Reliability: Roles and Definitions

NARUC Electricity Committee

Dr. Carl Linvill
Principal
The Regulatory Assistance Project (RAP)®

50 State Street, Suite 3
Montpelier, Vermont
United States

+1 802 498 0723
clinvill@raponline.org
raponline.org
Regulatory Roles
Who decides?

- **FERC**: Regulates transmission and wholesale sale of electricity and natural gas in interstate commerce and established NERC as the Electric Reliability Organization.

- **PUCs**: Jurisdictional authority over Distribution Systems and input to the Regional Advisory Body authorized by EPAct 2005.

- **NERC**: The Electric Reliability Organization authorized by FERC under section 215 of EPAct 2005 to establish technical reliability standards for Bulk Electric System operations (includes 7 regional reliability organizations).
Useful Definitions

- **Bulk Power System:**
  - Facilities and control systems necessary for operating an interconnected transmission network
  - Electricity from generation facilities needed to maintain reliability

- **Bulk Electric System:**
  - All transmission elements operated at 100 kV or higher as well as real and reactive power resources connected at 100 kV or higher
  - Does not include facilities used in local distribution
  - Many specific inclusions/exclusions (see NERC)
Who provides technical foundations? (used by NERC, FERC and PUCs)

- **IEEE**: Professional organization of electronic and electrical engineers that establishes standards
- **ANSI**: American National Standards Institute is a non-profit consensus-based organization that establishes standards, including electrical standards and codes
- **NESC**: National Electrical Safety Code establishes safety standards to protect electrical workers and users of electric systems (published by IEEE every 5 years)
- **IEC**: International Electrotechnical Commission establishes international standards
Reliability Roles
Who does what?

Bulk System Guidelines
- NERC, FERC
- IEEE, ANSI, IEC
- NESC

Technical and jurisdictional overlap

Distribution System Guidelines
- IEEE 1547, PUC/PRC
- IEEE, ANSI, IEC
- NEC

Source: National Renewable Energy Laboratory
More Useful Definitions

• Transmission: Bulk Power System power lines that carry current at 120 kV or higher (exact voltage delineation may vary)
• Sub-transmission: Carry power stepped down from Transmission lines, “typically” 34.5 to 69 kV
• Distribution: Distribution System power lines “typically” 69 kV or lower
• DER: Distributed Energy Resource (1547) includes resources that inject energy into the grid (synchronous and asynchronous DG, Storage), does not include resources that withhold use of energy
• IBR: Inverter-Based Resources (wind, solar and storage) are asynchronously connected to the Bulk Power System with power electronics
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

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