

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

BAL-012-1 - Operating Reserve Policy Standard Background Document

November 2012

RELIABILITY | ACCOUNTABILITY



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Introduction

This document provides background on the development of BAL-012-1, Operating Reserve Policy (ORP) proposed standard. The intent is to explain the rationale and considerations for the requirements and their associated compliance information.

The original Standards Authorization Request (SAR) directed the drafting team to consider the following directives from FERC Order 693:

- Include a continent-wide Contingency Reserve policy, which should include uniform elements (definitions and requirements).
- Include a requirement that explicitly provides that Demand Side Management (DSM) may be used as a resource for Contingency Reserves.
- Recognize the loss of Transmission, as well as generation, thereby providing a realistic simulation of possible events that might affect the Contingency Reserves.

This standard was developed to require a Balancing Authority (BA) or, as appropriate, Reserves Sharing Group, Regulation Reserve Sharing Group, Frequency Response Sharing Group (responsible entities) to develop and document policies that will detail its appropriate mix of Operating Reserves. Each responsible entity's policies will detail the specific amounts of Operating Reserves based on the responsible entity's Load characteristics and magnitude, topology, and mix of resources available to the responsible entity, to ensure adequate Regulating Reserve (RR), Contingency Reserve (CR), and Frequency Responsive Reserve (FRR) to maintain Balancing Authority Load/resource balance in support of Interconnection frequency.

Formal reserve planning has been considered for a long time by the operating entities under NERC, going back to Policy 1. NERC Policy 1 required, "The minimum reserve requirement for the group, its allocation among members, the permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental (non-spinning) that may be included in Contingency Reserve, and the procedure for applying Contingency Reserve in practice, and the limitations, if any, upon the amount of interruptible Load that may be included." BAL-012-1 takes the planning for Operating Reserves and divides them into the individual components to provide visibility and accountability.

Operating Reserves are an absolute requirement to maintain a reliable Interconnection. It is important that all responsible entities have policies for Operating Reserves to allow arrangements in terms of contracts, agreements, and testing to meet their long-range forecasts. Requiring responsible entities to develop these Operating Reserve policies will identify gaps and will require the responsible entities to resolve these gaps. For example, some of the responsible entities may not have the necessary data on their units to allow them to project the required amount of unit headroom needed to provide a level of Frequency

Responsive Reserve (FRR). Some responsible entities may determine after testing that their system does not have the ability to provide the required FRR or the economics may force them to consider alternatives; such as purchasing FRR from other responsible entities or customers.

Each responsible entity's different system characteristics will necessitate that the policies will be different and, therefore, a one-size fits all Operating Reserve standard was discussed, but dismissed by the standard drafting team as unworkable. The team decided to make a general framework that would instruct that each responsible entity will develop a plan that meets the requirements of its particular area. The team also discussed that a new type of Reserve Sharing Group or Frequency Response Sharing Group, may become necessary when BAL-003-1 becomes an approved standard. Historically, many BAs have formed Contingency Reserve Sharing Groups to comply with BAL-002-0. Some BAs may choose to form a Frequency Response Sharing Group to achieve compliance with BAL-003-1.

Note that while Requirements R1, R3, R5, R7 and R8 each require a policy document to be developed by the responsible entity, there is no preclusion of all of the policies being placed into one document.

Background and Rationale by Requirement

Requirement 1

- R1.** Each responsible entity shall have a documented Regulating Reserve policy that includes at least the following:
- 1.1.** The method for determination of the responsible entity's regulating needs.
 - 1.2.** The types of resources and the portion of their capacity that can be made available for regulation.
 - 1.3.** Consideration of the energy exports and imports with other responsible entities, including an assessment of the ability of the resources within the responsible entity to meet the net-ramping requirement associated with these transactions.
 - 1.4.** A prohibition against counting toward the responsible entities regulating needs any capacity which is already included in another responsible entity's Regulating, Contingency, or Frequency Responsive Reserve policy.
 - 1.5.** A review of the responsible entity's Regulating Reserve for the operating time horizon.
 - 1.6.** The ability of the responsible entity's System Operator(s) to determine, on at least an hourly basis, that the responsible entity has sufficient Regulating Reserve.
 - 1.7.** How depleted Regulating Reserves will be restored in a timely manner.

