Winter Preparedness Survey

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February 2-4, 2011 Southwest Cold Weather Event

- Three regions involved - ERCOT, WECC, and SPP
  - 1.3 million customers out during event peak on Feb. 2
  - 4.4 million customers affected during event
  - No load loss at any time in SPP during event

- SPP Region
  - 3 Balancing Authorities declared varying levels of Energy Emergency Alerts due to generator problems or deficiencies in natural gas supply
Winter Weather Issues in ERCOT

• Power plants across Texas experienced problems during cold weather event
  – Freezing instrumentation, pipes, and drain lines contributed to unit tripping, de-rating, and failure to start
  – Some natural gas curtailments and natural gas pressure affected fuel supply
  – Generator outages scheduled exceed projected levels

• Implementation of load shedding plans effective but magnitude raised concerns
  – Curtailments affected some natural gas production and distribution facilities
Winter Weather Issues in WECC

• Power plants in WECC experienced problems similar to those in ERCOT
  – Freezing sensing lines and control valves led to unit tripping
  – Limited local generation
• Limited import capability
• Communications
  – Notification to Transmission Owners/ Operators and Balancing Authorities during emergencies
  – Notification about load shedding to Distribution Providers
FERC and NERC conducted joint investigation

- 1989 event most similar to 2011 event

Report issued in August 2011

- 26 recommendations for electric industry and 6 for gas industry
- ERCOT-specific recommendations
- Detailed recommendations for entities performing specific functions
SPP RE Winter Weather Survey

- SPP RE Event Analysis Group coordinated survey with SPP’s Event Analysis Working Group (EAWG)
- SPP RE Registered Entities with the following NERC functions received survey Nov. 15:
  - Generator Owners and Operators (GOs/GOPs)
  - Transmission Owners and Operators (TOs/TOPs)
  - Balancing Authorities, Planning Authority, and Reliability Coordinator (BAs, PA, RC)
  - Transmission Service Providers/Distribution Providers (TSP, DP)
- 80% response rate by Dec. 2 deadline
- Deadline extended to Dec. 20; two more responses received
GO/GOP Survey Responses

• 41 GOs and 42 GOPs completed survey
  – Out of 54 GOs and 55 GOPs

• 94% of GOs/GOPs:
  – Verify heat trace functionality
  – Inspect insulation on piping/water lines, instrumentation systems, sensing lines and control valves
  – Drain water from nonessential systems; one GO/GOP intends to implement
GO/GOP Survey Responses, Continued

• Over 80%:
  – Review generator fuel supply/contracts
  – Verify alternate fuel storage capacity
  – Acquire, install, test portable heaters
  – Test emergency generators
GO/GOP Survey Responses, Continued

• Over 70%:
  – Test or run units with fuel switching capability on the alternate fuel; one GO/GOP intends to implement
  – Add extra insulation to exposed elements; one GO/GOP intends to implement
  – Acquire and install tarps, temporary shelters, or wind breaks around sensitive areas; one GO/GOP intends to implement
  – Train operations personnel on winter preparations and emergency plans; three GOs/GOPs intend to implement
  – Review communication protocols

• Only 25% conduct winter drills; two GOs/GOPs intend to implement
TO/TOP Survey Responses

• 35 TOs and 17 TOPs completed survey
  – Out of 40 TOs and 18 TOPs
• 97% verify breakers, metering and equipment is at correct pressure/temp
• 85% ensure equipment temperature requirements are met during operations; one TO/TOP intends to implement
TO/TOP Survey Responses, Continued

• Over 80% perform annual maintenance tests on breakers, heaters and supporting circuitry; three TOs/TOPs intend to implement

• Over 50% determine ambient temperature to which equipment, including fire protection systems, is protected; two TOs/TOPs intend to implement
BA Survey Responses

• Approximately 80%:
  – Review distribution of reserves to ensure they are usable and deliverable
  – Have procedures to evaluate emission limitations in advance of cold weather; one BA intends to implement
  – Have outage approval/reconsideration procedures to increase generator availability; one BA intends to implement

• 70% have procedures for communicating generator availability in advance
TSP/DP Survey Responses

• 71% review communication protocols and notification systems
• 48% train operating personnel on preparations/emergency plans

Many respondents indicated they would add operator training on winter emergencies/load shedding procedures
SPP Reliability Coordinator Survey Response

• As the Reliability Coordinator for the footprint, SPP intends to:
  • Develop procedures for GOs/GOPs to verify and provide accurate ambient temperature design specifications and limits
  • Expand outage criteria and reconsideration of outage approval and cancellation protocols to increase generator availability
  • Revise procedures and/or responsive reserve requirements to increase generator availability in the operational time frame
  • Train operations personnel on winter preparations/emergency plans
  • Review communication protocols and notification during cold weather events
Summary

- Many preventative measures for winter weather conditions are already included in winter plans
- Additional steps are being added so SPP region will be even better prepared the next time severe winter weather conditions occur
- SPP RE is:
  - Sharing survey results with members
  - Following-up with individual entities that requested additional information about lessons learned/best practices