

## ELECTRICITY

Grid Chief: Operators pulling 'rabbits' to keep lights on

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Stresses on part of the power grid have operators scrambling for ways to keep the lights on.

In Texas, where backup power reserves are stretched to the limit, most engineers would conclude that "there's no way in hell they can keep the lights on," said Jim Robb, CEO of the North American Electric Reliability Corp. "And yet they do."

In New England, the head of the regional grid operator, Gordon van Welie, has needed a magician's touch to escape natural gas shortages for power plants, Robb added at a Federal Energy Regulatory Commission conference last month.

"Gordon up in New England constantly finds another rabbit to pull out of his hat to keep the lights on when any of us would look at that situation and say, 'It's got to break,'" Robb said.

California's power network, newly reliant on solar power and strained natural gas supplies, rounds out a trio of regional grids drawing attention from federal regulators over the challenges they face.

Texas, with its abundant wind power resources, edges close to power shortages when low wind conditions strain backup fossil fuel supplies, NERC warned in its 2018 Long Term Reliability Assessment, issued last December. The Electric Reliability Council of Texas (ERCOT), the grid manager for most of the state, is expected to stay below the anticipated reserve margin — the safety cushion of available backup generation capacity above forecast peak demand — through 2023, the period covered in NERC's analysis.

"We remain concerned about ERCOT resource adequacy as we enter the summer of 2019, but must acknowledge that the actions of ERCOT and performance of ERCOT-based

generation in the past would indicate they have the tools needed to navigate this upcoming season," Robb and Lauby said in prepared testimony for the June 27 meeting.

ERCOT has called for a 13.75% reserve margin. But the figure this summer is estimated to drop below 9%, primarily due to retirements of over 4,000 megawatts of coal and natural generation over the past two years and delays in bringing new plants online, according to NERC, whose favored safety margin is 15%.

Supporters of a goal of achieving 100% renewable power supplies — without fallback support from gas or nuclear power — put faith in the widespread installation of battery power units to fill in behind renewable energy.

In California's shortage scenarios, the cost would be huge, according to the Wood Mackenzie analysts.

While battery storage could help meet load during sundown, a pipeline rupture in the U.S. Southwest would require investments "of a tremendous scale" to offset, they concluded.

"Nearly 15,000 megawatts of 4-hour battery storage, likely requiring capital investments on the scale of \$12 to \$18 billion, would be needed," the Wood Mackenzie consultants said.