

GOVERNMENTAL AFFAIRS WHITE PAPER

LIGHTS OUT: HOW A HISTORIC TEXAS WINTER STORM EXPOSED FAULTS IN THE STATE'S ELECTRIC GRID RELIABILITY AND THE IMPORTANCE OF TRADITIONAL ENERGY SOURCES

Executive Summary

A rare cold weather event swept through Texas in mid-February 2021, and brought with it cascading power failures that exacted catastrophic strains on the state's electrical grid. When demand began exceeding supply, state regulators were forced to impose controlled, rolling power outages to keep the grid from experiencing a total failure, that if had materialized could have left Texans without electricity for several months. At its peak, the Electric Reliability Council of Texas (ERCOT) – the state's primary grid operator -- reported more than 4 million Texans were without power over several days of unprecedented cold. Even when electricity was restored as temperatures rose, millions remained without safe drinking water after power outages hit treatment plants and water pumps used to pressurize lines. In the wake of this catastrophic grid failure, governmental officials, industry stakeholders and the public want to know what went wrong, and how to avoid a similar event from occurring again in the country's most energy-rich state. In the aftermath, evidence has already emerged that traditional energy sources like natural gas and coal outperformed renewable energy such as wind and solar and actually lessened the burdens of a failing grid. ERCOT's own data bears this out, showing that even though the extreme cold had frozen cooling systems on coal plants and natural gas pipelines, the state's coal plants still upped their output by 47% in response to increasing demand and natural gas plants increased their output by an amazing 450%, showing that fossil fuels have done yeoman's work to make up for solar and wind's diminished reliability.

What Happened: How Extreme Cold Strained the State's Electrical Grid

In mid-February 2021, Texas experienced a rare winter storm that brought record-breaking snowfall to some areas and frigid, sub-zero temperatures rarely experienced in the state. The Electric Reliability Council of Texas (ERCOT) was forced to take emergency measures to keep the entire state's electrical grid from collapsing, which according to its CEO, Bill Magnuss, was only minutes away from a complete failure that may have led to outages lasting "several months." ERCOT, which manages power

for about 90 percent of the state’s electric load, was forced to call upon regional state power operators to institute controlled, rolling power outages just to maintain the grid under an overwhelming demand surge which greatly exceeded capacity – and even ERCOT’s projections – as power generating facilities failed under low temperature strains. ERCOT reported that more than 180 state power plants, a majority, were unable to withstand the wintery conditions. Immediately thereafter, Texas Governor Greg Abbot (R) announced he was “taking responsibility for the current status of ERCOT.”¹ Days later, as temperatures warmed up to more seasonal levels, ERCOT finally lifted emergency conditions and was able to bring the lights back on for most Texans.²

Energy demand reached a record high on February 14, 2021 and did not taper off as electricity usage typically does during overnight hours. “The issue became critical when several of the grid’s energy generation units began to go offline in rapid progression, affecting more than half of the grid’s winter generating capacity,” according to Dan Woodfin, ERCOT Senior Director of System Operations. “These failing sources largely included nuclear plants, coal plants and thermal energy generators. Frozen wind turbines were a factor, too, but Woodfin said wind shutdowns accounted for less than 13% of the outages.”³

According to the *Washington Examiner*, “The reality is every energy resource failed, and the grid was ill-equipped to deal with the unusually cold temperatures that caused energy demand in the state to spike to levels rarely, if ever, seen during the winter months.”⁴ And post-storm analyses are already refuting erroneous media reports claiming fossil fuels, specifically natural gas utilized for power generation, caused, or exacerbated the rolling power outages. In fact, natural gas proved to be more resilient and reliable during the storm than other energy generating sources.

Just days prior to the Texas storm, the Electric Power Research Institute (EPRI) published its own report, *Exploring the Impacts of Extreme Events, Natural Gas Fuel and Other Contingencies on Resource Adequacy*, which noted that the “electric industry systematically understates the probability and depth of many high impact common mode events” such as extreme weather events which “are rising in frequency, intensity, geographic scope, and duration.”⁵ As to renewables and traditional fossil fuel power generation, the report finds that the “availability and output of renewable sources being correlated with weather

¹ As *Texas deep freeze subsides, some households now face electricity bills as high as \$10,000* (NBC News; February 19, 2021); <https://www.nbcnews.com/business/business-news/deep-freeze-subsides-texans-now-face-electricity-bills-10-000-n1258362>

² *Texas crisis a wake-up call for the power grid* (Washington Examiner, February 2021); <https://www.washingtonexaminer.com/policy/texas-freeze-power-grid-resilience-lacking>

