

## Project 2010-14.1 Balancing Authority Reliability-based Controls - Reserves

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

BAL-002-0 Mapping to Proposed NERC Reliability Standard BAL-002-2

Standard BAL-002-0 NERC Board Approved	Comment	Proposed Standard BAL-002-2
<p>R1. Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.</p> <p>R1.1. A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same</p>	<p>This Requirement has been moved into BAL-002-2 "Additional Compliance Information"</p>	<p>1.4. Additional Compliance Information</p> <p>A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group.</p> <p>A Balancing Authority or Reserve Sharing Group may use Contingency Reserve for any Balancing Contingency Event.</p>

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<p>responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002. The Reliability Coordinator and Planning Authority shall each establish a set of inter-regional and intra-regional Transfer Capabilities that is consistent with its current Transfer Capability Methodology.</p>		
<p>R2. Each Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:</p> <p>R2.1. The minimum reserve requirement for the group.</p> <p>R2.2. Its allocation among members.</p> <p>R2.3. The permissible mix of</p>	<p>This Requirement has been moved into BAL-012-0 Requirements R2 and R4</p>	<p>BAL-012-0</p> <p>Requirement R2</p> <p>R2. Each Balancing Authority and Reserve Sharing Group shall, once each calendar year with no more than 15 calendar months between intervals, document its annual plan for Contingency Reserve used to recover from Balancing Contingency Events addressing each of the following: [Violation Risk Factor:] [Time Horizon: ]</p> <p>2.1. The determination of the Balancing Authority's or Reserve Sharing Group's Contingency Reserve margin.</p>

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<p>Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.</p> <p>R2.4. The procedure for applying Contingency Reserve in practice.</p> <p>R2.5. The limitations, if any, upon the amount of interruptible load that may be included.</p> <p>R2.6. The same portion of resource capacity (e.g. reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.</p>		<p>2.2. 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</p> <ul style="list-style-type: none"> <li>2.2.1. Balancing Contingency Event</li> <li>2.2.2. Events associated with Energy Emergency Alert 2, and</li> <li>2.2.3. Events associated with Energy Emergency Alert 3.</li> </ul> <p>2.3. The control of supply and demand resources such as generators, controllable Loads and energy storage devices.</p> <p>2.4. The incorporation of energy import and export schedules by entities within the Balancing Authority Area and with other Balancing Authorities.</p> <p>2.5. The characteristics: such as capabilities, constraints and volatilities, of the resources operating inside the Balancing Authority Area.</p> <p>2.6. The characteristics: such as capabilities, constraints and volatilities, of the Load operating</p>

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		<p>inside the Balancing Authority Area.</p> <p>2.7. The exclusion of any portion of shared contingency resources included in another Balancing Authority’s Regulating, Contingency, or Frequency Responsive Reserve plans.</p> <p>2.8. The amount of the Balancing Authority’s or Reserve Sharing Group’s resources that can be reduced in response to a Large Loss of Load Event.</p> <p>Requirement R4</p> <p>R4. Each Reserve Sharing Group or Frequency Response Sharing Group shall have a signed agreement among the participating Balancing Authorities addressing each of the following:</p> <p>4.1. The minimum reserve requirement for the group</p> <p>4.2. Allocation of reserves among members</p> <p>4.3. The procedure for activating reserves</p> <p>4.4. Reporting and record keeping processes</p>
<p>R3. Each Balancing Authority or Reserve Sharing Group shall</p>	<p>This Requirement has been moved into BAL-002-2 Requirements R1 and BAL-</p>	<p>BAL-002-2 Requirement R1</p>

