

Transmission Operations Short Course

Overview

This course is intended to provide system operators with necessary training to understand the concepts of transmission operations of the Bulk Electric System under normal and emergency conditions. This course is delivered over a two-day period and includes a wide variety of aspects of operations. This particular course covers generation from the perspective of utilization for constraint mitigation; however it does not cover generation from a marketing perspective.

Target Audience

The target audience includes:

- New operators to the system that will have the responsibility of transmission operations
- Generation control operators who want to expand their knowledge of transmission operations
- Individuals who desire the overall philosophy of monitoring and controlling the Bulk Electric System

NERC Continuing Education Hours

16.0 CEHs – Total
3.0 CEHs – Standards
13.0 CEHs – Ops Topics
2.0 CEHs – Sim

NERC Emergency Training Requirement

16.0 hours of Emergency Operations

Course Delivery

The course will be delivered over a two-day period. The class activities will include lecture, related exercises, group discussions, simulation demonstrations, and other content related activities. Quizzes will be given after each content area to measure the students' progress and effectiveness of the course delivery.

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Course Content

The transmission curriculum includes:

NERC Standards

The NERC Standards module reviews the following NERC Standards as related to transmission and transmission control: Standard TOP-001-0 — Reliability Responsibilities and Authorities, Standard TOP-002-0 — Normal Operations Planning, Standard TOP 003-0 — Planned Outage Coordination, Standard TOP-004-0 — Transmission Security, Standard TOP-005-0 — Operational Reliability Information, Standard TOP 006-0 — Monitoring System Conditions, Standard TOP-007-0 — Reporting SOL and IROL Violations, Standard TOP-008-0 — Response to Transmission Limit Violations, and Standard VAR-001-0 — Voltage and Reactive Control.

Transmission Equipment

The Transmission Equipment module explores the evolution of transmission components in addition to the operation of basic components which includes bulk power transmission facilities, transformers, phase shifting transformers, circuit breakers, buses, disconnects, switchgear, and reactive equipment. The module considers how the equipment interacts, their purpose, and their limitations.

Transmission Control

The Transmission Control module reviews the control of the transmission, sub-transmission, and distribution systems and how they relate to each other. The module then addresses identification of diagram components. System events are then identified and explored with respect to controlling reactive resources, thermal limits, system stability, and voltage profiles. The module then steps through equipment failures, actions to implement and performing various degrees of contingency analysis. This module includes exercises and demonstration utilizing the EPRI Power simulator.

Classroom Schedule:

Day 1 - 8:00 AM to 5:00 PM (Lunch provided)

Day 2 - 8:00 AM to 5:00 PM (Lunch provided)

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