

## Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

### Description of Current Draft

| Completed Actions   | Date                          |
|---|-------------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | June 15, 2022                 |
| SAR posted for comment  | June 22, 2022 – July 21, 2022 |

| Anticipated Actions                                      | Date                              |
|--|-----------------------------------|
| 45-day formal comment period with initial ballot         | January 25, 2024 – March 11, 2024 |
| Formal or informal comment period with additional ballot | May 2024                          |
| Final ballot   | August 2024                       |
| Board adoption   | December 2024                     |

## New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

### Term(s):

**Energy Reliability Assessment (ERA)** - Evaluation of the resources that supply electrical energy and ancillary services for the Bulk Power System to reliably meet the expected demand during the associated time period. ERAs account for the impact of actions that occur sequentially throughout the assessment period, including the depletion and replenishment of finite upstream resources (e.g., fuel).

## A. Introduction

1. **Title:** Energy Reliability Assessments
2. **Number:** BAL-007-1
3. **Purpose:** To assess and mitigate the risks of energy emergencies in the operations planning time horizon by analyzing the expected resource mix availability and the expected availability of fuel during the study period.
4. **Applicability:**
  - 4.1. **Functional Entities:**
    - 4.1.1. Balancing Authority
    - 4.1.2. Reliability Coordinator
5. **Effective Date:** See Implementation Plan
6. **Background:** See Project 2022-03 [project page](#)

## B. Requirements and Measures

- R1.** Each Balancing Authority shall document and maintain a Reliability Coordinator-reviewed Energy Reliability Assessment (ERA) process, which shall be reviewed at least annually and updated, if necessary. The ERA process document shall: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identify the frequency and duration of the ERAs with a corresponding rationale for each following time horizons:
    - 1.1.1.** Near-term; and
      - 1.1.1.1.** The end of the near-term assessment period shall be greater than five days and less than six weeks from the start of the assessment.
      - 1.1.1.2.** Each subsequent near-term assessment period shall partially overlap the previous near-term assessment period.
    - 1.1.2.** Seasonal;
      - 1.1.2.1.** Seasonal ERAs shall be performed for a minimum of two seasons that is representative of seasonal risks for operations.
      - 1.1.2.2.** Document a deadline for completing each seasonal ERA based on mitigation options for each seasonal ERA.
  - 1.2.** Include a process for the development of the base case that includes, but is not limited to, the following up-to-date data:
    - 1.2.1.** Time series demand;
    - 1.2.2.** Demand response, as appropriate;
    - 1.2.3.** Generator capability considering known constraints of:
      - 1.2.3.1.** Availability, including planned outages, and flexibility;
      - 1.2.3.2.** Fuel supply and inventory concerns;
      - 1.2.3.3.** Fuel switching capabilities; and
      - 1.2.3.4.** Environmental constraints.
    - 1.2.4.** Documented energy transfer assumptions; and
    - 1.2.5.** Energy storage capability.
  - 1.3.** Include a documented rationale for the base case elements chosen in Requirement R1.2.
- M1.** Each Balancing Authority shall have evidence of a process document and maintained in accordance with Requirement R1.

