



Preventing Unnecessary Generator Tripping with PRC-025-2 Regulation

The August 2003 blackout in the northeastern North American continent served as a wake-up call for the electricity industry. Analysis of this and other major disturbances revealed that generators were often tripped unnecessarily during system events, worsening the severity and prolonging the duration of disruptions. To address this issue, the North American Electric Reliability Corporation (NERC) introduced PRC-025-2.

What is NERC PRC-025-2?

The primary goal of PRC-025-2 is to prevent unnecessary tripping of generators during system disturbances for conditions that do not pose a risk of equipment damage. By maintaining generators online during transient periods, the regulation aims to support the system's recovery and enhance grid stability. PRC-025-2 sets standards for relay settings while maintaining reliable fault protection.

PRC-025-2 mandates that generator owners, transmission owners, and distribution providers apply settings in accordance with PRC-025-2 - Attachment 1: Relay Settings. These settings are derived from the maximum capability of synchronous and asynchronous generators or transformers, ensuring that protective relays are appropriately calibrated to support grid stability during disturbances. The regulation provides specific criteria for setting load-responsive protective relays based on generator type, transformer configuration, and system topology.



Compliance with PRC-025-2 is essential for ensuring grid reliability and resilience. By preventing unnecessary generator tripping, the regulation helps mitigate the risk of cascading failures and widespread blackouts. Moreover, PRC-025-2 supports the efficient operation of the bulk power system by optimizing the use of generator assets during transient events. Non-compliance with PRC-025-2 could compromise grid stability and reliability, potentially leading to severe disruptions and economic losses.

How can SynchroGrid help?

Leveraging advanced technologies and expertise, SynchroGrid offers solutions tailored to meet a spectrum of regulations spanning from PRC-002 through PRC-027. Specifically, SynchroGrid specializes in optimizing protective relay settings in accordance with regulatory requirements. Through thorough analysis of generator characteristics, system topology, and operational dynamics, SynchroGrid identifies opportunities to fine-tune relay settings, optimizing grid resilience while ensuring reliable fault protection.

Our track record includes numerous successful PRC-025-2 compliance studies for various clients. For example, we have conducted detailed engineering calculations to verify that relay settings are in compliance with PRC-025-2 for 50 generation units. This involved reviewing relay one lines/three lines & applicable relay settings, performing calculations to verify relay settings are in compliance with PRC-025, suggesting setting changes for non-compliant relays and creation of compliance reports.

SynchroGrid has consistently verified compliance for multiple clients by ensuring that all load-responsive protective relay settings associated with generation units did not trip during the conditions mandated by the standard. We provide individualized reports for NERC auditing and offer project support during installation of new settings. Partnering with SynchroGrid empowers utilities and grid operators to confidently navigate PRC-025-2 complexities, ensuring uninterrupted electricity delivery while mitigating risks of disruptions and economic losses.

Reference:

<https://www.nerc.com/pa/Stand/Reliability%20Standards/PRC-025-2.pdf>