³ *What percentage of Texas energy is renewable? Breaking down the state’s power sources from gas to wind* (Austin American-Statesman, February 19, 2021); <https://www.statesman.com/story/news/2021/02/17/texas-energy-wind-power-outage-natural-gas-renewable-green-new-deal/6780546002/>

⁴ *Id.*

⁵ *Exploring the Impacts of Extreme Events, Natural Gas Fuel and Other Contingencies on Resource Adequacy* (EPRI, January 28, 2021); <https://www.epri.com/research/products/000000003002019300>

requires other resources and/or demand to rapidly respond to significant changes in renewable energy production.” Further, “It is acknowledged that natural gas-based generation is a critical supply technology needed to maintain reliable service to consumers; it is generally assumed to be an ‘available resource’ even though both operational and regulatory issues can and do lead to that capacity being unavailable.”⁶

Vistra Corporation – one of the largest power generators in Texas – said it warned state agencies days before cascading blackouts plunged millions into darkness that internal forecasts showed electricity demand was expected to exceed supply. Despite the warning, “the coordination and planning by authorities across the broader energy sector were seemingly disproportionate to the severity of the situation. Days ahead of this event, Vistra and others forecasted insufficient generation would be available, and “we began winter emergency preparations. The warning signs were there, but the public was unaware of the gravity of the situation, which led to people being unable to respond and make the necessary adjustments for their families.”⁷

While the general consensus is that the immediate cause for the Texas power outages was extreme cold and insufficient winterization of the state’s energy systems, “there’s still no escaping the fact that, for years, Texas regulators have favored the construction of heavily subsidized renewable energy sources over more reliable electricity generation. These policies have pushed the state away from nuclear and coal and now millions in Texas and the Great Plains states are learning just how badly exposed they are when extreme weather hits,” writes Jason Hayes, director of environmental policy at the Mackinac Center for Public Policy.⁸ For example, Texas “spent tens of billions of dollars on wind turbines that don’t work when millions of people desperately need electricity. As the cold weather has gotten worse, half the state’s wind generation has sat frozen and immobile. Where wind provided 42% of the state’s electricity on February 7, it fell to 8% on February 11.”⁹ Moreover, “the failure of wind has sparked a competing narrative that fossil fuel plants were the real cause of power outages. This claim can be quickly dispelled with a look at data from ERCOT, the state’s electricity regulator. Even though the extreme cold had frozen cooling systems on coal plants and natural gas pipelines, the state’s coal plants still upped their output by 47% in response to increasing demand. Natural gas plants across the state increased their output by an amazing 450%. Fossil fuels have done yeoman’s work to make up for wind’s reliable unreliability.”¹⁰

⁶ *Id.*

⁷ *Days Before Blackouts, One Texas Power Giant Sounded the Alarm* (Bloomberg, February 20, 2021); <https://news.yahoo.com/days-blackouts-one-texas-power-014130098.html>

⁸ *Texas blackouts warning to Biden and all of us: Renewables do play a role in grid problems* (USA Today, Opinion, February 22, 2021); <https://www.usatoday.com/story/opinion/2021/02/22/renewable-energy-part-cause-texas-blackouts-column/6772677002/>

⁹ *Id.*

¹⁰ *Id.*

Texas Power Generation Mix – The Importance of Fossil Fuels

“Early power plants produced electricity primarily from coal, steam or hydroelectric energy. Today, Texas still generates electricity from some of these traditional sources but increasingly relies on natural gas as well as renewable resources, primarily wind,” according to the Texas Comptroller of Public Accounts.¹¹ Today, ERCOT reports that nearly half of Texas’ electricity is generated by natural gas-fired power plants at 51%, with wind at nearly 25%, coal at 13%, nuclear at nearly 5%, solar at nearly 4%, and Hydro, biomass-fired units at just 2%.¹²

According to an October 2020 ERCOT report, “Wind power has been the fastest-growing source of energy in Texas’ power grid. In 2015, wind power generation supplied just 11% of Texas’ energy grid, more than doubling in the past few years, and finally surpassing coal as the second-largest source of energy, but reliable and abundant natural gas still leads the way in Texas.

Regarding infrastructure, Texas is the only one of the contiguous 48 states with its own stand-alone electricity grid – one of the three main grids in the United States: the Eastern Interconnection, Western Interconnection, and Texas Interconnection. The Texas Interconnection, which covers 213 of the 254 Texas counties, is managed by ERCOT. Portions of Texas near the state’s borders are covered by the eastern and western grids. Because Texas maintains its own isolated grid it is not subject to federal oversight and is, for the most part, dependent on its own resources to meet the state’s electricity needs. As the independent system operator for the Texas grid, ERCOT connects more than 46,500 miles of transmission lines and more than 650 power generation facilities, providing electricity to more than 26 million customers. ERCOT’s primary responsibilities include maintaining power reliability, ensuring open access to transmission lines, and facilitating competitive electricity markets. It’s overseen by the Texas Public Utility Commission, which also enforces compliance with the state’s utility laws and regulates Texas’ electric utility rates. In the state, several types of entities are involved in providing electricity to end users. The current structure dates from 1999, when the Texas Legislature introduced retail competition in much of ERCOT’s service area. According to ERCOT, about 75 percent of its total power load represents customers in these “competitive” areas.

