

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

PRC-030-1 is posted for a 34-day formal comment period with additional ballot.

Completed Actions	Date
Standards Committee approved Standard Authorization Request (SAR) for posting	January 25, 2023
SAR posted for comment	February 22, 2023 – March 23, 2023
25-day formal or informal comment period with ballot	March 25, 2024 – April 18, 2024

Anticipated Actions	Date
34-day formal or informal comment period with additional ballot	June 7, 2024 – July 10, 2024
05-day final ballot	TBD
Board adoption	August 14 - 15, 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):

None

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 that owns equipment as identified in section 4.2
 - 4.2. **Facilities:**
 - 4.2.1. Bulk Power System (BPS)-BES inverter-based resources¹ (IBR)
5. **Effective Date:** See Implementation Plan for PRC-030-1

¹ For the purpose of this standard, the main power transformer is the power transformer that steps up voltage from the collection system voltage to the nominal transmission/interconnecting system voltage for inverter-based resources. In case of offshore wind plants connecting via a dedicated VSC-HVDC, the main power transformer is the onshore main power transformer.

B. Requirements and Measures

- R1.** Each applicable Generator Owner shall ~~have~~ implement a documented process to identify ~~unexpected~~ changes⁴ in active power output ~~occurring within a two-second period and is that are~~ the greater of ~~either 2010%~~ of the plant's gross nameplate rating, ~~or 20 MVAMW, and occurring during a period that is no longer than 4 seconds.~~ Changes in active power for the following are excluded: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- Changes associated with intermittent primary energy source² availability;
 - Resource dispatch, resource ramping, planned outages, or planned resource testing; or
 - Loss of Transmission Provider's interconnection facilities.
- M1.** Each applicable Generator Owner shall have evidence which ~~may~~ includes but is not limited to: (1) at the documented process for detecting ~~unexpected~~ changes in output as described in Requirement R1, (2) evidence to demonstrate implementation of its documented process, (3) actual data recordings, and (34) identification of gross nameplate rating.

~~**R2.** Each applicable Generator Owner shall implement its process established in Requirement R1 to identify unexpected changes in power output. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*~~

~~**M2.** Acceptable evidence of implementation may include, but is not limited to, dated electronic or hard copy documentation to demonstrate that the applicable Generator Owner implemented its process established in Requirement R1.~~

~~**R3.** Each applicable Generator Owner shall provide data when requested from its Balancing Authority, Reliability Coordinator, or Transmission Operator regarding IBR responses during an identified system level event within 30 calendar days of the receipt of the request. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*~~

~~Each applicable Generator Owner shall have evidence as specified in Requirement R3 which may include, but is not limited to, dated documentation (electronic or hardcopy format): emails, facsimiles, or transmittals.~~

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⁴ Unexpected changes in power output includes any change of generation that is not attributed to factors such as weather patterns, change of wind, change in irradiance, curtailment, ramping, planned outage, planned testing, or the loss of a Transmission Line connecting the IBR generators.

² Examples include changes in wind, solar irradiance.

~~R4.R2.~~ Each applicable Generator Owner ~~shall analyze its IBRs performance,~~ within ~~4590~~ calendar days of ~~either the event identified identifying an active power change event pursuant to Requirement R12 or following receipt of a request pursuant to Requirement R3. The analysis shall include all of the following from its applicable Reliability Coordinator, Balancing Authority, or Transmission Operator that identified a Disturbance and a change in the inverter-based resource(s) active power output, shall:~~ [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

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~~2.1.~~ Analyze its IBR facility performance during the event, including:

~~4.1.0.2.1.1.~~ ~~The~~ Determination of the root cause(s) of ~~unexpected~~ change(s) in active power output;

~~4.2.~~ The applicability to its other IBR facilities that could be affected by the same cause of ~~unexpected change(s) in power output;~~ and

~~2.1.2.~~ Documentation of the facility's Ride-through performance including reactive power response during the event;

~~2.1.3.~~ Assessment of any performance issues identified and if corrective actions are needed; and

~~2.1.4.~~ Determination of the susceptibility of its other inverter-based resource facilities to similar events.

~~4.3.2.2.~~ ~~Notification to each~~ Upon request, provide the analysis results to the requesting applicable Balancing Authority, Reliability Coordinator, Balancing Authority, or Transmission Operator ~~of the analysis results.~~

~~M4.M2.~~ Each applicable Generator Owner shall have dated ~~analysis~~ documentation, ~~of the required analysis~~ developed in accordance with ~~Requirements R4~~ 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.

~~R5.R3.~~ ~~Each~~ If performance issues and corrective actions were identified in Requirement R2 Part 2.1.3, ~~each~~ applicable Generator Owner shall, within ~~4560~~ calendar days of completing the analysis in Requirement ~~R4R2~~, develop one of the following and provide it to ~~each~~ the applicable Reliability Coordinator, Balancing Authority, and Transmission Operator: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

~~5.1.~~ A Corrective Action Plan (CAP) for the identified ~~Inverter-Based Resource~~ inverter-based resource(s), including other applicable facilities owned by the Generator Owner as identified in Requirement ~~R4R2~~ Part ~~4.22.1.3~~; or

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~~5.2.~~ A technical justification that addresses why corrective actions will not be applied nor implemented.

