Smart Grid Implementation Workshop

Breakout Group Report

~~***Anticipating and Responding to System Disturbances in a Self-Healing Manner***~~

Addressing System Disturbances – Automated Prevention, Containment, and Restoration

June 20, 2008

Washington DC

Major Findings

Tweaking the Characteristic

- **Prevention includes real time[1] monitoring and other means to anticipate and avoid problems**
- **Automated does not mean total but cost effective and appropriate levels of autonomy**
- **Containment and restoration as quick as needed**

Other Key Points

- **Strategies must address both large-scale catastrophes and smaller scale events**
- **Smart grid includes wide area coverage from generation to consumption**
- **Metrics needed for the design phase as well as for the build phase and operate phase (values)**
- **Specific targets for some metrics will vary by the grid topology and baseline (existing level of maturity and need for normalization)**

[1] - As it is happening

Top 5 Metrics

Apply to both transmission and distribution

Monitoring and Analysis

- **The % of network nodes and customer interfaces being monitored in real time[1]**
- **The coverage %, #, and MW of phasor measurement units and networks**

Automation and Controls

- **The % of assets monitored, controlled and/or automated**

Communications

- **The level of development of a common communications infrastructure**

Electric System Design

- **The % of the system that is able to be "fed" from alternative sources**

1 – As it is happening

Issues with Data, Methods, Analysis

Metric: % of network nodes and customer interfaces being monitored

- **Need common definitions (i.e. "nodes"); Utilities may have different baselines; Need to survey utilities**

Metric: coverage %, #, and MW of phasors

- **PMUs networked; analysis of coverage needed**

Metric: % of assets monitored, controlled and/or automated

- **Need common definitions (i.e. "what are SG assets"); Level of granularity?; Analysis to develop baselines**

Metric: level of development of a common communications infrastructure

- **Needs definition; Need for standards; Analysis to assess compliance**

Metric: % of the system that is able to be "fed" from alternative sources

- **Utility-specific targets vary by grid topology; alternate sources may not be attractive if heavily loaded**

Path(s) Forward

- Develop standard definitions
- Establish baselines and targets both utility-specific and normalized across utilities
- Conduct benchmarking for comparable topologies (global)
- Define interconnection-level monitoring
- Establish data sharing framework
- Need to support smart grid appropriations

Suggestions for DOE

- Step up the pace, run faster, events happening rapidly, need help with paths forward
- Lots of work to do, need to establish priorities at a high level for the industry
- Assess international and cross-industry efforts
- There is an urgent need to bring together all stakeholders and facilitate communications about all things smart grid
    - particularly manufacturers, regulators, and consumer groups
- Establish smart grid research agenda at interconnection and distribution levels
- Support and promote regional demonstrations