Unofficial Comment Form

Project 2018-04 Modifications to PRC-024-2

**Do not** use this form for submitting comments. Use the [Standards Balloting and Commenting System (SBS)](https://sbs.nerc.net/) to submit comments on **PRC-024-3 – Generator Voltage and Frequency Protection**. Comments must be submitted by **8 p.m. Eastern, Friday, May 31, 2019.
m. Eastern, Thursday, August 20, 2015**

Additional information is available on the [project page](https://www.nerc.com/pa/Stand/Pages/Project-2018-04-Modifications-to-PRC-024-2.aspx). If you have questions, contact Standards Developer, Mat Bunch (via email), or at (404) 446-9785.

## Background Information

On November 27, 2018, the NERC Operating Committee (OC) and Planning Committee (PC) submitted a Standard Authorization Request (SAR) prepared by the Inverter-Based Resource Performance Task Force (IRPTF), which reports to the OC and PC.

Based off the analyses of the [Blue Cut Fire](https://www.nerc.com/pa/rrm/ea/1200_MW_Fault_Induced_Solar_Photovoltaic_Resource_/1200_MW_Fault_Induced_Solar_Photovoltaic_Resource_Interruption_Final.pdf) and [Canyon 2 Fire](https://www.nerc.com/pa/rrm/ea/October%209%202017%20Canyon%202%20Fire%20Disturbance%20Report/900%20MW%20Solar%20Photovoltaic%20Resource%20Interruption%20Disturbance%20Report.pdf#search=blue%20cut%20fire) disturbances in southern California along with the development of the [PRC-024-2 Gaps Whitepaper](https://www.nerc.com/pa/Stand/Project%20201804%20Modifications%20to%20PRC0242/NERC%20IRPTF%20PRC-024-2%20Gaps%20Whitepaper.pdf), the IRPTF identified potential modifications to PRC-024-2 to ensure that inverter-based generator owners, operators, developers, and equipment manufacturers understand the intent of the standard in order for their plants to respond to grid disturbances in a manner that contributes to the reliable operation of the BPS. In order to address the issues in the [SAR](https://www.nerc.com/pa/Stand/Project%20201804%20Modifications%20to%20PRC0242/PRC-024-2_SAR_Clean_02202019.pdf), the standard drafting team developed the proposed modifications in PRC-024-3.

**PRC-024-3 – Summary of Key Changes**

**Momentary Cessation**

* Requirements R1 and R2 modified to specify a generating resource may neither trip NOR enter momentary cessation inside the No Trip Zone

**No Trip Zone**

* To clarify confusion regarding tripping or entering momentary cessation *outside* the No Trip Zone, the area outside the boundary is now labeled as a “May Trip Zone”

**Applicability Section**

* Facilities Section added that explicitly lists protective functions for specific equipment
	+ Plant Auxiliary Equipment is not included as an applicable facility
	+ Specifies that voltage and frequency protection should be applied to both generator step-up (GSU) and collector transformers
	+ Addresses a potential reliability gap identified by the standard drafting team
		- Some Transmission Owners (TOs) own GSU or collector transformers, yet not currently in the scope PRC-024

**Inclusion of Some TOs as Functional Entities[[1]](#footnote-1)**

* *Not all TOs are applicable*
* Only those specific TOs that own a GSU or collector transformer and apply protection listed in the facilities section are now in scope of PRC-024

**Point of Interconnection (POI)**

* To address ambiguity concerns, removed the term altogether and replaced with precise language for this standard:
	+ “at the high side of the GSU or collector transformer”

**Figures and Tables**

* Clarified areas of confusion as specified by the Standard Authorization Request
* General “clean up” work throughout

**Variance – Quebec Interconnection**

* Variance to Requirement R2 with more stringent under/over voltage boundaries

## Questions

1. The standards drafting team (SDT) replaced “protective relays” to “protection” throughout the standard to include relays, settings in applicable control systems, as well as other types of voltage and frequency protection devices. Do you agree with these modifications? If you do not agree, or if you agree but have comments or suggestions, provide your recommendation, explanation, and proposed modification.

[ ]  Yes

[ ]  No

Comments:

1. To address confusion regarding “at the point of interconnection,” the team replaced it with the phrase, “at the high side of the generator step-up or collector transformer.” Do you agree with this clarifying change? If not, please provide an alternative suggestion.

[ ]  Yes

[ ]  No

Comments:

1. The SDT modified Requirements R1 and R2 to not allow momentary cessation, in addition to tripping, in the “no trip zone.” Do you agree that momentary cessation should not be allowed in the no trip zone? If not, please provide your rationale.

[ ]  Yes

[ ]  No

Comments:

1. Do you agree that “momentary cessation” – like “tripping” – is well understood by industry? If not, please provide your rationale.

[ ]  Yes

[ ]  No

Comments:

1. The SDT was apprised that, in some instances, the TO may own the GSU or collector transformers. As such, TOs were added to the applicable entity for cases where they may own a GSU or collector transformers with frequency and voltage protection enabled. Do you agree with the addition of TOs who own a GSU or collector transformer to the applicable entities? If not, please provide your rationale.

[ ]  Yes

[ ]  No

Comments:

1. Another intent of the facilities section was to clarify that voltage and frequency protection applied to plant auxiliary equipment is not applicable to the standard. Do you agree it is clear that plant aux equipment is out of scope of PRC-024? If not, please provide your rationale and a proposal.

[ ]  Yes

[ ]  No

Comments:

1. The SDT made several clarifying changes to the figures and tables (outlined in the SAR) to improve readability and eliminate confusion addressed in the SAR, including: (i) labeling the area outside the “No Trip Zone” as the “May Trip Zone;” (ii) removal of “ride-through” language; (iii) addition of “Minimum Time;” (iv) replacement of “instantaneous” with “0.10” seconds; and (v) clarifying modifications to the Voltage Boundary Clarifications. Do you agree with these modifications? If not, please recommend alternative solution(s).

[ ]  Yes

[ ]  No

Comments:

1. The SDT added Quebec Interconnection-wide Variance to Requirement R2 with more stringent voltage boundaries for the No Trip Zone. Do you agree with this proposed Quebec Variance? If not, please provide your rationale.

[ ]  Yes

[ ]  No

Comments:

1. Do you agree with the proposed Implementation Plan? If not, please provide your rationale.

[ ]  Yes

[ ]  No

Comments:

1. Do you agree that the proposed modifications provide a cost-effective means of addressing issues in the SAR? If not, please provide an alternative, more cost-effective manner in which to achieve at least an equivalent level of reliability.

[ ]  Yes

[ ]  No

Comments:

1. If you have any additional comments on themes that have NOT already been addressed in the proceeding questions on this comment form, please provide them here.

Comments:

1. Requirements R1 and R2 in the currently enforceable PRC-024-2 standard, via footnotes 2 and 4, include all frequency and voltage protective relays from the individual generating resource to the high side of the main power transformer for dispersed power producing resources. There was also an identified potential reliability gap when frequency and voltage protection, specifically volts per hertz, are applied to conventional generator GSUs. To alleviate this potential reliability gap, and to achieve parity for all resources, the SDT added a facilities section to specify the facilities that are subject to the Standard, if those facilities have frequency and voltage protection enabled. The facilities section now clarifies that the GSU or collector transformer is an applicable facility. [↑](#footnote-ref-1)