In competitive areas, power generators produce electricity from fuel and sell it on the wholesale market, where it’s purchased by private companies called investor-owned utilities or retail electricity providers (REPs). Texas has about 300 REPs; customers can choose among them based on pricing and various options such as an emphasis on renewable power. Electricity purchased from REPs is distributed

¹¹ *Id.*

¹² *Texas’ Electricity Resources: WHERE POWER COMES FROM — AND HOW IT GETS TO YOU* (Texas Comptroller of Public Accounts, August 2020); <https://comptroller.texas.gov/economy/fiscal-notes/2020/august/ercot.php#:~:text=Generation%2C%20Demand%20and%20Capacity,as%20renewable%20resources%2C%20primarily%20wind>.

to homes, businesses and other facilities by transmission and distribution utilities, which own the actual poles, power lines, and meters.

Texans living in areas outside the ERCOT grid or in areas served by municipally owned utilities (such as Austin Energy), electricity co-ops and river authorities rely on a single service provider. According to the state Legislative Budget Board, as of September 2019, six of Texas' 20 largest cities maintained their own utilities, the largest being San Antonio.

Texas' power mix has changed considerably in the past decade. In 2009, coal-fired plants generated nearly 37 percent of the state's electricity while wind provided about 6 percent. Since then, three Texas coal-fired plants have closed and the use of wind power has more than quadrupled, as more transmission lines bringing electricity from remote wind farms to urban market centers came online. In the same period, state energy consumption rose by 20 percent. According to ERCOT, much of this growth can be attributed to new industrial facilities along the coast near Houston, as well as oil and gas activities in the Permian Basin. ERCOT's most recent forecasts indicate that Texas' electricity demands will continue to rise, although the pandemic and any recessions may alter consumption projections.

Through it all, ERCOT's grid has been remarkably resilient – providing enough power for Texans during even the most challenging and prolonged triple-digit summer heat. According to ERCOT, the grid's electrical demand reached a record high of 74,820 MW in August 2019, at a time when the state's reserve margin — the amount of extra energy on hand beyond peak demand — fell to a historically low 8.6 percent. To protect the grid's reliability and prevent uncontrolled outages during tight conditions such as this, ERCOT can declare an Energy Emergency Alert, which triggers certain procedures, such as rotating outages and public advisories to conserve energy, when operating reserves drop below specific levels, as we saw during the winter storm. Weather conditions — particularly those blistering summer temperatures — are a huge factor in predicting demand, since about half of Texas' peak electricity use comes from air conditioning. But as Texans now know, the grid was unprepared for the arctic cold that hit the state.

Energy Sources

Renewable energy sources — mainly wind — contribute more than a fifth of Texas' net electricity. Texas is the nation's leader in wind-powered electricity generation, producing almost 30 percent of the U.S. total. In fact, according to the U.S. Energy Information Administration (EIA), Texas is “first in the nation in wind-generated electricity.”¹³ The state produces so much wind energy that the American Wind Energy Association says only four nations outside ours have more wind capacity than

¹³ *Texas State Profile and Energy Estimates* (U.S. Energy Information Administration; March 19, 2020); <https://www.eia.gov/state/analysis.php?sid=TX>

Texas. Regarding solar, in the first quarter of 2020, the Solar Energy Industries Association (SEIA) ranked Texas fifth among states in installed solar capacity, with 4,606 MW in place and an estimated 10,261 jobs tied to this renewable source. “Renewable energy sources contribute nearly one-fifth of the net electricity generated in Texas and account for one-fifth of the total U.S. utility-scale electricity generation from all nonhydroelectric renewable source.”¹⁴ Sunny West Texas in particular offers excellent potential for solar energy and, as costs for photovoltaic panels fall and transmission access improves, the state’s solar capacity can be expected to increase. The SEIA ranks Texas second nationally for projected growth during the next five years.