- R2.** Each Balancing Authority shall develop, document, and maintain a set of Reliability Coordinator-reviewed ERA scenarios for both the near-term and seasonal time horizons, as follows: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 2.1.** Each set of ERA scenarios shall include:
- 2.1.1.** Projected system load for the interval being studied with system normal (no contingency) conditions;
  - 2.1.2.** Projected system load for the interval being studied with an energy contingency as described in Attachment 1;
  - 2.1.3.** Projected system load for the interval being studied with fuel supply contingency as described in Attachment 1;
  - 2.1.4.** High load for the interval being studied with system normal (no contingency) conditions;
  - 2.1.5.** High load for the interval being studied with energy contingency as described in Attachment 1;
  - 2.1.6.** High load for the interval being studied with fuel supply contingency as described in Attachment 1; and
  - 2.1.7.** If appropriate for the seasonal time horizon, a scenario(s) with a likely event of occurring within the interval being studied that may include seasonally appropriate historical events, generation specific fuel or energy contingency scenarios, and weather events that are projected to occur if appropriate for the seasonal time horizon only.
- 2.2.** The Balancing Authority shall document the rationale for the scenarios identified in Requirement R2.1.
- M2.** Each Balancing Authority shall have evidence that scenarios were developed and maintained along with a documented rationale and criteria in accordance with Requirement R2. Such evidence could include, but is not limited to, e-mail records or review or revision history to indicate that the scenarios, rationale, and criteria have been documented.
- R3.** Each Balancing Authority shall develop, maintain, and document one or more Operating Plan(s) to mitigate unacceptable risk(s) associated with ERA scenario(s) with a likely event of occurring. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M3.** Each Balancing Authority shall have evidence that it developed, maintained, and documented its Operating Plan(s) in accordance with Requirement R3. Such evidence could include, but is not limited to, a review or revision history to indicate that the Operating Plan(s) have been developed, maintained, and documented.
- R4.** The Balancing Authority shall submit the following information to its Reliability Coordinator for review on a mutually agreed-upon schedule: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
- 4.1.** The ERA process;

- 4.2. The ERA scenarios; and
- 4.3. Operating Plan(s).
- M4.** Each Balancing Authority shall have evidence that it submitted the information to its Reliability Coordinator on a mutually agreed upon schedule in accordance with Requirement R4. Such evidence could include, but is not limited to, e-mail records.
- R5.** Within 60 calendar days of receipt of the information identified in Requirement R4, the Reliability Coordinator shall: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
  - 5.1.** Review each submittal for coordination with other Balancing Authorities' ERA information to avoid risks to Wide Area reliability; and
  - 5.2.** Notify each Balancing Authority of the results of its review, and if the need for revisions is identified, to address any reliability risks.
- M5.** Each Reliability Coordinator shall have evidence that it reviewed each submittal with other Balancing Authorities' ERA information to avoid risks to Wide Area reliability and notify each Balancing Authority of the results of the review in accordance with Requirement R5. Such evidence could include, but is not limited to, e-mail records.
- R6.** Within 60 calendar days of receipt of the Reliability Coordinator's notice of the results of the review conducted under Requirement R5, each Balancing Authority shall address any reliability risks identified by its Reliability Coordinator and resubmit the updated information required in Requirement R4 to its Reliability Coordinator, unless otherwise specified by its Reliability Coordinator. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M6.** Each Balancing Authority shall have evidence that it addressed any reliability risks identified by its Reliability Coordinator within 30 calendar days or as specified by its Reliability Coordinator in accordance with Requirement R6. Such evidence could include, but is not limited to, e-mail records.
- R7.** Each Balancing Authority shall perform ERAs according to the process documented in Requirement R1 using the scenarios documented in Requirement R2. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- M7.** Each Balancing Authority shall have evidence that it performed the ERA in accordance with Requirement R7. Such evidence could include, but is not limited to, dated ERA results.
- R8.** Each Balancing Authority shall determine energy reserve margins calculated for each time step of an ERA scenario according to the following: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
  - 8.1.** For the ERA scenarios identified in Requirement R2.1.1 and Requirement R2.1.4, the energy reserve margin is at least 150% of the largest N-1 Contingency within

each Balancing Authority's footprint plus at least 2% of the load forecast for the near-term ERA or at least 5% of the load forecast for the seasonal ERA;