Background and Rationale

Requirement R1 is intended to ensure that each responsible entity has a documented policy to carry sufficient Regulating Reserves to be able to balance supply and demand within responsible entity's area, as required by BAL-001-1. In addition, each responsible entity's policy for Regulating Reserves must account for their individual systems requirements due to size, types of resources and Load characteristics that may be unique to the particular responsible entity area.

Requirement 2

R2. Each Responsible Entity shall implement, in a manner that identifies, assesses, and corrects deficiencies, a Regulating Reserve policy identified in Requirement R1.

Background and Rationale

Requirement R2 requires responsible entities to implement a process for identifying deficiencies with adherence to their documented Regulating Reserve policy. The process must identify potential deficiencies, and assess and correct the identified deficiencies, because every process has improvement opportunities and also any deficiencies that are found external to the process (e.g. during an audit by the CEA or through an internal audit) must be evaluated to determine whether the process needs changes. If an entity determines that no changes are needed, the entity must demonstrate that no changes to the process are necessary to address the deficiencies that were found external to the process. This ensures that the entity is evaluating their Regulating Reserve policy, and eliminates the need for the entity to report each deficiency as a potential violation.

Requirement 3

R3. Each responsible entity shall have a documented Contingency Reserve policy that includes at least the following:

- 3.1.** The method for determination of the responsible entity's Contingency Reserve needs.
- 3.2.** The types of resources and the portion of their capacity capable of reducing the Balancing Authority's Area Control Error in response to each of the following:
 - 3.2.1.** A Balancing Contingency Event.
 - 3.2.2.** Events associated with Energy Emergency Alert 2. And
 - 3.2.3.** Events associated with Energy Emergency Alert 3.
- 3.3.** Consideration of the energy import and export schedules with other responsible entities.

- 3.4.** A prohibition against counting toward the responsible entities Contingency Reserve requirement any capacity which is already included in another responsible entity's Regulating, Contingency, or Frequency Responsive Reserve policy.
- 3.5.** The planned response to a Large Loss of Load Event by the responsible entity.
- 3.6.** A review of the responsible entity's Contingency Reserve for the operating time horizon.
- 3.7.** The ability of the responsible entity's System Operator(s) to determine, on at least an hourly basis, that the responsible entity has sufficient Contingency Reserve.
- 3.8.** How depleted Contingency Reserves will be restored in a timely manner.

Background and Rationale

Requirement R3 is intended to ensure that each responsible entity shall have a documented policy to carry sufficient Contingency Reserves to restore the balance of supply and demand within the responsible entity's area. The requirement also requires the responsible entity to support Interconnection frequency based on maintaining ACE within acceptable limits under credible Contingency Events, as defined within BAL-002-2. In addition, each responsible entity's policy for Contingency Reserves must account for their individual systems requirements due to size, types of resources and Load characteristics that may be unique to the particular responsible entity area.

Requirement 4

- R4.** Each responsible entity shall implement, in a manner that identifies, assesses, and corrects deficiencies, a Contingency Reserve policy identified in Requirement R3.

Background and Rationale

Requirement R4 requires responsible entities to implement a process for identifying deficiencies with adherence to their documented Contingency Reserve policy. The process must identify potential deficiencies, and assess and correct the identified deficiencies, because every process has improvement opportunities and also any deficiencies that are found external to the process (e.g. during an audit by the CEA or through an internal audit) must be evaluated to determine whether the process needs changes. If an entity determines that no changes are needed, the entity must demonstrate that no changes to the process are necessary to address the deficiencies that were found external to the process. This ensures that the entity is

evaluating its Contingency Reserve policy, and eliminates the need for the entity to report each deficiency as a potential violation.

