How Much Electricity Infrastructure and Reliability Should We Be Investing In?

Harvard Electricity Policy Group
December 7, 2012
2011 Illinois Derecho
Ice Storm Destroys Transmission Towers
Infrastructure Hardening

Enhanced Ability of the Distribution System to Withstand the Impact of a Major Storm

- Undergrounding
- Higher design, loading and construction standards
- Inspection and maintenance
- Tree trimming and removal
- Technology
  - Circuit auto-configuration
  - Micro-grids
Resiliency Measures

Enhancing Ability to Restore Distribution System After the Storm

- Increased labor force
- Standby supply of equipment and restoration materials
  - Trucks (time to obtain remote trucks)
- Enhanced communications, planning and coordination
- Internal and external communications
  - Satellite phones
  - Voice mail boxes full
- Technology
  - Smart Grid - Circuit auto-configuration, identification of outages
  - Airborne Damage Assessment
Cost Recovery

What Level of Reliability Should We Pay For?

- Different recovery mechanisms possible
- Rolled in
- Municipalities pay for ‘non-standard’ installation
- Test year issues
- Securitization
Nuclear

Fukushima

- Issues
  - Flooding
  - Loss of off-site power
- Recognition of a need for review
  - Reexamination of licensing basis (is original licensed design robust enough?)
  - Additional equipment put in place nearby but remote from station site
Bulk Power System

- Extreme Cold Weather
  - February 2011 Cold Weather Event in ERCOT and SPP
  - NERC Standards for Generator Winterization?
- October 29-30, 2011 Northeast Snow Storm
  - Off right-of-way tree management
- Space Weather (Geomagnetic Disturbance) – RM12-22