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News : Several North American grids may lack power in extreme winter conditions: NERC

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- Winter 2022-23 forwards up after report
- Biggest risk seen in **ERCOT**
- 'Rolling the dice' in some areas

Much of the **North American** bulk power system remains at risk of "insufficient **electricity** supplies during peak winter conditions," especially in **Texas** , the Midwest, **New England** and **Alberta** , the **North American Electric** Reliability Corp. reported Nov. 17.

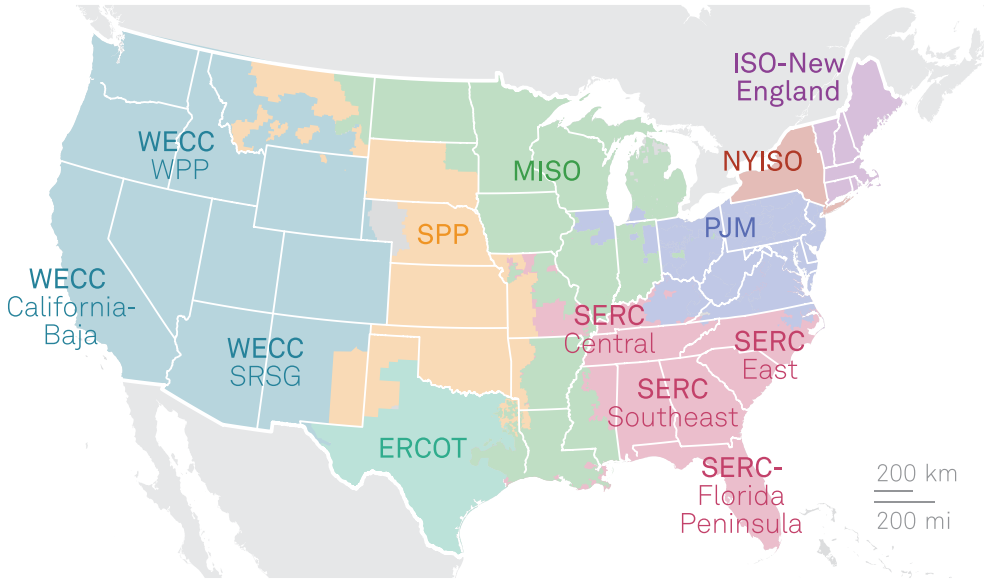
Power markets had clearly understood how tight circumstances would be in some of these areas, with December-through-February on-peak forwards showing big year-on-year premiums over day-ahead on-peak prices for December 2021 through February 2022. Examples include:

- **Electric** Reliability Council of **Texas** North Hub forwards: $72.86/MWh on Nov. 16, up from the $38.52/MWh average for day-ahead on-peak locational marginal prices for the 2021-22 winter;
- **Indiana Hub** forwards: $96.58/MWh, up from $53.84/MWh for 2021-22 winter; and
- Mass Hub forwards: $219.35/MWh, up from the ISO **New England** Internal Hub's average of $116.46/MWh for 2021-22 winter.

On the **Intercontinental Exchange** Nov. 17, the **ERCOT North** Hub January-February package traded around $85.50/MWh, up about $2.75. **Indiana Hub** Jan-Feb forwards jumped almost $9 to $113/MWh, while Mass Hub Jan-Feb rose $2 to about $267.75/MWh.

North American power winter reliability assessment, prices

The North American Electric Reliability Corporation foresees significant risk of insufficient power supplies in winter 2022-23, expecially in Texas, the Midwest, the Carolinas and New England.



