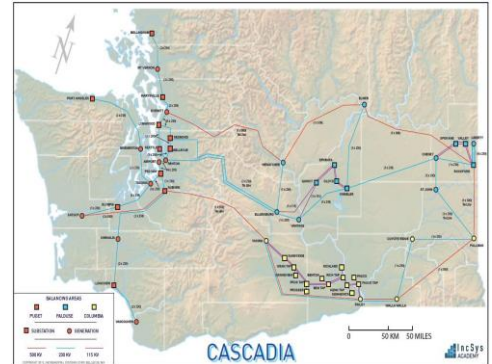


Automatic Generation Control

Automatic Generation Control is a computer-based training module which consists of two video lectures and a simulation exercise. The video lectures cover the concept and application of Automatic Generation Control and their critical role in maintaining load balance, ACE, and to return frequency to 60HZ following a disturbance. Using diagrams, the instructor explains the function, characteristics, and responsibilities of Balancing Authorities. Using real examples from across North America, the instructor explains BA diversity and the computer systems a BA System Operator may use. Using diagrams, instructor provides examples of the actual, scheduled, and inadvertent interchanges. Students act as System Operators to simulate the loss of a generating unit. Students will trip a unit in a designated area, then use the data from various PowerSimulator displays to calculate the frequency bias. The exercise is repeated using a different unit in the adjacent BA, and the bias is again calculated.

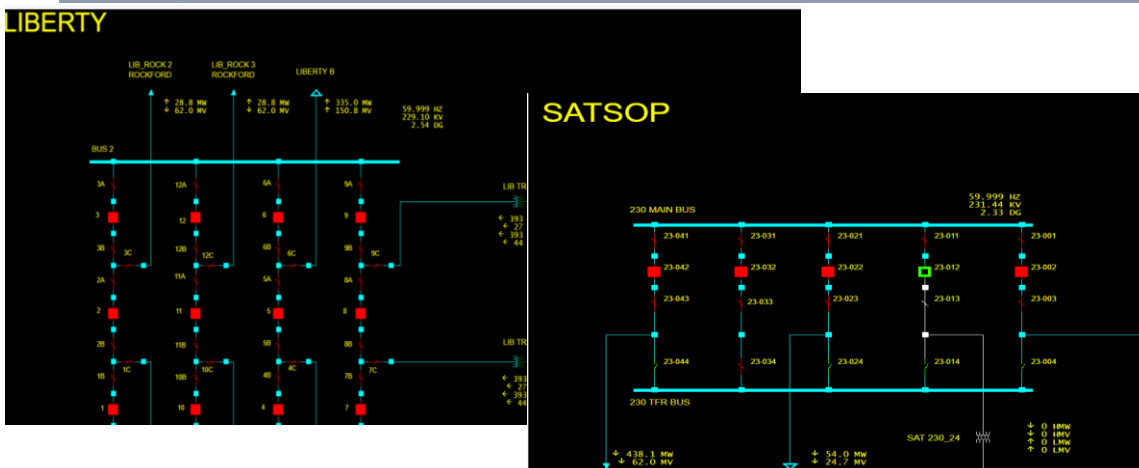


Cascadia 3040 Course Objectives

Automatic Generation Control

COURSE CE HOURS		
OT	STD	SIM
2	0	.5

- Describe the need for AGC Systems
- Describe NERC Balancing Authorities
- Describe the characteristics of a Balancing Authority
- Describe types of interchange
- Describe function and components of an AGC System
- Describe various unit control modes
- Compare flat frequency and flat tie-line modes
- Explain the roles of primary and secondary control
- Describe AGC Functions and Components
- Describe generator control modes and AGC control modes
- Describe the ACE equation and the conditions that will make ACE positive or negative
- Describe how ACE responds to internal and external generation losses
- Monitor system frequency and determine the steady-state change in frequency
- Monitor Net Interchange before and after a unit trip
- Calculate frequency bias for two different Balancing Authorities
- Examine the components and appraise the functions of an AGC systems
- Examine the ACE equation and calculate based on various sets of conditions
- Differentiate between Tie-line Bias control, Flat Frequency, and Flat Tie-Line modes



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