Unofficial Comment Form  
Project 2010-13.2 Phase II Relay Loadability  
(PRC-025-1 and PRC-023-2)

Please **DO NOT** use this form for submitting comments. Please use the [electronic form](http://www.nerc.com/filez/standards/Project_2010-13.2_Summary_Table.html) located at the link below to submit comments on the Standard. The electronic comment form must be completed by May 24, 2013. If you have questions please contact Scott Barfield-McGinnis at [Scott.Barfield@nerc.net](mailto:Scott.Barfield@nerc.net) or by telephone at (404) 446-9689.

**Background Information**
This posting is soliciting formal comments in a 30-day formal comment period.

The Standard Authorization Request (SAR) for this project was initiated on August 5, 2010 and approved by the Standards Committee (SC) on August 12, 2010. It established the scope of work for Project 2010-13.2 for what is the second phase of Order 733, Transmission Relay Loadability Reliability Standard.¹ Phase I resulted in the NERC Reliability Standard PRC-023-1 and Phase II concerning this project specifically addresses protecting the generator, generator step-up (GSU) transformer, and unit auxiliary transformers (UAT) in the proposed new standard, PRC-025-1. The SC moved this project into active development on March 8, 2012.

During analysis of many of the major disturbances in the last 25 years on the North American interconnected power system, generators have been found to have tripped for conditions that did not apparently pose a direct risk to those generators and associated equipment within the time period where the tripping occurred. This unnecessary tripping has often been evaluated to have extended the scope and/or duration of that disturbance. This was noted, in detail, to be a serious issue in the August 2003 “blackout’ in the northeastern North American continent.

During the recoverable phase of a disturbance, the disturbance may exhibit a “voltage disturbance” behavior pattern, where system voltage is widely depressed. In order to support the system during this phase of a disturbance, this standard establishes criteria for setting load-responsive relays such that individual generators may provide Reactive Power within their dynamic capability during transient time periods to help the system recover from that voltage disturbance. The premature or unnecessary tripping of generators resulting in the removal of dynamic Reactive Power exacerbates the severity of the voltage disturbance, and as a result

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changes the character of the system disturbance. In addition, the loss of Real Power could initiate or exacerbate a frequency disturbance.

The Standard Drafting Team has developed draft three of the standard to provide requirements that address these concerns, and is presenting this draft to industry for a formal comment period to get industry comments to aid in further development.

Summary of changes
The generator relay loadability standard drafting team (“SDT”) has revised the proposed the draft of PRC-023-3 – Transmission Relay Loadability based on stakeholder comments received during the Standard Authorization Request (SAR) 45-day formal posting of the SAR which included a redline to the PRC-023-2 standard. The SAR was not modified by the standard drafting team. Contemporaneously with the SAR posting, the SDT has revised the proposed draft of PRC-025-1 – Generator Relay Loadability during its 45-day formal comment posting of the standard and initial ballot which received 54.65% stakeholder approval. The following narrative is a summary of the significant improvements made to the above standards.

Standard (PRC-023-3)

- Applicability
  - The phase “at the terminal of the” was inserted in for each applicable entity of the standard to create a bright line between the proposed PRC-023-3 and PRC-025-1 standards
  - References to the two new Requirements (R7 and R8) was inserted for the applicable Distribution Provider and Transmission Owner
  - References to the two new Applicability for Circuits (4.2.3 and 4.24) were inserted for the applicable Distribution Provider and Transmission Owner
  - Applicability 4.2.3 – Circuits Subject to Requirement R7 was added to create a bright line between the proposed PRC-023-3 and PRC-025-1 standards for the Distribution Provider and Transmission Owner regarding generator interconnection Facilities
  - Applicability 4.2.4 – Circuits Subject to Requirement R8 was added to create a bright line between the proposed PRC-023-3 and PRC-025-1 standards for the Distribution Provider and Transmission Owner regarding generator step-up (GSU) transformers

- Requirements
  - Requirement R1, Criterion 6 was removed and replaced by two new proposed Requirements R7 and R8
  - New Requirement R7 applicable to the Distribution Provider and Transmission Owner regarding generator interconnection Facilities to create a bright line between the
proposed PRC-023-3 and PRC-025-1 in applying settings to load-responsive protective relay for loadability

- New Requirement R8 applicable to the Distribution Provider and Transmission Owner regarding generator step-up (GSU) transformer to create a bright line between the proposed PRC-023-3 and PRC-025-1 in applying settings to load-responsive protective relay for loadability

- Measures
  - New Measure M7 was inserted to correspond to the new Requirement R7
  - New Measure M8 was inserted to correspond to the new Requirement R8

- Compliance
  - The Compliance Monitoring Responsibility section text was updated to current NERC Reliability Standards language
  - Requirements R7 and R8 were added to the Data Retention section
  - The reference to “Compliance Monitor” was updated to the more correct term, “Compliance Enforcement Authority”

- Violation Severity Levels
  - New VSL was inserted for Requirement R7
  - New VSL was inserted for Requirement R8
  - Removed references to Requirement R1, Criterion 6 because it is no longer used

- Attachment A
  - Revised criterion 2.4 to address relays applied at the terminals of generation Facilities in accordance with NERC Reliability Standard PRC-025-1 for the Planning Coordinator pursuant to Requirement R6

