

Southwest Power Pool: Winter 2013-2014

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Helping our members
work together to
keep the lights on...
today and in the future

SPP Winter 2013-2014 Operations and Market Performance Agenda

- **Regional Gas/Electric Coordination**
- **Winter 2013/2014 Preparations**
- **Operations Under EIS Market Operations**
 - Cold Weather event January 6-8
 - Cold Weather event February 4-6
- **Integrated Marketplace Operations**
 - Implemented March 1
 - Cold Weather event March 1-3
- **Lessons Learned from Winter events**

Coordination Activities

- **Gas Electric Coordination Task Force (GECTF)**
 - SPP created the Gas Electric Coordination Task Force in 3rd quarter of 2012
 - The group meets monthly to discuss:
 - Support and respond to gas and electric coordination issues impacting SPP
 - Operational updates
 - Training and planning activity updates

Coordination Activities (cont'd)

- **SPP Operations preparation has included:**
 - **SPP conducted training at SPP led by Gas Industry experts, to address**
 - **Gas-scheduling practices**
 - **Timing of the gas industry scheduling day compared to electric industry scheduling day**
 - **Specific pipeline and transmission line configurations in the SPP region**
 - **Increased awareness of gas pipeline regional impacts**
- **Participation in national gas/electric coordination group**

Winter 2013/2014 Preparations

- **Fall 2013 Preparation for Winter 2013/2014**
 - **SPP Operations personnel visited primary Gas Industry Operation facilities in the SPP Region. As a result of the visits, SPP initiated the development and implementation of the SPP Winter Preparedness Plan, including:**
 - **Joint calls with Gas and Electric Operations**
 - **Developed/implemented communication protocol**
 - **Exchanged operational information such as system maps, data points, etc...**
 - **Used approximately 4 times during 2013/2014 winter months**

Winter 2013/2014 Preparations

- The SPP Winter Preparedness Plan improved gas and electric coordination in the SPP region significantly
- SPP intends to expand to other gas industry operation entities prior to Winter 2015
- Prepared for March 1st Integrated Marketplace startup changes
 - 16 Balancing Authorities responsible for Unit Commitment through February 2014
 - SPP Consolidated Balancing Authority commenced on March 1 with Regional Unit Commitment performed by RTO

EIS Market Operations Prior to March 1

- SPP single Reliability Coordinator with Regional Tariff
- Regional Reserve Sharing Group
- Real-Time Energy Imbalance Market only with 5 minute dispatch
- Region had 16 Balancing Authorities
 - Maintained compliance with NERC standards
 - Responsible for all day-ahead and real-time unit commitments



Cold event of January 6 – 8, 2014

- SPP market set all time winter peak load during this event
- SPP Preparation
 - SPP canvassed each BA/GOP requesting information related to ability to carry sufficient capacity to meet BA obligations
 - Reviewed reserve levels; no changes made
 - Planned outages were canceled
- Transmission
 - No issue with interchange schedules
 - No reported issues with substation equipment performance

Cold event of January 6 – 8, 2014, (cont'd)

Impacts related to the Extreme Cold Weather event:

- Three of sixteen Balancing Authorities in the SPP region experienced freeze issues; two had major generator unit trips, one resulting in an EEA-2 for 3½ hours
- Fuel issues
 - Gas supply was restricted to pre-arranged nominations
 - Coal and minor ancillary support systems for six SPP generators resulted in derates or temporary forced outages
- SPP maintained required reserves with EEA activity for impacted BAs
- SPP worked with neighboring systems on coordination

Cold event of February 4 – 6, 2014

- Experienced the second highest winter peak load level on February 5 and very high natural gas prices
- SPP Preparation
 - Correspondence with member GOPs related to awareness and preparation
 - Communication with gas pipeline companies regarding restrictions and potential mechanical service issues
- Transmission
 - No major forced transmission outages during the event
 - No issue with interchange schedules
 - No reported issues with substation equipment performance

SPP Integrated Marketplace

- Integrated Marketplace started as planned on March 1
- Includes full Day-2 market systems
- Sixteen Balancing Authorities were consolidated into one simultaneously with the market startup
 - Centralized dispatch with real-time generation dispatch
 - Single reliability unit commitment
 - Overall SPP Integrated Marketplace systems performed well



Cold event of March 1 - 3, 2014

- Experienced third highest all-time winter peak loading on March 3
- SPP Actions with Integrated Marketplace launch
 - Additional staff and resources were on-site and available to address concerns in preparation for the weather and in real time
 - Heightened awareness based on compliance with additional NERC Standards
 - Multiple studies/cases and preparations were made to confirm results of new processes
 - Limited testing of unit commitment process during market trials
 - Experience was rapidly gained during first three days of the market

Cold event of March 1 - 3, 2014 (cont'd)

- **SPP Preparation**

- SPP ran a conservative operation; long on capacity intending to compensate for unusually high outages, no-starts, gas restrictions, and transmission issues
- Correspondence with member GOPs related to awareness and preparation
- Communication with gas pipeline companies regarding restrictions and potential mechanical service issues

- **Transmission**

- No major forced transmission outages during the event
- No issue with interchange schedules
- No reported issues with substation equipment performance

Cold event of March 1 – 3, 2014 (cont'd)

Actions/Information for the Extreme Cold Weather event:

- **Generation outages or inability to start units were more transparent based on the Consolidated BA**
- **Fuel issues**
 - Gas supplies were more constrained than previous events based on lower temperatures forcing SPP resources set to depend on coal supplies, and gas needs to start oil burners
 - Wind forecasting was challenging providing greater uncertainty
- **Planned outages introducing unnecessary BES risk were delayed and SPP maintained required generation reserves**
- **SPP had good communications with neighboring systems**

Preliminary Lessons Learned/Post-Event Analysis

- **SPP continues to review load forecasting processes**
 - Increasing accuracy
 - Reviewing additional weather vendors adding to our data inputs
- **Good coordination with neighboring systems; increased the limit on an interface in coordination with an adjacent BA to assist with their obligations**
- **Continued discussions in the Gas Electric Coordination Task Force; follow up conference call scheduled with major gas supplier in SPP's region to discuss lessons learned**

Preliminary Lessons Learned/Post-Event Analysis (cont'd)

- Oil-Fueled gas generators presenting challenges as natural gas needed to start was limited
- Some intermittent (wind) resources included as part of generation mix, which were unavailable due to low wind speeds and low temperatures
- Cold weather with Integrated Marketplace operating was valuable for gaining experience and quick learning