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<p>activate sufficient Contingency Reserve to comply with the DCS.</p> <p>R3.1. As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently than annually, their probable contingencies to determine their prospective most severe single contingencies.</p>	<p>012-0 Requirement R2</p>	<p>Each Balancing Authority or Reserve Sharing Group experiencing a Reportable Contingency Event shall implement its Contingency Reserve plan so that the Balancing authority or Reserve Sharing Group can demonstrate that, within the Contingency Event Recovery Period:</p> <ul style="list-style-type: none"> <li>• The Balancing Authority or Reserve Sharing Group returned its ACE to:               <ul style="list-style-type: none"> <li>○ Zero, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery Period, if its ACE just prior to the Reportable Contingency Event was positive or equal to zero, or</li> <li>○ Its Pre-Reportable Contingency Event ACE Value, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery Period, if its ACE just prior to the Reportable Contingency Event was negative.</li> </ul> </li> <li>• Provided, however, that in either of the foregoing cases, if the Reportable contingency Event (individually or when combined with any previous</li> </ul>

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		<p>Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods) exceeded the Balancing Authority's or Reserve Sharing Group's Most Severe Single contingency (MSSC), then the Balancing Authority or Reserve Sharing Group need only demonstrate ACE recovery of at least equal to its MSSC, less the sum of the magnitudes of all Previous Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods.</p> <p>BAL-012-0</p> <p>Requirement R2</p> <p>R2. Each Balancing Authority and Reserve Sharing Group shall, once each calendar year with no more than 15 calendar months between intervals, document its annual plan for Contingency Reserve used to recover from Balancing Contingency Events addressing each of the following: [Violation Risk Factor:] [Time Horizon: ]</p> <p>2.1. The determination of the Balancing Authority's or Reserve Sharing Group's Contingency Reserve</p>

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<b>Standard BAL-002-0 NERC Board Approved</b>	<b>Comment</b>	<b>Proposed Standard BAL-002-2</b>
		<p>margin.</p> <p>2.2. 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</p> <ul style="list-style-type: none"> <li>2.2.1. Balancing Contingency Event</li> <li>2.2.2. Events associated with Energy Emergency Alert 2, and</li> <li>2.2.3. Events associated with Energy Emergency Alert 3.</li> </ul> <p>2.3. The control of supply and demand resources such as generators, controllable Loads and energy storage devices.</p> <p>2.4. The incorporation of energy import and export schedules by entities within the Balancing Authority Area and with other Balancing Authorities.</p> <p>2.5. The characteristics: such as capabilities, constraints and volatilities, of the resources operating inside the Balancing Authority Area.</p> <p>2.6. The characteristics: such as capabilities,</p>

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		<p>constraints and volatilities, of the Load operating inside the Balancing Authority Area.</p> <p>2.7. The exclusion of any portion of shared contingency resources included in another Balancing Authority’s Regulating, Contingency, or Frequency Responsive Reserve plans.</p> <p>2.8. The amount of the Balancing Authority’s or Reserve Sharing Group’s resources that can be reduced in response to a Large Loss of Load Event.</p>
<p>R4. A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:</p> <p>R4.1. A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero.</p>	<p>This Requirement has been moved into BAL-002-2 Requirement R1 and into the “Contingency Event Recovery Period” definition</p>	<p>BAL-002-0 Requirement R4 and R4.1 to BAL-002-2 Requirement R1</p> <p>Each Balancing Authority or Reserve Sharing Group experiencing a Reportable Contingency Event shall implement its Contingency Reserve plan so that the Balancing authority or Reserve Sharing Group can demonstrate that, within the Contingency Event Recovery Period:</p> <ul style="list-style-type: none"> <li>• The Balancing Authority or Reserve Sharing Group returned its ACE to: <ul style="list-style-type: none"> <li>○ Zero, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery</li> </ul> </li> </ul>

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<p>For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.</p> <p>R4.2. The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance. Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.</p>		<p>Period, if its ACE just prior to the Reportable Contingency Event was positive or equal to zero, or</p> <ul style="list-style-type: none"> <li>○ Its Pre-Reportable Contingency Event ACE Value, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery Period, if its ACE just prior to the Reportable Contingency Event was negative.</li> <li>● Provided, however, that in either of the foregoing cases, if the Reportable contingency Event (individually or when combined with any previous Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods) exceeded the Balancing Authority’s or Reserve Sharing Group’s Most Severe Single contingency (MSSC), then the Balancing Authority or Reserve Sharing Group need only demonstrate ACE recovery of at least equal to its MSSC, less the sum of the magnitudes of all Previous Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods.</li> </ul> <p>BAL-002-0 Requirement R4.2 to “Contingency Event Recovery</p>

