

# NERC PRC-025-1 COMPLIANCE

Electrical Engineering Services



## BENEFITS

### Are You Compliant?

Reliability of the bulk electric system (BES) is a national priority. The 2003 electric power blackout across the northeast United States and Ontario, Canada, has emphasized the need to improve grid stability.

As a result, the North American Electric Reliability Corporation (NERC) created several reliability standards including PRC-025-1 — Generator Relay Loadability.

The purpose of this standard is to set load-responsive protective relays associated with generation facilities at a level to prevent unnecessary tripping of generators during a system disturbance for conditions that do not pose a risk of damage to the associated equipment.

Navigating these standards can be difficult to manage in-house without the assistance of an outside technical resource like Vertiv™ that is familiar with the various requirements and methodologies. You can trust that Vertiv's Electrical Reliability Services will deliver complete NERC compliance solutions.

### Benefits

- Avoid costly fines
- Increase generator stability
- Decrease nuisance tripping and unplanned outages
- Increase infrastructure performance
- Improve grid reliability



## Ensure compliance with NERC PRC-025-1 regulatory requirements

Understanding and complying with reliability standard PRC-025-1 requires considerable knowledge of the requirements and methodology used to successfully implement the technical requirements. The standard, which outlines multiple options for achieving compliance, applies to generating plants that are classified as part of the BES. These plants have a single unit rated 20 megavolt amperes (MVA) and greater or aggregate units rated 75 MVA and greater, connected to the system at or greater than 100 kilovolts (kV).

The deadline to demonstrate compliance for the standard is October 2019. For many generation owners and operators that have limited in-house engineering resources, it may be difficult to navigate and meet the requirements without the help of external engineering resources.

Vertiv's NERC compliance services provide owners and operators with the added resources and tools needed to address reliability requirements. Our compliance experts, comprised of protection and control engineers, leverage in-depth understanding of NERC standards and how they impact power-producing infrastructure to help you develop an acceptable compliance program.

Our NERC compliance services include:

- Compliance assessment
- Engineering analysis and modeling
- NERC program management
- Relay retrofits/upgrades
- NERC compliance documentation

## Compliance Assessment

The first step to achieving compliance is to determine your current status. To get started, Vertiv™ engineers have developed a downloadable tool that allows you to quickly assess the settings for your facility's generator unit protection relays and determine if they meet PRC-025-1 requirements, and if not, by what margin. The results from this assessment will determine the level of effort required to demonstrate compliance or if additional actions must be taken to meet requirements.

## Engineering Analysis and Modeling

Evaluation of your infrastructure involves on-site data analysis and data collection by our highly-trained engineers who have years of experience working in and around operating generation plants. They ensure that the right data is collected in the most efficient manner possible. Once the data is collected, they will assemble and organize it to perform modeling and an engineering analysis of your electrical system. Whether your generation unit is evaluated under field forcing simulations using power system modeling software or by conservative loadability evaluation criteria, a complete NERC-approved mathematical proof will be provided for each load sensitive relay requiring study. Our engineers leverage industry accepted software applications to model dynamic systems including PSSE, E-Tap, MatLab and Power World. Upon completion of the analysis, a comprehensive report will be provided with recommendations and corrective actions required for ensuring compliance and improving power system loadability at your facility.

## NERC Program Management

Implementing corrective actions is the next step to ensuring compliance. Vertiv's NERC program management services provide ongoing support throughout the compliance process. From identification of non-compliance issues to project planning and management, we will be with you every step of the way helping you select the most cost effective and appropriate solutions. You can rest assured, knowing that you will have expert engineering assistance to selectively coordinate the proposed protective device settings with your utility and the field resources needed to implement and test relay settings changes. Whether you are operating a single combustion unit or you own a hundred sites, we have the resources to ensure that your scope of work is completed on schedule. Our engineers are sensitive to the deadlines that accompany NERC implementation plans and will work to ensure that your fleet will complete the requirements on time, avoiding a self-report situation.

## Relay Retrofits/Upgrades

In some cases, the existing protective devices may not be capable of accepting the settings required to comply with loadability requirements. In this situation, it may be necessary to retrofit, upgrade, or replace the existing relays with microprocessor-based relays capable of providing the appropriate protection while maintaining system stability during disturbance events. We can provide turnkey relay replacement solutions for these unique situations, including engineering, procurement, installation, testing, startup and commissioning. Under these circumstances NERC allows a two-year extension for compliance until October 2021.

## NERC Compliance Documentation

After compliance has been verified, a technical report is provided to demonstrate compliance. Our NERC conformance reports are designed with the auditor's needs in mind. Using standardized terminology and equations from the NERC standards ensures clear interpretation of the results. To support a successful audit, reports include comprehensive engineering analysis that is searchable and linked for ease of navigation and full demonstration of compliance. Lastly, each report is a "living" document allowing for recently updated or cyclic information, such as relay test data, to be easily appended.

### Summary

Vertiv is ready to help through each step of the compliance process. Perhaps you're in the budgeting phase and need to understand the future resources needed. Or maybe you're at the end of an analysis and need to implement and test new protective relay settings. Regardless, Vertiv is here to provide guidance and expertise.

Relying on us allows you to effectively develop and execute a plan to achieve compliance with PRC-025-1 or any other reliability standard.

### Ordering Information

To learn more about this service or other Vertiv solutions, please contact your local sales representative office for Vertiv's Electrical Reliability Services or visit VertivCo.com. In the United States, call 1-877-468-6384.