Requirement 5

- R5.** Each responsible entity shall have a documented Frequency Responsive Reserve policy that includes at least the following:
- 5.1.** The Frequency Response Obligation (FRO) assigned to the responsible entity.
 - 5.2.** The types of resources (such as generation, load, storage devices, etc.) and their expected Frequency Response (such as MW/0.1 Hz and the range of frequency where response is expected).
 - 5.3.** A prohibition against counting toward the responsible entities Frequency Responsive Reserves any capacity which is already included in another responsible entity's Regulating, Contingency, or Frequency Responsive Reserve policy.
 - 5.4.** The amount of Frequency Responsive Reserve provided through contractual agreements.
 - 5.5.** A review of the responsible entity's Frequency Responsive Reserve for the operating time horizon.
 - 5.6.** The ability of the responsible entity's System Operator(s) to determine, on at least an hourly basis, that the responsible entity has sufficient Frequency Responsive Reserve.
 - 5.7.** How depleted Frequency Responsive Reserves will be restored in a timely manner.

Background and Rationale

Requirement R5 is intended to ensure that each responsible entity shall have a documented policy to carry sufficient Frequency Responsive Reserves to maintain system frequency within limits, as defined within BAL-003-1. In addition, each responsible entity's policy for Frequency Responsive Reserves must account for their individual systems requirements due to size, types of resources and Load characteristics that may be unique to the particular responsible entity area.

Requirement 6

- R6.** Each responsible entity shall implement, in a manner that identifies, assesses, and corrects deficiencies, a Frequency Responsive Reserve policy identified in Requirement R5.

Background and Rationale

Requirement R6 requires responsible entities to implement a process for identifying deficiencies with adherence to their documented Frequency Responsive Reserve policy. The process must identify potential deficiencies, and assess and correct the identified deficiencies, because every process has improvement opportunities and also any deficiencies that are found external to the process (e.g. during an audit by the CEA or through an internal audit) must be evaluated to determine whether the process needs changes. If an entity determines that no changes are needed, the entity must demonstrate that no changes to the process are necessary to address the deficiencies that were found external to the process. This ensures that the entity is evaluating its Frequency Responsive Reserve policy, and eliminates the need for the entity to report each deficiency as a potential violation.

Requirement 7

- R7.** Each Reserve Sharing Group, Regulation Reserve Sharing Group or Frequency Response Sharing Group shall have a policy addressing each of the following:
- 7.1.** The minimum reserve requirement for the group.
 - 7.2.** The allocation of reserves among members.
 - 7.3.** The procedure for activating reserves.
 - 7.4.** Reporting and recordkeeping processes.

Background and Rationale

Requirement R7 is intended to determine whether a Balancing Authority is part of a Reserve Sharing Group. This requirement allows for Reserve Sharing Groups to be formed to meet the requirements of BAL-001-1, BAL-002-2 and BAL-003-1. It requires an agreement in which the minimum criteria needed in the agreement are detailed, as well as the criteria auditors will be able to use to identify the roles of the participating Balancing Authorities.

Requirement 8

- R8.** Each responsible entity shall have a policy that requires the total capability of resources designated to provide Regulating Reserve, Contingency Reserve and Frequency Responsive Reserve to be at least equal to the amount required to meet all reserve requirements concurrently prior to deploying any such resources.

Background and Rationale

The SDT discussed at length that the quantity for each type of reserve (regulating, contingency, and frequency responsive) must be uniquely identified. For example, a MW amount from an individual resource could be allocated only for one type of reserve at any given time. Another example, FRR may be substituted for CR, but most likely the reverse would not be true. In addition, each different type of reserve may be needed during Contingencies which strongly supports that double accounting would lead to less reliability. All three types of reserves could be from a single resource, provided that they are uniquely identified to meet the individual Operating Reserve requirements.