



Mandatory Reliability and Markets

Fernando L. Alvarado
Chair, IEEE-USA Energy Policy Committee

Harvard Electricity Policy Group
Forty-first Plenary Session
Atlanta, Georgia, December 8-9, 2005

Outline

- The IEEE-USA Principles (verbatim)
- Some operator concerns (paraphrased)
 - *With suggested solutions by FLA*
- NERC standards (summary and samples)
- Comments and perspective (*by FLA*)

The seven IEEE-USA principles

1. Reliability criteria of a single North American reliability organization should be the minimum applied by all systems
2. **Prices of all market products must be established in a manner that provides proper incentives for reliable behavior**
3. [I]ncentives for the effective planning, construction, operation and maintenance of [the] infrastructure should be incorporated into all market structures.
4. Long-term resource adequacy, as reflected by installed reserve margins, are necessary to assure that sufficient supply resources are developed.
 - The extent of reliance on organized forward markets, may [vary].
 - Information about forward commitments must be made available to operators.
 - Reactive power supply adequacy is fundamental.
5. **Compatibility must exist between the regulatory and institutional framework and technical fundamentals.**
6. Policymakers should establish a clear and stable framework for coordination among state and federal regulators.
7. Design of state administered retail rules should facilitate demand response.

Major operator concerns paraphrased*

- “There is a problem with "ramping". Huge blocks change at "on peak" and "off peak" times, causing ACE and frequency swings.”
 - “Disband the on-off peak notion, which is a legacy notion.”
 - *FLA view: Improve regulation markets (see, for example, New York).*
- “Should a large disturbance occur, the market cannot adjust quickly enough to cover the outage in an economic manner.”
 - *FLA view: Improve reserve markets (particularly locational reserves).*
- “TLRs are not evil. Without a way to get the system back in balance we can have chaos and the TLR is the back up scheme.”
 - “Improve markets so TLR become rare, but keep the TLR notion.”
 - *FLA view: Unfortunately, in some systems TLRs are the primary means for congestion management. Also, in emergencies, operators should have even more flexibility than that afforded by the TLR system.*
- “There should be huge penalties for deferring maintenance and for improper training.”
 - “Should we require that the operators have EE degrees?”
 - *FLA view: agree on training, agree on tree trimming and some network items, but problematic for generator maintenance.*

(*) These concerns were verbalized by a person quite familiar with NERC, its procedures and objectives

The NERC Standards Categories

- Resource and Demand Balancing
- Interchange Scheduling and Coordination
- Transmission Operations
- Voltage and Reactive
- Interconnection Reliability Operations and Coordination
- Emergency Preparedness and Operations
- Transmission Planning
- Modeling, Data, and Analysis
- Protection and Control
- Facilities Design, Connections and Maintenance
- Communications
- Critical Infrastructure Protection
- Personnel Performance, Training, and Qualifications
- Organization Certification

Think of NERC as the “FAA” of the Power Industry that also happens to serve functions of the Chicago Mercantile Exchange

Purpose of Resource and Demand Balancing

- “To maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time.”

Purpose of the Disturbance Control Standards

- “The purpose of the Disturbance Control Standard (DCS) is to ensure the Balancing Authority is able to utilize its Contingency Reserve to balance resources and demand and return Interconnection frequency within defined limits following a Reportable Disturbance. Because generator failures are far more common than significant losses of load and because Contingency Reserve activation does not typically apply to the loss of load, the application of DCS is limited to the loss of supply and does not apply to the loss of load.”

Are the Standards Necessary?

- Some standards are absolutely essential
- All the standards are there to facilitate system operability and ensure reliability
 - Until and unless there is a proven market substitute, they should remain

Are the Standards Adequate Today?

- Many standards will have to evolve
- Likewise, the market structure must also evolve to better accommodate reliability
 - The more markets evolve in a manner that recognized reliability, the less reliance on mandatory rules will be required

Comments and Perspective

- Simplicity and transparency are essential to markets
 - Markets should be as simple as possible but no simpler
 - Rules (and particularly price caps) have distorting effects
- Ability to operate the system in a reliable manner is in the interest of all
 - Some market rules can impair reliability
 - E.g.: Price caps day ahead but no *de-facto* price caps in real time