

FERC/NERC report on 2018 cold snap finds mandatory generator standard needed

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The North American Electric Reliability Corp. in 2012 considered requiring generators to ensure that their plants can handle extreme cold conditions. But in the face of industry pushback, NERC in 2013 dropped the idea and went with voluntary guidelines instead.

Now, several years later and following the polar vortex of 2014 and a cold snap in January 2018 that tested the limits of the grid system managed by the Midcontinent ISO, a report by staff of the U.S. Federal Energy Regulatory Commission in consultation with NERC staff is recommending that NERC take another stab at a mandatory standard.

"Despite the guidance, ... cold-weather events continue to occur involving extensive unplanned generation outages, which imperil reliable [bulk electric system] operations," said the July 18 report. "A mandatory reliability standard would require generator owner/operators to properly prepare for extreme cold weather, and would help [reliability coordinators] and [balancing authorities] identify units which may not be able to perform during an extreme weather event."

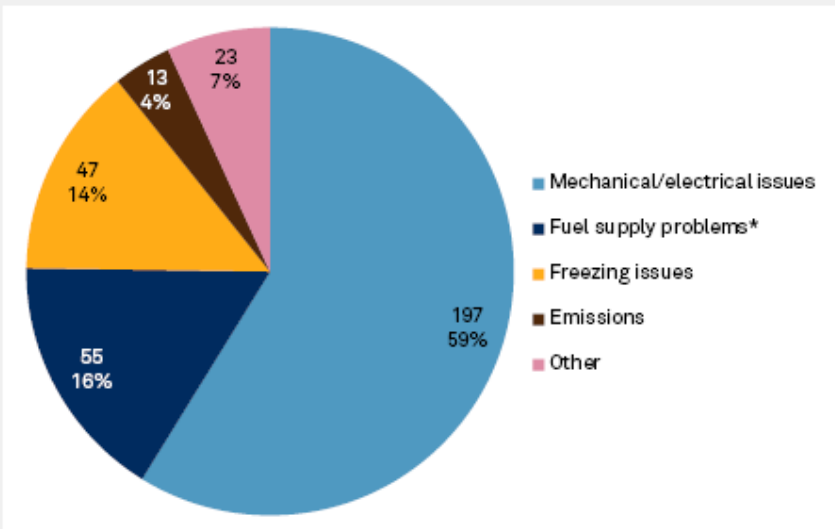
Following the early century Western energy crisis and Northeastern blackout of 2003, Congress in 2005 mandated that owners and operators of the bulk power system be subject to mandatory reliability standards. Generally, NERC is responsible for proposing and enforcing those standards, while FERC has approval authority and can also direct NERC to propose new standards.

According to the 2018 cold snap report, NERC committees ultimately opted for voluntary winterization guidelines in the face of opposition from the power industry and based on a recommendation from NERC's Reliability Issues Steering Committee. Some industry members in comments ahead of the decision suggested that NERC standards do not require a generator to be available all the time and that the costs of winterization are not justified when the investment would only pay off on rare occasions.

But scientists have predicted that as long as global carbon dioxide emissions continue to climb and the climate continues to change, the pattern of extreme weather events is likely to increase. And in the U.S., large portions of the power grid have been tested during at least three recent winters, including in the Southwest in 2011, the Polar Vortex in the Midwest and Northeast in 2014, and the most recent cold snap in mid-January 2018 that hit nine Midwest and south-central states, many of which are part of MISO and the Southwest Power Pool Inc.

Following each of those events, NERC found that generators in the affected regions could have been better prepared. The latest report shows that some generators were once again forced to shut down or not operate their plants during the 2018 cold snap. More than one-third of plant operators and owners — eight out of 21 — that lost generation did not have a winterization plan, the report found. Some entities did not know how much cold their facilities were rated to handle or did not incorporate those ratings into their freeze-protection measures.

Causes of unplanned generation outages during January 2018 cold snap



Data as of July 18, 2019.
* Includes curtailment and quality.
Sources: U.S. Federal Energy Regulatory Commission; North American Electric Reliability Corp.

In Jan. 15-19, 2018, a total of 62,555 MW of generators experienced unplanned outages, derates or failures, most of which the report attributed directly or indirectly to the cold conditions. While gas-fired plants accounted for about 70% of the unplanned outages, only 16% of those outages were due to gas supply challenges. Meanwhile, the report noted, some coal-fired units were having their own fuel supply problems due to wet or frozen coal supplies.

About 14% of all generator failures were directly caused by the cold and included frozen sensing lines, equipment, water lines and valves, as well as blade icing and facilities reaching low-temperature cutoff limits, the report said. Another 30% were indirectly attributable to the weather and included natural gas curtailments to gas-fired generators and mechanical causes known to be related to cold weather. The report added that challenges with large power transfers between MISO's northern and southern

regions and increased electricity usage further complicated the situation.

The report noted that MISO purchased some emergency energy supplies from Southern Co. for shortages in the MISO South region — the area that saw the largest amount of generation capacity out during the event. But the report found that MISO relied on using more transmission capacity than it normally does on the part of the system it contractually shares with SPP without being absolutely sure the line could handle the extra strain. The report recommended MISO and SPP study the capacity limits of the shared transmission capacity further.

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