

# Implementation Plan

## PRC-025-1 – Generator Relay Loadability

### Project 2010-13.2 Phase II Relay Loadability

#### Requested Approvals

- PRC-025-1 – Generator Relay Loadability

#### Requested Retirements

- None.

#### Prerequisite Approvals

- None.

#### Parallel Approvals

- PRC-023-3 – Transmission Relay Loadability\*

\*A supplemental SAR was approved by the Standards Committee at the January 16-17, 2013 meeting to authorize the drafting team to make corresponding changes to PRC-023-2 in order to establish a bright line between the applicability of load-responsive protective relays in the transmission and generator relay loadability standards.

#### Revisions to Defined Terms in the NERC Glossary

- None

#### Background

The Implementation Plan addresses concerns about the effort required to become compliant with the standard. The drafting team considered a number of issues that a Generator Owner, [Transmission Owner, or Distribution Provider](#) might encounter in its efforts to ensure its load-responsive protective relay settings are applied in accordance with the PRC-025-1 standard. The period to become compliant is based on two time frames. One time frame is provided if the Generator Owner, [Transmission Owner, or Distribution Provider](#) determines that its existing load-responsive protective relays are capable of achieving compliance with the standard while maintaining reliable fault protection. A second and extended time frame is provided if the Generator Owner, [Transmission Owner, or Distribution Provider](#) determines that its existing load-responsive protective relays require replacement [or removal](#). The standard drafting team recognizes that it may be necessary to replace a legacy load-responsive protective relay with a modern advanced-technology relay that can be set using functions such as load

encroachment or that removal of the load-responsive protective relay is the best alternative to satisfy the entity's protection criteria and meet the requirements of proposed PRC-025-1.

## General Considerations

The Implementation Plan period reflects consideration of the following:

1. It is not beneficial to reliability for a Generator Owner to remove a generation unit or plant from service solely to achieve compliance with this standard.
2. The Implementation Plan recognizes that the time between scheduled outages depends on the nature of the generation unit or plant and may be as long as 24 months between scheduled outages.
3. The Implementation Plan assumes that Generator Owners will stagger outages between generation units or plants based upon fleet size, operating history, and forecasted outages.
4. The Generator Owner, Transmission Owner, or Distribution Provider will need to: evaluate load-responsive protective relays applied on its Facilities; perform the applicable calculations required by the standard; and determine whether existing relays are capable of meeting the performance of standard while achieving reliable fault protection.
5. It is necessary for the generation unit or plant to be off-line in order to make adjustments.
6. The outage duration in order to replace any necessary components, to apply settings, and perform necessary testing may be significant.
7. For those load-responsive protective relays that do not require replacement or removal, the Generator Owner, Transmission Owner, or Distribution Provider will need time to complete the evaluation in #4 above required by the standard and schedule the work while the generation unit or plant is off-line.
8. For those load-responsive protective relays that require replacement or removal, the Generator Owner, Transmission Owner, or Distribution Provider will need time to complete the evaluation in #4 above required by the standard, as well as, time to coordinate protection system changes with other entities, procure materials, and schedule the work while the generation unit or plant is off-line.
9. The Generator Owner, Transmission Owner, and Distribution Provider will need to coordinate activities where multiple owners may need to perform its work under the standard.

## Applicable Entities\*

- Generator Owner
- Transmission Owner
- Distribution Provider

\*See the proposed standard for detailed applicability for functional entities and Facilities.

**Effective Date**

**New Standard**

<p>PRC-025-1</p>	<p>First day of the first calendar quarter beyond the date that this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter beyond the date this standard is approved by the NERC Board of Trustees, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.</p>
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**Standards for Retirement**

<p><del>None</del> PRC-023-2</p>	<p><u>Midnight of the day immediately prior to the Effective Date of PRC-023-3 – Transmission Relay Loadability in the particular jurisdiction in which the new standard is becoming effective, except Requirement R1, Criterion 6 which will remain in force until the effective date of PRC-025-1.</u></p>
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**Implementation Plan for Definitions**

- No definitions are proposed as a part of this standard.

**Implementation Plan for PRC-025-1, Requirement R1**

**Load-responsive protective relays subject to the standard**

Each Generator Owner that owns load-responsive protective relays applicable to this standard shall be 100% compliant on the following dates:

Requirement	Applicability	Implementation Date	
		Jurisdictions where Regulatory Approval is Required	Jurisdictions where No Regulatory Approval is Required
R1	Each Generator Owner, <u>Transmission Owner, and Distribution Provider</u> shall apply settings that are in accordance with PRC-025-1 – Attachment 1: Relay Settings, on each load-responsive protective relay while maintaining reliable fault protection.	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is not necessary, the first day <u>4860</u> months after applicable regulatory approvals	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is not necessary, the first day <u>4860</u> months after Board of Trustees adoption, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities
		Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is necessary, the first day <u>7284</u> months after applicable regulatory approvals	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is necessary, the first day <u>7284</u> months after Board of Trustees adoption, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities

**Load-responsive protective relays which become applicable to the standard**

Each Generator Owner, Transmission Owner, and Distribution Provider that owns load-responsive protective relays that become applicable to this standard, not because of the actions of ~~the Generator Owner itself~~ including, but not limited to changes in NERC Registration Criteria, ~~or~~ Bulk Electric System (BES) definition, ~~or any other non-Generator Owner action~~, shall be 100% compliant on the following dates:

