ELECTRIC RELIABILITY: How Much, By What Means, At What Cost?

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Economic Costs of Outage

- Much of the current national energy policy debate centers around building new transmission lines
- The actual debate should center on electric reliability: how much? for whom? by what means? and at what cost?

Economic Costs of Outage

- The proper measure of economic cost of an outage is the VOLL: Value of Lost Load
- VOLL is almost always higher than electricity rates
- Historically, we established Loss of Load Probability (LOLP) criteria in order to avoid outages. Reserve margins were typically set for one day of generation-related outages per ten years. Is this optimal?
- This did not capture transmission and distribution-related outages

Economic Costs of Outage

- The most recent attempt to deal with outage costs is a September 2003 LBL Report: “Characteristics and Trends in a National Study of Consumer Outage Costs.”
- An effort at creating a meta-data set of value of reliability studies over the last 20 years.

Economic Costs of Outage

- That study found that the “average” cost experienced by the “average” customer for a one-hour summer afternoon outage is approximately:
  - $2.90 for residential customers
  - $1200 for small commercial & industrial customers
  - $8200 for large commercial and industrial customers

Economic Costs of Outage

- Outage costs increase substantially, not linearly as outage duration increase from one hour to eight hours
- Outage costs are generally higher in the winter.
- There is no average cost; there is no average customer. We need to look at the marginal costs of individual or subgroups of customers.

Economic Costs of Outage

- There are significant and key differences in outage costs across different regions (and climate), time of day, consumption, and different business types.
- Because of these differences, the aggregated averages do not provide policy-makers with useful information on what steps should be taken

Economic Costs of Outage

- Value of Service Studies should be done subregionally
- The uniqueness of a given locality is not a problem of collinearity of variables; the uniqueness of a given locality in most cases helps to identify the level of reliability reasonably achievable in a given geographic location
- Because of uniqueness, the average on average is wrong.

Federal Regulatory Response

- The Federal Energy Regulatory Commission has responded by providing an incentive rate of return for new transmission investment.
- Additional suggestions in the FERC White Paper that were not implemented – because they are beyond FERC's jurisdiction and authority.
- Vegetation Management Policy?
- Reliability Task Force.
- Seeking Authority to Enforce NERC Reliability Standards

State Regulatory Response

- Most states have had reporting and monitoring requirements
- Increasingly state commissions are requiring the use of performance indices to measure reliability, sometimes with penalties for failures to meet the standards.

State Regulatory Response

- Dispatchable demand-side management response to be compensated in some states, such as California, and New York, where there are organized wholesale markets
- Effectively a strike price set at the value of service / value of loss load

Meat Ax Approach and Unintended Consequences

- It has been suggested that transmission planning be done on a regional basis by the RTO
- Might not capture the granular richness at the subregional / individual customer level
- Locational Marginal Pricing combined with financial Congestion Management Rights could create unintended consequences: Argentina and perhaps in the United States

What Is Needed: A More Granular Approach

- Follow the data where it leads you – sometimes to distributed generation, sometimes to transmission enhancements or new lines, sometimes to dispatchable demand-side management
- Otherwise, economic waste