Frequency Response Concerns & Renewable Generation

Brendan Kirby
Consultant
American Wind Energy Association
NERC Frequency Response Conference
May 22, 2012

Who Should Be Responsible For Frequency Response?

- Declining frequency response has been recognized as a serious reliability concern for over a decade
- The problem is most serious in the Eastern Interconnection – the interconnection with the lowest penetration of wind and solar
- Generators differ in their capabilities *and costs* for providing frequency response
  - In a competitive environment uncompensated costs likely lead some frequency response capable resources from providing response
- Frequency response costs are both capital and opportunity
  - Increased cost to make a generator frequency responsive
  - Greater operating costs when poised to provide response
- Costs vary from generator to generator and from hour to hour

Obtaining Reliability Resources and Maintaining Reliability Should Be a BA Responsibility

- The BA is responsible for meeting CPS 1&2 and DCS requirements
  - Obtaining the required reserves
  - Operating to meet the standards
- BA responsibility for assuring sufficient frequency response capability is a logical extension of existing practice
  - The BA is the entity that is aware of current system needs and capabilities
- The BA can select from the available frequency response resources to assure reliability
  - Select the least cost resource mix: It will likely change from hour to hour
  - Utilize all available resources: Generators, Demand Response, Storage

Assuring Frequency Response Capability

- Resources differ in their frequency response capability
  - All technologies have difficulties under certain circumstances: CTs when duct firing, nuclear plants, coal plants when in boiler follow mode.
  - Some loads can provide frequency response, most cannot
  - Some storage resources are ideal for frequency response but others are not
  - The amount of frequency response that each generator, load, or storage facility can provide differs
  - Some new wind turbines can't supply the capability
- Incentives are better than mandatory requirements for reliably obtaining frequency response capability

AWEA's Frequency Response Recommendations

- Address the problem
- Technology neutrality
  - Allow generation, demand response, and storage to participate if they are technically capable
- Use economic incentives rather than mandatory requirements
  - To select the least cost resources in real time
  - To assure capability is installed
  - Pay for performance
- Make full use of existing capability
  - Do not impose retroactive requirements