Requirement	Applicability	Implementation Date	
		Jurisdictions where Regulatory Approval is Required	Jurisdictions where No Regulatory Approval is Required
R1	Each Generator Owner, <u>Transmission Owner, and Distribution Provider</u> shall apply settings that are in accordance with PRC-025-1 – Attachment 1: Relay Settings, on each load-responsive protective relay while maintaining reliable fault protection.	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is not necessary, the first day <del>4860</del> months beyond the date the load-responsive protective relays become applicable to the standard	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is not necessary, the first day <del>4860</del> months beyond the date the load-responsive protective relays become applicable to the standard
		Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is necessary, the first day <del>7284</del> months beyond the date the load-responsive protective relays become applicable to the standard	Where determined by the Generator Owner, <u>Transmission Owner, or Distribution Provider</u> that replacement or removal is necessary, the first day <del>7284</del> months beyond the date the load-responsive protective relays become applicable to the standard

### ~~Transition to Using Capability Reported to the Transmission Planner~~

~~Reliability Standard PRC-025-1 requires the Generator Owner to use “Real Power output – 100% of the gross MW capability reported to the Transmission Planner or other entities as specified by the Regional Reliability Organization.” PRC-025-1 includes the “Transmission Planner” to comport with the functional entity that receives the report of the Generator Owner’s gross Real Power capability pursuant to Reliability Standard MOD-025-2, which combines Reliability Standards MOD-024-1 and MOD-025-1.~~

~~Because Reliability Standards MOD-024-1 and MOD-025-1 require the Generator Owner to follow its Regional Reliability Organization’s procedures for reporting its gross Real and Reactive Power capability, respectively, Reliability Standard PRC-025-1 also includes the phrase “other entities as specified by the Regional Reliability Organization” so that the Generator Owner can remain compliant with PRC-025-1 and both MOD-024-1 and MOD-025-1 during the implementation period for MOD-025-2. This construction avoids a reliability gap and ambiguity within the PRC-025-1 standard regarding the value (gross Real Power capability) that is reported during the extended implementation plan for MOD-025-2.~~

~~Upon retirement of MOD-024-1 and MOD-025-1 and full compliance with MOD-025-2, entities will be reporting solely to the Transmission Planner. At that time, the reference to “other entities as specified by the Regional Reliability Organization” will be removed from PRC-025-1 since it will no longer be necessary or utilized by any functional entities following full implementation of MOD-025-2.~~

**Revisions or Retirements to Already Approved Standards**

The following table identifies the sections of the approved standard that shall be added, retired, or revised when this standard is implemented. If the drafting team is recommending revisions, those changes are identified ~~in bold blue with underlining for additions and for deletions in bold red with a strikethrough~~ by the “Proposed Replacement” column.

Already Approved Standard	Proposed Replacement Requirement(s)
<p><b>New Standard – Not Applicable</b></p>	<p><b>PRC-025-1 (New)</b></p> <p><b>R1.</b> Each Generator Owner, <u>Transmission Owner, and Distribution Provider</u> shall apply settings that are in accordance with PRC-025-1 – Attachment 1: Relay Settings, on each load-responsive protective relay while maintaining reliable fault protection. <i>[Violation Risk Factor: High] [Time Horizon: Long-Term Planning]</i></p>
<p><b>Notes:</b> This requirement meets the directive in FERC Order No. 733, paragraph 106 and supporting paragraphs 104, 105, and 108. A full discussion of how Requirement R1 is responsive to the FERC directives may be found in the Consideration of Issues and Directives document associated with Project 2012-13.2 – Phase II – Relay Loadability: Generator.</p>	

Already Approved Standard	Proposed Replacement Requirement(s)
<p><b><u>PRC-023-2 (Retirement)</u></b>  <u>R1, Criterion 6. – “Set transmission line relays applied on transmission lines connected to generation stations remote to load so they do not operate at or below 230% of the aggregated generation nameplate capability.”</u></p>	<p><b><u>PRC-025-1 (New)</u></b>  <b><u>New Requirement</u></b>  <u>R1. Each Generator Owner, Transmission Owner, and Distribution Provider shall apply settings that are in accordance with PRC-025-1 – Attachment 1: Relay Settings, on each load-responsive protective relay while maintaining reliable fault protection. [Violation Risk Factor: High] [Time Horizon: Long-Term Planning]</u></p> <p><u>*Attachment 1: Relay Settings, Table 1: Relay Loadability Evaluation Criteria, Options 14 through 19. (See standard for details)</u></p>
<p><b><u>Notes:</u></b> <u>The Transmission Owner and Distribution Provider were added to the Applicability of the proposed PRC-025-1 and excluded lines that are used exclusively to export energy directly from a Bulk Electric System (BES) generating unit or generating plant to the network; therefore, Requirement R1, Criterion 6 has been removed from the proposed standard PRC-023-3 because this criterion is now replaced (i.e., superseded) by the proposed PRC-025-1 – Generator Relay Loadability standard, Requirement R1 and its Attachment 1: Attachment 1: Relay Settings, Table 1: Relay Loadability Evaluation Criteria, Options 14 through 19. Applicability concerning generation Facilities is now addressed in the proposed PRC-025-1. Although, Requirement R1, Criterion 6 is not shown in the proposed PRC-023-3, it remains auditable while each entity assures its compliance with the proposed PRC-025-1 criteria according to the provided Implementation Plan(s).</u></p>	