

SPP'S RESPONSE TO THE FEBRUARY 2021 WINTER WEATHER EVENT



During the week of Feb. 14-20, 2021, locations across the SPP service territory from North Dakota to the Texas panhandle experienced record-low temperatures for days on end. As consumers' electricity and natural gas use increased, power production was limited due to fuel-supply issues, equipment malfunctions, and transmission system constraints. The overall reliability of the bulk electric system was severely tested.

Despite these challenges, SPP was able to continuously maintain a reliable supply of wholesale electric service across its region, with two brief exceptions. Following its emergency operations procedures and to prevent a more

severe system failure, SPP directed its transmission operators to temporarily reduce regional electricity use twice: by about 1.5% for 50 minutes on Feb. 15 and by about 6.5% for approximately three hours on Feb. 16. Underscoring the historic significance of this event, these marked the first times in SPP's history region-wide curtailments were necessary.

SPP's independent board directed staff and stakeholders to conduct a comprehensive review of the organization's response to the event. The review yielded seven key observations and 22 recommendations to help SPP learn, mitigate and be better prepared for future extreme reliability threats.

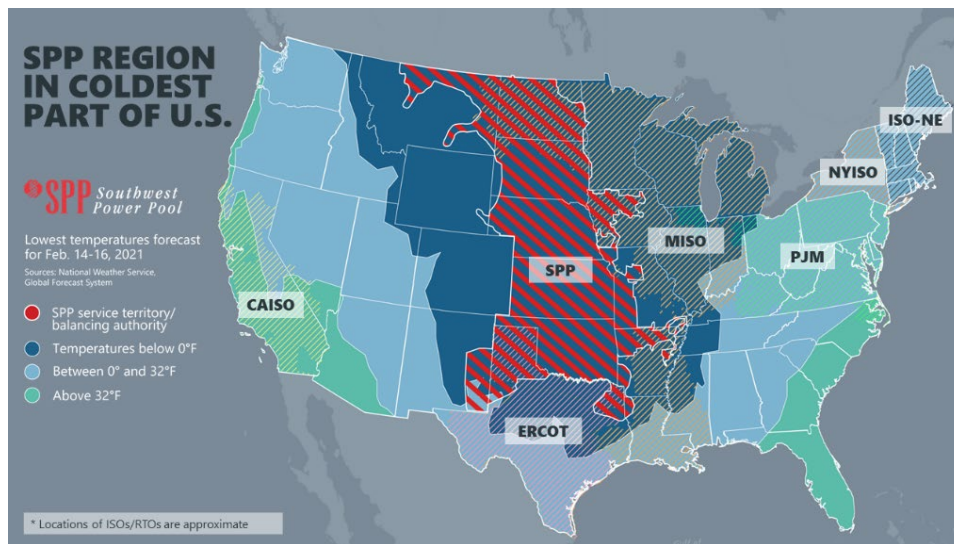
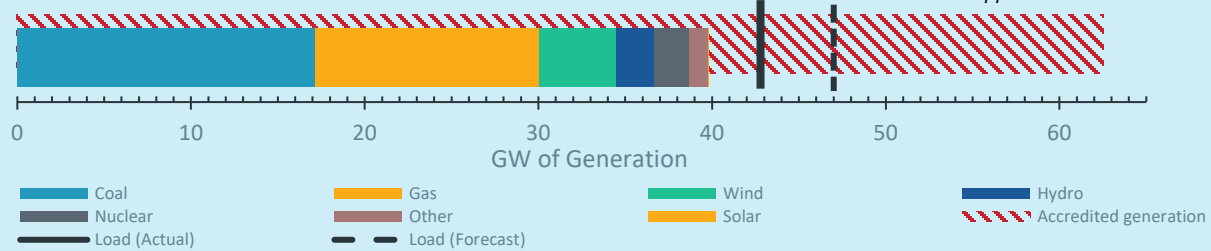


Figure 1: This map illustrates why SPP was so severely impacted by the February 2021 winter storm. The nation's lowest temperatures were felt across the SPP region and lasted for days.

Electric Supply and Demand Prior to Feb. 16 Service Interruptions



This chart illustrates the generation shortfall that led SPP to direct service interruptions on Feb. 16. SPP had approx. 62.6 gigawatts (GW) of accredited generating capacity available during the winter 2021 season. Total available generation on Feb. 16 at approximately 6:45 am was less than 40 GW, but with energy imported from neighbors, SPP was able to meet approx. 43 GW of demand. As available imports lessened, though, SPP had to implement emergency procedures to preserve the overall integrity of the grid. SPP's early forecasts predicted demand to reach as high as 47 GW, though this did not materialize due to consumers' voluntary conservation and SPP's directed interruptions.

KEY OBSERVATIONS



Unavailable Generation and Fuel: Lack of available generation was the primary cause of the event's reliability impacts.

Lack of fuel was biggest cause of generation unavailability.



High Gas Prices: Extremely high natural gas prices were the primary drivers of record-high energy offers, exceeding

SPP market's offer caps for the first time.



Increased Credit Exposure: The spike in SPP's market prices raised concerns about market participants' liquidity and created an exponential increase in short-term credit exposure.



Helpful Interconnections:

Relationships and interconnections with neighboring systems facilitated critically helpful assistance.



Congested Transmission: Full use of generation in certain locations was limited by constraints on the SPP

system.



Minimized Reliability Impacts: Early preparation, timely decisions, and effective communication helped

minimize reliability impacts while effective execution of load-shed procedures mitigated the risk of uncontrolled blackouts.



Credible Communications and Response: Stakeholders indicated general satisfaction with SPP's

emergency communications, information sharing, and credibility, while recognizing the need for improvements.

The comprehensive review evaluated hundreds of process changes, system enhancements, new and amended policies, assessments, and other solutions to address the event's root causes and enable SPP and its stakeholders to improve their response to future extreme system events. SPP's board approved 22 actions, policy changes and assessments to address issues related to fuel assurance, resource planning and availability, emergency response, communications and other critical areas.

A full report of the detailed analysis and recommendations is available [on SPP.org](https://www.spp.org).