- 8.2.** For the ERA scenarios identified in Requirement R2.1.2 and Requirement R2.1.5, the energy reserve margin is at least the larger of 150% of the largest N-1 Contingency within each Balancing Authority's footprint or 2% of the load forecast for the near-term ERA or at least 5% of the load forecast for the seasonal ERA; and
- 8.3.** For the ERA scenarios identified in Requirements R2.1.3, Requirement R2.1.6, and Requirement R2.1.7, the energy reserve margin is at least 125% of the largest N-1 Contingency within each Balancing Authority's footprint.
- M8.** Each Balancing Authority shall have evidence that it determined an energy reserve margin in accordance with Requirement R8.
- R9.** Each Balancing Authority shall compare results of the ERA to the energy reserve margins in Requirement R8 and, if the energy reserve margins are not met, the Balancing Authority shall implement an Operating Plan(s) developed in Requirement R3. *[Violation Risk Factor: High] [Time Horizon: Operations Planning]*
- M9.** Each Balancing Authority shall have evidence that it implemented an Operating Plan(s) when the required reserve margin was not met in accordance with Requirement R9.
- R10.** Each Balancing Authority shall provide the results of the ERA and the comparison of results from Requirement R9 to its Reliability Coordinator under the following conditions: *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*
  - 10.1.** The ERA comparison to the energy reserve margin requires implementation of an Operating Plan(s) to mitigate risk within 24 hours for the near-term time horizon or;
  - 10.2.** The ERA performed is a seasonal ERA within 14 calendar days or;
  - 10.3.** The Reliability Coordinator has requested the results.
- M10.** Each Balancing Authority shall have evidence that it provided the results of the ERA to its Reliability Coordinator within the criteria in accordance with Requirement R10. Such evidence could include, but is not limited to, e-mail records.
- R11.** Each Reliability Coordinator that receives results of a near-term ERA and the comparison of results from Requirement R9 pursuant to Requirement R10 Part 10.1 from a Balancing Authority within its Reliability Coordinator Area shall notify, within 24 hours from the time of receiving notification, other Balancing Authorities and Transmission Operators in its Reliability Coordinator Area, and neighboring Reliability Coordinators of the implementation of an Operating Plan(s). *[Violation Risk Factor: Low] [Time Horizon: Operations Planning]*

**M11.** Each Reliability Coordinator will have and provide upon request, evidence that could include, but is not limited to, operator logs, voice recordings or e-mail records that will be used to determine if the Reliability Coordinator communicated, in accordance with Requirement R11, within 24 hours from the time of receiving results of a near-term ERA and the comparison of results from Requirement R9 pursuant to Requirement R10 Part 10.1 from a Balancing Authority, other Balancing Authorities and Transmission Operators in its Reliability Coordinator area, and neighboring Reliability Coordinators of the implementation of an Operating Plan(s).

## C. Compliance

### 1. Compliance Monitoring Process

**1.1. Compliance Enforcement Authority:** “Compliance Enforcement Authority” means NERC or the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

**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 applicable entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

- The Balancing Authority and Reliability Coordinator shall keep data or evidence to show compliance with applicable requirements for six months for near-term time horizon and 18 months for the seasonal time horizon or since the last audit.

**1.3. Compliance Monitoring and Enforcement Program:** As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” 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.



## Violation Severity Levels

| R #       | Violation Severity Levels |  |   |  |
|-----------|---------------------------|--|---|--|
|           | Lower VSL                 | Moderate VSL   | High VSL  | Severe VSL   |
| <b>R1</b> | N/A                       | <p>The Balancing Authority documented a Reliability Coordinator-reviewed Energy Reliability Assessment process for the near-term time horizon but failed to maintain it at least annually.</p> <p>OR</p> <p>The Balancing Authority documented a Reliability Coordinator-reviewed Energy Reliability Assessment process for the seasonal time horizon but failed to maintain it at least annually.</p> | <p>The Balancing Authority documented and maintained a Reliability Coordinator-reviewed Energy Reliability Assessment process for the near-term time horizon and seasonal time horizon but failed to include one of the required base case elements under Requirement R1 Part 1.2 or supporting rationale(s) under Requirement R1 Part 1.3 for the near-term time horizon or seasonal time horizon.</p> | <p>The Balancing Authority documented and maintained a Reliability Coordinator-reviewed Energy Reliability Assessment process for the near-term time horizon and seasonal time horizon but failed to include two or more of the required base case elements under Requirement R1 Part 1.2 or supporting rationale(s) under Requirement R1 Part 1.3 for the near-term time horizon or seasonal time horizon.</p> <p>OR</p> <p>The Balancing Authority failed to document a Reliability Coordinator-reviewed Energy Reliability Assessment process for the near-term time horizon.</p> <p>OR</p> <p>The Balancing Authority failed to document a</p> |

