.3.k. to clarify NWPP RSG procedures related to Energy Emergency Alerts. In addition, clarifying language was addded to Section L. regarding Obligation to submit a NWPP RSG Verification Form and new Section L.2. added regarding Reporting Balancing Obligation to Notify NWPP Staff.	11-8-2018
New term added for NWPP Reserve Sharing Group Reporting ACE. In addition, new Attachment M – *Overview of BPA Remedial Action Schemes That Suspend Automatic*	

Generation Control and Result in Expected Changes to NWPP Reserve Sharing Group Reporting ACE and Attachment N - *Correlation Table of Participants, Reliability Coordinators and Zones.* Clarifying changes to section I.5. regarding data telemetered from Reserve Sharing Program to the Reliability Coordinator with the addition of the NWPP RSG Reporting ACE and new Section I.6. – Management of Data Related to Reserve Sharing Zones. 2-14-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 2-14-2019