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		<p>Period” and “Contingency Event Restoration Period” definitions.</p> <p><b>Contingency Event Recovery Period</b></p> <p>A period not exceeding 15 minutes following the start of the Balancing Contingency Event. The start of the Balancing Contingency Event is the point in time where the first change in MW is observed due to the event.</p> <p><b>Contingency Reserve Restoration Period:</b></p> <p>A period not exceeding 90 minutes following the end of the Contingency Event Recovery Period, during which the amount of Contingency Reserve deployed to recover from a Balancing Contingency Event is to be restored. A period not exceeding 15 minutes following the start of the Balancing Contingency Event.</p>
<p>R5. Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more</p>	<p>This Requirement has been moved into BAL-002-2 Requirement R1 and BAL-012-0 Requirement R4</p>	<p>BAL-002-2</p> <p><b>Requirement R1</b></p> <p>Each Balancing Authority or Reserve Sharing Group experiencing a Reportable Contingency Event shall implement its Contingency Reserve plan so that the Balancing authority or Reserve Sharing Group can demonstrate that, within the Contingency Event</p>

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<p>other group members. (If a group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:</p> <p>R5.1. The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS. To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.</p> <p>or</p>		<p>Recovery Period:</p> <ul style="list-style-type: none"> <li>• The Balancing Authority or Reserve Sharing Group returned its ACE to:               <ul style="list-style-type: none"> <li>○ Zero, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery Period, if its ACE just prior to the Reportable Contingency Event was positive or equal to zero, or</li> <li>○ Its Pre-Reportable Contingency Event ACE Value, less the sum of the magnitudes of all subsequent Balancing Contingency Events that occur within the Contingency Event Recovery Period, if its ACE just prior to the Reportable Contingency Event was negative.</li> </ul> </li> <li>• Provided, however, that in either of the foregoing cases, if the Reportable contingency Event (individually or when combined with any previous Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods) exceeded the Balancing Authority’s or Reserve Sharing Group’s Most Severe Single contingency (MSSC), then the Balancing Authority or</li> </ul>

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<p>R5.2. The Reserve Sharing Group reviews each member’s ACE in response to the activation of reserves. To be in compliance, a member’s ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.</p>		<p>Reserve Sharing Group need only demonstrate ACE recovery of at least equal to its MSSC, less the sum of the magnitudes of all Previous Balancing Contingency Events that have not completed their Contingency Reserve Restoration Periods.</p> <p>BAL-012-0</p> <p>Requirement R4</p> <p>R4. Each Reserve Sharing Group or Frequency Response Sharing Group shall have a signed agreement among the participating Balancing Authorities addressing each of the following:</p> <ul style="list-style-type: none"> <li>4.1. The minimum reserve requirement for the group</li> <li>4.2. Allocation of reserves among members</li> <li>4.3. The procedure for activating reserves</li> <li>4.4. Reporting and record keeping processes</li> </ul>
<p>R6. A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within</p>	<p>This Requirement has been moved into the BAL-002-2 “Contingency Event</p>	<p>BAL-002-2</p> <p>Contingency Reserve Restoration Period:</p> <p>A period not exceeding 90 minutes following the end of</p>

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<p>the Contingency Reserve Restoration Period for its Interconnection.</p> <p>R6.1. The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.</p> <p>R6.2. The default Contingency Reserve Restoration Period is 90 minutes.</p>	<p>Restoration Period” definition</p>	<p>the Contingency Event Recovery Period, during which the amount of Contingency Reserve deployed to recover from a Balancing Contingency Event is to be restored. A period not exceeding 15 minutes following the start of the Balancing Contingency Event.</p>