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|-----------|-----|--|--|--|
|           |     |  |  | Reliability Coordinator-reviewed Energy Reliability Assessment process for the seasonal time horizon.  |
| <b>R2</b> | N/A | <p>The Balancing Authority developed and documented Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the near-term time horizon but failed to maintain them.</p> <p>OR</p> <p>The Balancing Authority developed and documented Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the seasonal time horizon but failed to maintain them.</p> | <p>The Balancing Authority developed and documented Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the near-term time horizon and seasonal time horizons but failed to include one of the scenarios of Requirement R2 Part 2.1 or supporting rationales under Requirement R2 Part 2.2 for the near-term time horizon or seasonal time horizon.</p> | <p>The Balancing Authority developed and documented Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the near-term time horizon and seasonal time horizons but failed to include two or more of the scenarios of Requirement R2 Part 2.1 or supporting rationales under Requirement R2 Part 2.2 for the near-term time horizon or seasonal time horizon.</p> <p>OR</p> <p>The Balancing Authority failed to develop or document Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the near-term time horizon.</p> <p>OR</p> <p>The Balancing Authority failed to develop or</p> |

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|           |     |     |   | document Reliability Coordinator-reviewed Energy Reliability Assessment scenarios for the seasonal time horizon.  |
| <b>R3</b> | N/A | N/A | N/A   | The Balancing Authority failed to develop an Operating Plan(s) to mitigate risk identified in the Energy Reliability Assessments.   |
| <b>R4</b> | N/A | N/A | The Balancing Authority submitted information that contained the Energy Reliability Assessment process, the Energy Reliability Assessment scenarios, and Operating Plan(s) but failed to submit within the mutually agreed-upon schedule. | The Balancing Authority failed to submit information that contained the Energy Reliability Assessment process, the Energy Reliability Assessment scenarios, and Operating Plan(s).                |
| <b>R5</b> | N/A | N/A | The Reliability Coordinator reviewed each submittal for coordination with other Balancing Authorities' Energy Reliability Assessment information to avoid risks to Wide Area reliability but failed to notify                             | The Reliability Coordinator failed to review each submittal for coordination with other Balancing Authorities' Energy Reliability Assessment information to avoid risks to Wide Area reliability. |

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|           |     |     | each Balancing Authority within 60 calendar days.   |   |
| <b>R6</b> | N/A | N/A | The Balancing Authority addressed any reliability risks identified by its Reliability Coordinator and resubmitted the updated information required in Requirement R2 to its Reliability Coordinator but failed to resubmit the updated information within 60 calendar days of receipt or as specified by its Reliability Coordinator. | The Balancing Authority failed to address any reliability risks identified by its Reliability Coordinator.<br><br>OR<br>The Balancing Authority failed to resubmit the updated information required in Requirement R2 to its Reliability Coordinator. |
| <b>R7</b> | N/A | N/A | N/A   | The Balancing Authority failed to perform Energy Reliability Assessments in accordance with its process documented in Requirement R1 using the scenarios documented in Requirement R2.  |
| <b>R8</b> | N/A | N/A | N/A   | The Balancing Authority failed to determine the energy reserve margins in accordance with Requirements R8 Parts 8.1 through 8.3.  |

