

A. Introduction

1. **Title:** Unexpected Inverter-Based Resource Event Mitigation
2. **Number:** PRC-030-1
3. **Purpose:** Identify, analyze, and mitigate unexpected Inverter-Based Resource (IBR) change of power output.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1. Generator Owner
 - 4.2. **Facilities:**
 - 4.2.1. Bulk Electric System (BES) Inverter-Based Resources; and
 - 4.2.2. Non-BES Inverter-Based Resources that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV.
5. **Effective Date:** See Implementation Plan for PRC-030-1

B. Requirements and Measures

- R1.** Each applicable Generator Owner shall implement a documented process to identify any complete facility loss of output, or changes in Real Power output that are at least 20 MW and at least 10% of the plant's gross nameplate rating, occurring within a 4 second period. Changes in Real Power for the following are excluded: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- Changes associated with intermittent primary energy source availability, created by changes such as variation in wind speed and solar irradiance;
 - Resource dispatch, resource ramping, planned outages, or planned resource testing;
 - A Transmission or collection system loss that, by configuration, disconnects the Inverter-Based Resource generator; or
 - Real Power reduction due solely to a Protection System Misoperations being analyzed and corrected under PRC-004 Reliability Standard.
- M1.** Each applicable Generator Owner shall have evidence which includes but is not limited to: (1) the documented process for detecting changes in output as described in Requirement R1, (2) evidence to demonstrate implementation of its documented process, (3) actual data recordings, and (4) identification of gross nameplate rating.
- R2.** Each applicable Generator Owner, within 90 calendar days of a Real Power change event pursuant to Requirement R1 or following a request from its associated Reliability Coordinator, Balancing Authority, or Transmission Operator that identified a Disturbance and a change in the Inverter-Based Resource(s) Real Power output, shall: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 2.1.** Analyze its Inverter-Based Resource facility performance during the event, including:
- 2.1.1.** Determine the root cause(s) of change(s) in Real Power output;
 - 2.1.2.** Document the facility's Ride-through performance including Reactive Power response during the event;
 - 2.1.3.** Assess any performance issues identified and if corrective actions are needed; and
 - 2.1.4.** Determine the applicability of the root cause(s) to the Generator Owner's other Inverter-Based Resource facilities.
- 2.2.** Upon request, provide the analysis results to the requesting associated Reliability Coordinator, Balancing Authority, or Transmission Operator.
- M2.** Each applicable Generator Owner shall have dated documentation of the required analysis developed in accordance with Requirement R2. Evidence may include, but is not limited to: (1) an analysis report, (2) actual data recordings or derivations, (3) documents describing the device specification and device configuration or settings, and (4) plant configuration.

- R3.** If performance issues and a need for corrective actions were identified in Requirement R2 Part 2.1.3, each applicable Generator Owner shall, within 60 calendar days of completing the analysis in Requirement R2, develop one of the following and provide it to the associated Reliability Coordinator, Balancing Authority, and Transmission Operator: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- A Corrective Action Plan (CAP) for the identified Inverter-Based Resource(s), including other applicable facilities owned by the Generator Owner as identified in Requirement R2 Part 2.1.3; or
 - A technical justification that addresses why corrective actions will not be implemented.
- M3.** Each applicable Generator Owner shall have dated evidence (electronic or hardcopy format) that demonstrates it developed a CAP or a technical justification, and evidence of transmittal to the Reliability Coordinator, Balancing Authority, and Transmission Operator in accordance with Requirement R3.
- R4.** Each applicable Generator Owner shall, for each of its Corrective Action Plans developed pursuant to Requirement R3: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning, Long-term Planning]*
- 4.1.** Implement the CAP;
 - 4.2.** Update the CAP if actions or timetables change; and
 - 4.3.** Notify each associated Reliability Coordinator if CAP actions or timetables change and when the CAP is completed.
- M4.** Acceptable evidence may include, but is not limited to, dated documentation such as CAPs, project or work management program records, settings sheets, work orders, maintenance records, communication with equipment manufacturers, and communication with each associated Reliability Coordinator that documents the implementation, updating, or completion of a CAP in accordance with Requirement R3.

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 Generator Owner shall keep data or evidence of Requirement R1, and R2, Measure M1, and M2 for 36 calendar months following the completion of each Requirement.
- The Generator Owner shall retain evidence of Requirement R3, Measure M3, including any supporting analysis per Requirements R2 and R3, for a minimum of 36 calendar months following completion of each CAP, completion of each evaluation, and completion of each declaration.
- The Generator Owner shall retain evidence of Requirement R4, Measure M4 for a minimum of 36 calendar months following completion of each CAP.

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 |
| R1. | N/A | N/A | N/A | The responsible entity failed to implement a documented process to identify changes in Real Power output in accordance with Requirement R1. |
| R2. | The responsible entity performed an analysis in accordance with Requirement R2, but in more than 90 calendar days but less than 120 calendar days of an event or receiving a request. | The responsible entity performed an analysis in accordance with Requirement R2, but in 120 or more calendar days but less than 150 calendar days of an event or receiving a request. | <p>The responsible entity performed an analysis in accordance with Requirement R2, but in 150 or more calendar days but less than 180 calendar days of an event or receiving a request.</p> <p>OR</p> <p>The responsible entity performed the analysis in Requirement R2 but failed to address Part 2.1.1 or Part 2.1.4.</p> <p>OR</p> <p>The responsible entity failed to provide the analysis results from the requesting entity in accordance with Requirement R2, Part 2.2.</p> | <p>The responsible entity developed an analysis in accordance with Requirement R2, but in 180 calendar days or more of an event or receiving a request.</p> <p>OR</p> <p>The responsible entity performed the analysis in Requirement R2 but failed to address Part 2.1.1 and Part 2.1.4.</p> <p>OR</p> <p>The responsible entity failed to document the facility's Ride-through performance in accordance with Requirement R2, Part 2.1.2</p> <p>OR</p> <p>The responsible entity failed to determine the applicability of other Inverter-Based Resource</p> |

| R # | Violation Severity Levels | | | |
|------------|--|---|--|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| | | | | facilities in accordance with Requirement R2, Part 2.1.4. |
| R3. | The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented within 60 calendar days, but provided it within 90 calendar days. | The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented within 90 calendar days, but provided it within 120 calendar days. | <p>The responsible entity failed to develop a CAP or provide a technical justification why no corrective actions will be implemented within 120 calendar days, but provided it within 150 calendar days</p> <p>OR</p> <p>The developed CAP did not include corrective actions for other facilities owned by the Generator Owners as identified in Requirement R2 Part 2.1.3, if necessary.</p> <p>OR</p> <p>The developed CAP or technical justification was not provided to the associated Reliability Coordinator, Balancing Authority, and Transmission Operator.</p> | The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented, within 150 calendar days. |
| R4. | The responsible entity implemented, but failed to update a CAP, when actions or timetables changed, in accordance with Requirement R4. | N/A | N/A | The responsible entity failed to implement a CAP in accordance with Requirement R4. |

D. Regional Variances

None.

E. Associated Documents

Implementation Plan.

Version History

| Version | Date | Action | Change Tracking |
|---------|-----------------|-----------------------------------|-----------------|
| 1 | October 8, 2024 | Adopted by NERC Board of Trustees | |