

## Implementation Plan

### Project 2010-05.1 – Protection Systems: Phase 1 (Misoperations)

#### Requested Approvals

- PRC-004-3 – Protection System Misoperation Identification and Correction

#### Requested Retirements

- PRC-003-1 – Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection System
- PRC-004-2.1a – Analysis and Mitigation of Transmission and Generation Protection System Misoperations

#### Prerequisite Approvals

- None

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

The standard drafting team proposes the following new definition:

##### **Composite Protection System:**

The total complement of the Protection System(s) that function collectively to protect an Element, such as any primary, secondary, local backup, and communication-assisted relay systems. Backup protection provided by a remote Protection System is excluded.

The standard drafting team proposes the following revised definition:

##### **Misoperation:**

The failure of a Composite Protection System to operate as intended. Any of the following is a Misoperation:

1. **Failure to Trip – During Fault** – A failure of a Composite Protection System to operate for a Fault condition for which it is designed. The failure of a Protection System component is not a Misoperation as long as the performance of the Composite Protection System is correct.
2. **Failure to Trip – Other Than Fault** – A failure of a Composite Protection System to operate for a non-Fault condition for which it is designed, such as a power swing, undervoltage,

overexcitation, or loss of excitation. The failure of a Protection System component is not a Misoperation as long as the performance of the Composite Protection System is correct.

3. **Slow Trip – During Fault** – A Composite Protection System operation that is slower than required for a Fault condition for which it is designed. Delayed clearing of a Fault condition is a Misoperation if high-speed performance was previously identified as being necessary to prevent voltage or dynamic instability, or resulted in the operation of any other Composite Protection System.
4. **Slow Trip – Other Than Fault** – A Composite Protection System operation that is slower than required for a non-Fault condition for which it is designed, such as a power swing, undervoltage, overexcitation, or loss of excitation. Delayed clearing of a non-Fault condition is a Misoperation if high-speed performance was previously identified as being necessary to prevent voltage or dynamic instability, or resulted in the operation of any other Composite Protection System.
5. **Unnecessary Trip – During Fault** – An unnecessary Protection System operation for a Fault condition on another Element.
6. **Unnecessary Trip – Other Than Fault** – An unnecessary Protection System operation for a non-Fault condition for which it is not designed. A Protection System operation that is caused by on-site maintenance, testing, inspection, construction or commissioning activities is not a Misoperation.

## General Considerations

The implementation period allows adequate time for applicable entities to develop or modify its procedures and processes for reviewing Protection System operations. The obligation for reporting Misoperations has been removed from PRC-004 and is being developed under the NERC Rules of Procedure, Section 1600 – Request for Data or Information. The development and implementation of a Corrective Action Plan remains within the scope of PRC-004; therefore, little additional time and resources should be needed to account for the increased detail in the required performance identified in the proposed PRC-004-3 Reliability Standard.

## Applicability

This standard applies to the following functional entities:

- Transmission Owner
- Generator Owner
- Distribution Provider

This standard applies to the following Facilities:

- Protection Systems for BES Elements. Non-protective functions that are embedded within a Protection System are excluded. Protective functions intended to operate as a control function during switching are excluded.
- Underfrequency load shedding (UFLS) that is intended to trip one or more BES Elements.

### **Effective Dates of New or Revised Standards and Definitions**

Except in the Western Interconnection, the standard and definitions shall become effective on the first day of the first calendar quarter that is twelve months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. Except in the Western Interconnection, where approval by an applicable governmental authority is not required, the standard and definitions shall become effective on the first day of the first calendar quarter that is twelve months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.

In the Western Interconnection, the standard and definitions shall become effective on the first day of the first calendar quarter that is twenty-four months after the date that the standard is approved by an applicable governmental authority or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect. In the Western Interconnection, where approval by an applicable governmental authority is not required, the standard and definitions shall become effective on the first day of the first calendar quarter that is twenty-four months after the date the standard is adopted by the NERC Board of Trustees or as otherwise provided for in that jurisdiction.

### **Implementation Plan for PRC-004-3, All Requirements**

Each Transmission Owner, Generator Owner, and Distribution Provider applicable to this standard shall be 100% compliant upon the effective date of the standard.

The extended implementation for the Western Interconnection is provided to allow an opportunity to make the necessary changes to the PRC-004-WECC-1 Regional Reliability Standard. An overlap in performance between the regional and proposed continent-wide standard was identified during the development of the proposed PRC-004-3 Reliability Standard.

**Implementation Plan for definitions**

The revised definition of Misoperation and the new definition of Composite Protection System shall be implemented concurrently with the standard upon the effective dates noted above. Note that the Western Interconnection has an extended implementation.

**Retirement of Existing Standards**

Except in the Western Interconnection, the existing standards PRC-003-1 and PRC-004-2.1a shall be retired at midnight of the day immediately prior to the effective date of PRC-004-3. In the Western Interconnection, the existing standards PRC-003-1 and PRC-004-2.1a shall be retired at midnight of the day immediately prior to the effective date of PRC-004-3 for the Western Interconnection.