- Attachment C
  - Inserted new attachment to address relay loadability described in Requirements R7 and R8
  - Includes Table 1, Relay Loadability Evaluation Criteria which is the same as the criteria proposed in PRC-025-1 for generator interconnection Facilities and generator step-up (GSU) transformers

**Implementation Plan (PRC-023-3)**

- Updated to reflect known milestone dates based on the approvals of the current version two
• Added the implementation period for the two new Requirements (R7 and R8) to align with the same implementation period proposed in PRC-025-1

**VRF/ VSL Justifications (PRC-023-3)**

• Provided justification for VRF/VSL for the two new Requirements R7 and R8

**Standard (PRC-025-1)**

• Purpose
  o Revised to remove the first occurrence of “generator”
  o Other minor revisions to provide clarity in the scope of the standard

• Applicability
  o Inserted section 3.2.5 to provide applicability to Facilities that address Elements utilized in the aggregation of dispersed power producing resources.

• Requirements
  o No change

• Measures
  o No change

• Compliance
  o No change

• Violation Severity Levels
  o No change

• Attachment 1
  o General text revisions
  o Included language to note that the standard does not require the use of any of the protective functions list in Table 1, Relay Loadability Evaluation Criteria
  o Removed the Planning Coordinator and inserted the Regional Reliability Organization to comport with the anticipated retirement of MOD-024-1 and MOD-025-1 and the approval of MOD-025-2 in both the text and Table 1
  o Inserted language to address situations where the Generator Owner may combine both asynchronous and synchronous generators on a generator interconnection Facility to provide direction on the evaluation of relay loadability
Update the references to no-load tap changes (NLTC) and on-load tap changers (OLTC) to the generally accepted use of the IEEE terms, deenergized tap changers (DETC) and load tap changers (LTC)

Added an exception to the standard for Protection Systems that detect generator overloads

Added an exception to the standard for Protection Systems that detect transformer overloads

Made minor editorial edits to Table 1 text for clarity such as replacing “connected to” with “aggregate” for consistency with other uses

Made minor editorial edits to remove hyphens and inserting the word “connected” (e.g., Generator step-up transformer [connected] to asynchronous generators)

For the application of generator interconnection Facility, reduced the Reactive Power output calculation from 150% to 120% for consistency with the previous PRC-023-2, Requirement R1, Criterion 6

Implementation Plan (PRC-025-1)

- Minor editorial edits for clarity
- Updated the implementation information to mimic the table provided in the current PRC-023-2 and proposed PRC-023-3 to delineate the implementation for jurisdictions where regulatory approval is required and in jurisdictions where no regulatory approval is necessary
- Inserted language concerning who the Real and Reactive Power is reported to by the Generator Owner to allow a transition from reporting to the Regional Reliability Organization to the Transmission Planner rather than having the Planning Coordinator as identified in the previous posting of the PRC-025-1 standard

VRF/VSL Justifications (PRC-023-3)

Inserted references to the two new Requirements R7 and R8 proposed in PRC-023-3 to support reasoning for assigning of a VRF/VSL
*Please use the electronic comment form to submit your final comments to NERC.

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Please note that the official comment form does not retain formatting (even if it appears to transfer formatting when you copy from the unofficial Word version of the form into the official electronic comment form). If you enter extra carriage returns, bullets, automated numbering, symbols, bolding, italics, or any other formatting, that formatting will not be retained when you submit your comments.

- Separate discrete comments by idea, e.g., preface with (1), (2), etc.
- Use brackets [] to call attention to suggested inserted or deleted text.
- Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.
- Do not use formatting such as extra carriage returns, bullets, automated numbering, bolding, or italics.
- Please do not repeat other entity’s comments. Select the appropriate item to support another entity’s comments. An opportunity to enter additional or exception comments will be available.

1. Do the changes to the proposed PRC-023-2 and PRC-025-1 (listed above) provide a bright line between the two standards? If not, provide specific suggestions to improve or clarify the performance between the standards.

   □ Yes
   □ No

   Comments:

2. Does the Table 1: Relay Loadability Evaluation Criteria in both PRC-023-3 (Attachment C) and PRC-025-1 (Attachment 1) clearly identify the criteria for setting load-responsive protective relays? If not, provide specific detail that would improve the clarity of Table 1.

   □ Yes
   □ No

   Comments:
3. Does PRC-025-1, **Guidelines and Technical Basis** provide a clear understanding of the various criteria, including the options (e.g., 1a, 1b, 1c, 2a, etc.) for setting load-responsive protective relays? If not, provide specific detail that would improve the Guidelines and Technical Basis.

☐ Yes
☐ No

Comments:

4. The drafting team developed an Implementation Plan for the added requirements of the proposed PRC-023-3 that aligns with that proposed in PRC-025-1. Do you agree with the proposed **Implementation Plan** for PRC-023-3 Requirements R7 and R8 and the proposed PRC-025-1:

   a. 48-months to apply load-responsive protective relay settings, where relay replacement is not required, and
   b. 72-months to apply load-responsive protective relay settings, where relay replacement is required?

If not, provide an alternative implementation plan with specific rationale for such an alternative period.

☐ Yes
☐ No

Comments:

5. Do you have any other comments? If so, please provide suggested changes and rationale.

☐ Yes
☐ No

Comments: In PRC-023-3, add “Each” to the beginning of R8.