	ARM (%)	ERM (%)	Forwards ($/MWh)	2021-22 prices ($/MWh)
ERCOT	20.4	-21.4	72.86	38.52
ISO-New England	54.7	2.5	219.35	116.46
MISO	14.0	-7.6	96.58	53.84
NYISO	58.9	23.9	166.93	94.85
PJM	33.2	16.0	108.15	55.31
SERC-Central	18.4	2.7	79.02	50.59
SERC-East	17.3	1.0	102.85	51.00
SERC-Florida Peninsula	33.2	27.1	70.00	50.64
SERC-Southeast	22.8	8.4	83.13	48.83
SPP	44.5	9.3	89.10	36.61
WECC-California-Baja	41.7	18.6	88.92	51.37
WECC-SRSG	84.7	55.7	75.60	41.91
WECC-WPP	31.3	10.1	113.75	46.54

ARM is anticipated reserve margin with typical outages.
ERM is reserve margin under extreme conditions.
Forwards are December-February on-peak as of Nov. 16 at the following hubs: ERCOT North, Florida, Mass, Indiana, NYISO Zone G, PJM West, TVA, VACAR, Into Southern, SPP South, CAISO SP-15, Palo Verde, Mid-Columbia.
Prices are day-ahead on-peak for December 2021 through February 2022 for the same hubs except in ISO New England, which is for the Internal Hub.

Source: NERC, S&P Global Commodity Insights

In a media conference call, John Moura, **NERC** director of reliability assessment and performance analysis, presented the 2022-2023 Winter Reliability Assessment, which showed the following negative reserve margins under extreme circumstances:

- **ERCOT** : -21.4%
- **Canada** 's Maritime provinces: -8.6%
- **Midcontinent Independent System Operator** : -7.6%
- **Alberta** : -1.1%

In the power sector, reserve margin is the percent by which forecast load is exceeded by expected resources. Negative numbers indicate that load would exceed resources by the percentages indicated.

The report also noted two areas with low but positive reserve margins that **NERC** considered to be at greater risk under extreme scenarios: 2.5% in ISO **New England** and 1% in the East part of **NERC** 's **SERC** region, formerly known as the **Southeast Electric Reliability Council** .

The report states that "a large portion of the **North American** [bulk power system] is at risk of insufficient **electricity** supplies during peak winter conditions."

Factors raising risks

"Higher peak-demand projections, inadequate generator weatherization, fuel supply risks, and **natural gas** infrastructure are contributing risks seen," the report states.

"Weather is really the most influential factor in operating a bulk power system," Moura said. "Our power plants, our substations, our transmission systems -- they're all exposed to the elements year round, day in, day out. Also, weather affects everything from **electricity** demand to forcing generation offline and can also wreak havoc with our fuel systems. **Natural gas** infrastructure systems are prone to disruption, especially during extreme and prolonged cold weather. We've seen that in the past."

The "extreme" scenario incorporated in **NERC** 's 2022-23 winter assessment is a result of the deadly mid-February 2021 winter storm that left about 4 million **ERCOT** customers without power, some for days. The power sector refers to the event as Winter Storm Uri.

"Prior to Winter Storm Uri, we would not have evaluated such an extreme case with such a large amount of generation dropping offline," Moura said. "Now, we understand there's a vulnerability, not only in the supply of fuel but also in equipment."

However, Moura emphasized that the assessment was not a prediction, but an evaluation of risks, which showed enhanced risks in those areas with low or negative reserve margins in extreme scenarios.

'Rolling the dice'

Higher peak demand projections, inadequate weatherization, fuel supply risks, accelerated **coal** -fired plant retirements, increased reliance on intermittent **renewable** resources have challenged grid operators' risk management skills, according to the report.

For example, the report cites increased power demand in **Canada** 's Maritime provinces and **Alberta** .

While **Texas** has implemented enhanced winterization standards the power system, they are yet unproven, and **gas** infrastructure weatherization rules remain to be implemented.

Since the winter of 2021-22, **MISO** has had more than 4.2 GW of **nuclear** and **coal** -fired generation retire, with "few resource additions," the report states.

"[If] we have mild weather, if the **natural gas** system is reliable, if we can fill tanks and replenish our liquid fuels, the system is likely to remain reliable," Moura said. "But in areas where we have extreme weather, cold, widespread, prolonged winter weather in those areas that are experiencing challenges, … it sounds like they're a bit rolling the dice. And that's really sad."