



## WECC System Operator Training Generation

Emphasis on this class is on the following aspects of Generation Resources Control, Balance and Frequency Control. **Generation Resources Control & Balance** is a week-long class (Monday 1:00 pm – Friday 12:00 pm) that offers each student a total of **30 NERC Continuing Education (CE) Hours**, including six (6) NERC CE hours of NERC Standards and 12 NERC CE hours of simulation. Each student will also receive six (6) Emergency Operation (EOP) hours.

Primary Topics include:

- Generator & Turbine Basics
- Generator Electrical Characteristics
- Types of Generating Units
  - Fossil Fired Units
  - Nuclear Units
  - Hydro Units
  - Combustion Turbines
  - Combined Cycle Units
  - Wind Turbines
- Generating Unit Characteristics
  - Efficiency
  - Unit Capability & Minimum Load
- Frequency Control
  - Governor Systems & Components
  - Automatic Generation Control (AGC)
  - Reserve Criteria
  - NERC Control Performance Criteria (CPS1, CPS2 & DCS)
  - Impact of Frequency Deviations
  - Nature of a Frequency Deviation
  - Staged Response to a Generation Loss
  - Role of the System Operator
- NERC Standards associated with Generation Control and Balance

The following simulation modules, using the PALCO\* system, are included in the class. Additional Modules may be added as they are developed to enhance understanding of the covered topics.

- Introduction to the PALCO system (how to use the simulator)
- Generation Control Scenario
- AGC Control Mode Scenario
- Governor Response Scenario
- Generator Response to a Frequency Deviation
- Frequency Response & Frequency Excursions Scenario
- Voltage & Mvar Characteristics of Generators
- Power Angle Characteristics of Generators

\*PALCO is a fictional 29-station power system