



# NERC

NORTH AMERICAN ELECTRIC  
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## Final Report on February 2021 Freeze Underscores Winterization Recommendations

FERC, the North American Electric Reliability Corporation (NERC) and NERC's regional entities today issued the final report examining the impact the February 2021 freeze had on the bulk electric system in Texas and other parts of the South Central U.S. This 300-page analysis underscores preliminary recommendations released earlier this fall. The final report includes additional details regarding the need to strengthen rules for cold weather preparedness and coordination to prevent a recurrence of last winter's blackouts.

In February 2021, a severe cold weather event – also known as Winter Storm Uri – caused numerous outages, derates or failures to start at electric generating plants scattered across the region. The Texas grid operator (Electric Reliability Council of Texas or ERCOT) ordered a total of 20,000 MW of rolling blackouts in an effort to prevent grid collapse; this represents the largest manually controlled load shedding event in U.S. history. More than 4.5 million people in Texas lost power – some for as long as four days. Tragically, the loss of electricity caused the deaths of numerous Texans.

“The final report on Winter Storm Uri is a sobering analysis that highlights the significant work that needs to be done. I previously committed to take the recommendations seriously, and I plan to do exactly that,” FERC Chairman Rich Glick said. “The devastating effects of extreme cold on our bulk power system's ability to operate in 2011 and now, 2021, must not be allowed to happen again. We have a duty to protect the bulk power system and public safety and we will do just that.”

“Extreme weather events, such as the one in February 2021, are unfortunately becoming more commonplace and the electricity ecosystem needs to come together to plan for and prepare to operate under more extreme, longer duration, and wide area weather events,” NERC President and Chief Executive Officer Jim Robb said. “The FERC-NERC-Regional Entity Staff Report also highlights the need for substantially better coordination between the natural gas system and the electric system to ensure a reliable supply that nearly 400 million people across North America depend upon to support their way of life.”

Today's final report highlights the critical need for stronger mandatory electric reliability standards, particularly with respect to generator cold weather-critical components and systems. Notably, a combination of freezing issues (44.2 percent) and fuel issues (31.4 percent) caused 75.6 percent of the unplanned generating unit outages, derates and failures to start. Of particular note, protecting just four types of power plant components from icing and freezing could have reduced outages by 67 percent in the ERCOT region, 47 percent in the Southwest Power Pool (SPP) and 55 percent in the Midcontinent Independent System Operator South (MISO) regions. Natural gas-fired units represented 58 percent of all generating units experiencing unplanned outages, derates or failures to start. The remaining portion was comprised of wind (27 percent), coal (6 percent), solar (2 percent) and other generation types (7 percent), with four nuclear units making up less than 1 percent.

Today's final report provides more details:

- 81 percent of freeze-related generating unit outages occurred at temperatures above the units' stated ambient design temperature.
- 87 percent of unplanned generation outages due to fuel issues were related to natural gas, predominantly related to production and processing issues, while 13 percent involved issues with other fuels such as coal or fuel oil.
- Natural gas fuel supply issues were caused by natural gas production declines, with 43.3 percent of natural gas production declines caused by freezing temperatures and weather, and 21.5 percent caused by midstream, wellhead or gathering facility power losses, which could be attributed either to rolling blackouts or weather-related outages such as downed power lines.

The Final Report includes 28 formal recommendations that seek to prevent a recurrence of the failures experienced during the February 2021 cold weather event. These recommendations include important revisions to the NERC Reliability Standards surrounding generator winterization and gas-electric coordination.

Additional recommendations are included regarding topics such as cold weather impacts on mechanical and electrical components, utilization of weather forecasts to better predict electric demand, and increasing the ability to rotate rolling blackouts, amongst other recommendations. The report also encourages additional study of the ERCOT system's reliability issues, guidance on identification of natural gas infrastructure for protection from rolling blackouts, and additional ways to address natural gas fuel supply shortfalls during extreme cold weather events.

The full report is available [here](#).

The presentation of the preliminary findings released in September 2021 is available [here](#).