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INSIGHT

Power Outages in Texas

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The extremely cold weather that is affecting much of the country is causing some states to experience rolling blackouts to avoid a wider collapse of the electric power system. These weather-related impacts have been particularly acute in Texas. The current situation in Texas has been precipitated by the extreme cold, as noted by the *Washington Post*: "In the single-digit temperatures, pipelines froze up because there was some moisture in the gas. Pumps slowed. Diesel engines to power the pumps refused to start. One power plant after another went offline. Even a reactor at one of the state's two nuclear plants went dark, hobbled by frozen equipment." Some wind turbines in Texas were frozen, impacting about 10% of the power generated in Texas during the winter.

Texas's power outages, many experts argue, are largely a result of policies for electricity independence that the state has pursued for decades. Texas operates its own independent electrical grid, run by the Electric Reliability Council of Texas (ERCOT) that serves most of the state. Texas established ERCOT in 1970 initially to manage grid reliability in accordance with federal standards, and later established ERCOT as an independent system operator (ISO) scheduling power on an electric grid that connects approximately 680 generation units. ERCOT remains largely independent from oversight by the Federal Energy Regulatory Commission (FERC) because of the independent design of the electric power system in Texas. ERCOT itself states: "FERC does not have plenary jurisdiction over ERCOT because electric energy generated in the ERCOT Region is not transmitted in "interstate commerce," as defined by the [Federal Power Act], except for certain interconnections ordered by FERC that do not give rise to broader FERC jurisdiction."

The United States has three main electric power transmission systems, the Eastern and Western Interconnections, and the grid run by ERCOT. While these grids largely operate independently from each other, there are approximately 1,300 megawatts (MW) of transmission capacity connecting the three transmission systems. Other ISOs in California and New York operate within the Eastern and Western Interconnections, and have transmission connections with several other states. ERCOT has two connections with 820 MW of total transmission capacity connecting it to the Eastern Interconnect, and these are high-voltage, direct current transmission lines that operate under contract. There are also two connections that allow power to come in from Mexico. According to ERCOT, these interconnections "do not give rise to broader FERC jurisdiction." The result is that ERCOT's grid, essentially, is not connected to the rest of the United States.

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Unlike several of the other regional transmission organizations, ERCOT does not operate a market for electric capacity, or potential electricity supply, to exist alongside the conventional market for energy supplied every day. Such a market would pay generators to stand by to operate in the event of an energy shortfall. Texas chooses to rely on daily energy markets to supply the power it needs. Texas had always enjoyed an excess of electric supply, and reportedly saw no compelling reason to expect that would change. Its restructured market, among the most aggressive in the country, is said to have elected to face shortages rather than paying for excess generation.

The extreme cold weather event was forecast, and many observers argue ERCOT did not prepare for the weather and the large demand adequately. Texas usually experiences a maximum demand for electricity in warmer months to accommodate air conditioning loads. However, this is not the first time that extremely cold weather has caused an electricity crisis in Texas. After a historic cold weather event in 2011, FERC and the North American Electric Reliability Corporation (NERC) studied the power outages that resulted, and concluded that "the massive amount of generator failures that were experienced raises the question whether it would have been helpful to increase reserve levels going into the event. This action would have brought more units online earlier, might have prevented some of the freezing problems the generators experienced, and could have exposed operational problems in time to implement corrections before the units were needed to meet customer demand." The report also provided a discussion of weatherization best practices for cold weather preparedness.

The Department of Energy has authority to take action in the event of a grid emergency under section 202(c) of the Federal Power Act. That authority generally lasts for 15 days and may be seen as unlikely to be able to impact the current event, especially given limited infrastructure with the ability to import additional power into Texas. DOE has issued an emergency order allowing ERCOT to dispatch units to meet electricity demand through February 19, even if they exceed emission limits of sulfur dioxide, nitrogen oxide, mercury, and carbon monoxide. In addition, the current widespread cold temperatures have extended from the Canadian border into Mexico, so additional power from other regions may not be readily available. FERC and NERC have also announced their intention to investigate the operations of the bulk-power system during the extreme winter weather conditions currently being experienced by the Midwest and South central states.

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