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~~M5-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 ~~R5R3~~.

~~R2-R4.~~ Each applicable Generator Owner shall, for each of its Corrective Action Plans developed pursuant to Requirement ~~R5R3~~: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning, Long-term Planning*]

~~6.1.4.1.~~ Implement the CAP;

~~6.2.4.2.~~ Update the CAP if actions or timetables change; and

~~6.3.4.3.~~ Notify each applicable Reliability Coordinator if CAP actions or timetables change and when the CAP is completed.

~~M6-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 applicable Reliability Coordinator that documents the implementation, updating, or completion of a CAP in accordance with Requirement ~~R5R3~~.

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, ~~and R3~~, Measure M1, and M2, ~~and M3~~ for 1236 calendar months following the completion of each Requirement.
- The Generator Owner shall retain evidence of Requirement ~~R4~~R3, Measure ~~M4~~M3, including any supporting analysis per Requirements R2 and R3, for a minimum of 1236 calendar months following completion of each CAP, completion of each evaluation, and completion of each declaration.
- The Generator Owner shall retain evidence of Requirement ~~R6~~R4, Measure ~~M6~~M4 for a minimum of 1236 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 have implement a documented process to identify unexpected changes in active power output in accordance with Requirement R1.
R2.	N/A	N/A	N/A	The responsible entity failed to implement the process established in accordance with Requirement R1.
R3.	N/A	N/A	N/A	The responsible entity failed to provide data when requested from its Balancing Authority, Reliability Coordinator, or Transmission Operator.
R4R2.	The responsible entity performed an analysis in accordance with Requirement R4R2 , but in more than 4590 60120 calendar days but less than 60120 calendar days of first identifying an event or receiving a request.	The responsible entity performed an analysis in accordance with Requirement R4R2 , but in 60120 or more calendar days but less than 90150 calendar days of first identifying an event or receiving a request.	The responsible entity performed an analysis in accordance with Requirement R4R2 , but in 90150 or more calendar days but less than 120180 calendar days of first identifying an event or receiving a request. OR	The responsible entity developed an evaluation analysis in accordance with Requirement R4R2 , but in 120180 calendar days or more of first identifying an event or receiving a request. OR

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R #	Violation Severity Levels			
	Lower VSL	Moderate VSL	High VSL	Severe VSL
			<p>The responsible entity performed the analysis in Requirement R4,R2 but failed to address one of the Parts 4.1 through Parts 4.3.Part 2.1.1 or Part 2.1.4.</p> <p><u>OR</u></p> <p><u>The responsible entity failed to provide the analysis results from the requesting entity in accordance with Requirement R2, Part 2.2.</u></p>	<p>The responsible entity performed the analysis in Requirement R4,R2 but failed to address two or more of the Parts 4.1 through Parts 4.3Part 2.1.1 and Part 2.1.4.</p> <p><u>OR</u></p> <p><u>The responsible entity failed to document the facility's ride-through performance in accordance with Requirement R2, Part 2.1.2</u></p> <p><u>OR</u></p> <p>The responsible entity failed to develop an <u>evaluation</u> determine the <u>susceptibility of other inverter-based resource facilities</u> in accordance with Requirement R4R2, Part 2.1.3.</p>
R5 <u>R3.</u>	<p>The responsible entity failed to develop a CAP or provide a technical justification <u>addressing</u> why no corrective actions will be implemented within 45<u>60</u> days, but provided <u>it</u> within 60<u>90</u> days.</p>	<p>The responsible entity failed to develop a CAP or provide a technical justification <u>addressing</u> why no corrective actions will be implemented within 60<u>90</u> days, but provided <u>it</u> within 90<u>120</u> days.</p>	<p>The responsible entity failed to develop a CAP or provide a technical justification why no corrective actions will be implemented within 90<u>120</u> days, but provided <u>it</u> within 120<u>150</u> days</p>	<p>The responsible entity developed<u>failed to develop</u> a CAP or provide a technical justification <u>addressing</u> why no corrective actions will be implemented, but in 120<u>within 150</u> calendar days or more.</p>

R #	Violation Severity Levels			
	Lower VSL	Moderate VSL	High VSL	Severe VSL
			<p>OR</p> <p>The developed CAP did not include corrective actions for other facilities owned by the GOGenerator Owners as identified in R4.2Requirement <u>R2 Part 2.1.3</u>, if necessary.</p> <p>OR</p> <p>The developed CAP or technical justification was not provided to the applicable RCReliability Coordinator, <u>Balancing Authority, and Transmission Operator.</u></p>	<p>OR</p> <p>The responsible entity failed to develop a CAP or provide a technical justification why no corrective actions will be implemented.</p>
R6R4.	The responsible entity implemented, but failed to update a CAP, when actions or timetables changed, in accordance with Requirement R6R4.	N/A	N/A	The responsible entity failed to implement a CAP in accordance with Requirement R6R4.

D. Regional Variances

None.

E. Associated Documents

Implementation Plan.

Version History

Version	Date	Action	Change Tracking
Initial Draft	02/06/2024	Draft	
<u>Second Draft</u>	<u>06/07/2024</u>	<u>Draft</u>	