|            |  |   |   |  |
|------------|--|---|---|--|
| <b>R9</b>  | N/A  | N/A   | N/A   | <p>The Balancing Authority compared results of the Energy Reliability Assessment to the energy reserve margins in Requirement R8 but failed to implement an Operating Plan(s) developed in Requirement R3 upon determining the energy reserve margins were not met.</p> <p>OR</p> <p>The Balancing Authority failed to compare results of the Energy Reliability Assessment to the energy reserve margins in Requirement R8.</p> |
| <b>R10</b> | N/A  | N/A   | N/A   | <p>The Balancing Authority failed to provide the results of the Energy Reliability Assessment to its Reliability Coordinator when any of the conditions listed in Requirement R10.1 – R10.3 are met.</p>   |
| <b>R11</b> | The Reliability Coordinator received results of an Energy Reliability Assessment and comparison of results from Requirement R9 | The Reliability Coordinator received results of an Energy Reliability Assessment and comparison of results from | The Reliability Coordinator received results of an Energy Reliability Assessment and comparison | The Reliability Coordinator received results of an Energy Reliability Assessment and   |

|  |   |  |  |   |
|--|---|--|--|---|
|  | pursuant to Requirement R10 Part 10.1 but notified other Balancing Authorities and Transmission Operators in its Reliability Coordinator Area and neighboring Reliability Coordinators between 24-25 hours of receiving notification. | Requirement R9 pursuant to Requirement R10 Part 10.1 but notified other Balancing Authorities and Transmission Operators in its Reliability Coordinator Area and neighboring Reliability Coordinators between 25-26 hours of receiving notification. | of results from Requirement R9 pursuant to Requirement R10 Part 10.1 but notified other Balancing Authorities and Transmission Operators in its Reliability Coordinator Area and neighboring Reliability Coordinators between 26-27 hours of receiving notification. | comparison of results from Requirement R9 pursuant to Requirement R10 Part 10.1 but notified other Balancing Authorities and Transmission Operators in its Reliability Coordinator Area and neighboring Reliability Coordinators 27 hours or more of receiving notification.<br><br>OR<br><br>The Reliability Coordinator received results of an Energy Reliability Assessment and comparison of results from Requirement R9 pursuant to Requirement R10 Part 10.1 but failed to notify one or more Balancing Authorities or Transmission Operators in its Reliability Coordinator Area, or one or more neighboring Reliability Coordinators. |
|--|---|--|--|---|

## **D. Regional Variances**

None.

## **E. Associated Documents**

[Implementation Plan](#)

## Version History

| Version   | Date | Action                         | Change Tracking |
|-----------|------|--------------------------------|-----------------|
| Version 1 | TBD  | Drafted by Project 2022-03 SDT |                 |
|           |      |                                |                 |

## BAL-007-1 Attachment 1

### **Energy contingency**

The largest energy contingency is the loss of the largest energy supply (in MWh across the study duration) through either a generator or transmission outage caused by a single Contingency. The energy lost due to the largest energy contingency may not persist through the entire assessment period but assumes a likely duration as defined by the Balancing Authority for the Contingency.

The resource(s) can be identified through the normal load and high load scenarios identified in Requirements R2.1.1 and R2.1.4. The energy contingency resource(s) are the resource(s) that provides the most MWhs across the term of the study period and an N-1 Contingency can make that resource(s) unavailable.

### **Fuel contingency**

The largest fuel contingency is the loss of fuel supply that causes the largest reduction in electrical energy supply (in MWh across the study duration). The fuel contingency does not have to occur for the entire assessment period but assumes a likely duration as defined by the Balancing Authority for the fuel contingency. The fuel sources to be considered should include pipelines, suppliers of consumable fuels, and variable sources like solar and wind energy.

The resource(s) can be identified through the normal load and high load scenarios identified in Requirements R2.1.1 and R2.1.4. The fuel contingency resource(s) are the resource(s) that provides the most MWhs across the term of the study period and a fuel contingency can make that resource(s) unavailable.

Examples of fuel contingencies include:

1. Loss of pipeline or gas compressor that limits output of or causes outages of multiple gas-fired generators.
2. Extended cloudy period that causes multiple days of low solar output.
3. Low water reservoirs that limit energy production from hydro facilities.
4. A single point of failure within a fuel (e.g., coal, diesel, hydrogen) delivery network.