Regarding traditional energy sources, such as natural gas, according to the EIA, Texas “leads the nation in natural gas production, accounting for one-fourth of U.S. gross withdrawals in 2019.” As to power generation, “The industrial and electric power sectors accounted for nearly four-fifths of Texas natural gas use” and natural gas-fired power plants supplied more than half of the state’s electricity net generation in 2019. About 5,000 megawatts of Texas coal-fired generating capacity have been retired since 2016. As a result, coal-fired power plants supplied less than one-fifth of state generation in 2019, down from about one-third as recently as 2014. The state’s two operating nuclear power plants typically supply almost one-tenth of the state’s electricity net generation. Most of the capacity added in Texas since 2010 is fueled by natural gas or wind.¹⁵

Solutions: The Path Forward

Although Texas is not regulated by the U.S. Federal Energy Regulatory Commission (FERC), the agency announced plans to conduct an exhaustive investigation into the winter power outages. The review will “get to the bottom of what happened” and determine how power outages could be avoided when extreme weather happens again, said FERC Chairman Richard Glick. While FERC lacks jurisdiction over the Texas grid it can offer advice and adopt rules for power markets covering much of the United States. “People are literally dying, it is simply unacceptable,” said Glick during the storm. “The short-term focus must be on restoring power to the grid. We also have a responsibility to ensure this does not happen again.” FERC is preparing its probe alongside its grid reliability counterpart, the North American Electric Reliability Corporation (NERC), on a timetable that will be decided in part on how quickly officials can gather adequate information. The two agencies are hoping to avoid a repeat of a report they wrote on winter power outages in Texas and New Mexico in 2011, which Glick said sat on a shelf gathering dust after its voluntary recommendations were mostly ignored.¹⁶

¹⁴ *Texas Power Crisis: No Energy Source Alone Is to Blame and There Is No One Answer* (SEIA, February 17, 2021); <https://www.seia.org/blog/texaspowercrisis>

¹⁵ *Id.* at 13.

¹⁶ *FERC to review Texas power outages* (Argus Media; February 18, 2021);

In 2011, FERC and NERC released their joint report, *Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011*, detailing the need for Texas and other Southwestern states to weatherize their electrical grid infrastructure following then extreme cold and windy weather that hit the southwestern United States and knocked out 210 individual generating units within ERCOT’s jurisdiction. Regarding winterization in 2011, “Generators and natural gas producers suffered severe losses of capacity despite having received accurate forecasts of the storm. Entities in both categories report having winterization procedures in place. However, the poor performance of many of these generating units and wells suggests that these procedures were either inadequate or were not adequately followed.”¹⁷

Proving the benefits of natural gas, the report detailed how the Southwest “relies heavily on gas-fired generation to meet its peak capacity needs. In ERCOT, approximately 57 percent of the available on-peak summer and winter capability is from gas-fired generation (with 40 percent solely gas-fired and 17 percent having dual-fuel capability with gas as the primary fuel). The task force’s analysis therefore indicates there would have been adequate gas to supply the generators in ERCOT that failed for other reasons. This conclusion was confirmed by knowledgeable industry observers, who were of the opinion that the Texas supply of gas would have been adequate had the generators not experienced weatherization problems.”¹⁸

The FERC/NERC report found a number of inadequacies in generating units’ preparations for winter performance where “many generating units tripped, were derated, or failed to start as a result of problems associated with a failure to install and maintain adequate freeze protection systems and equipment.” The report recommended that generator owner/operators “should take steps to ensure that winterization supplies and equipment are in place before the winter season, that adequate staffing is in place for cold weather events, and that preventative action in anticipation of such events is taken in a timely manner.” Finally, the report recommended that transmission operators ensure that transmission facilities are capable of performing during cold weather conditions. But, again, the failures were structural to the grid production and delivery systems rather than the source of energy, such as natural gas and coal.

In 2016, the U.S. Department of Energy also issued its own report on the Texas power grid, known as the *Energy Sector Risk Profile*, which noted that, “According to the non-profit North American Electric Reliability Corporation (NERC) assessment, “the leading cause of electric transmission outages

<https://www.argusmedia.com/news/2188374-ferc-to-review-texas-power-outages>

¹⁷ *Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011* (FERC/ NERC, August 2011); <https://www.ferc.gov/sites/default/files/2020-04/08-16-11-report.pdf>

¹⁸ *Id.*

in Texas is Faulty Equipment/Human Error.”¹⁹ Further, “the greatest number of electric outages in Texas has occurred during the month of June” rather than winter months.

As the *Washington Examiner* noted in its survey of the recent winter storm, “Many of Texas’s power plants faltered because they weren’t mechanically prepared to handle freezing temperatures like power equipment in the Northeast and the Midwest is. Texas energy providers, though, have little financial incentive to make potentially costly upgrades to winterize their power plants because cold-weather events are rare in the state. Redesigned power markets could reward efforts power providers take to bolster resilience to extreme weather or offer incentives for plants to make those upgrades without losing competitive edge.”²⁰

Further, the drawbacks of wind and solar were certainly on display as those infrastructures were not weatherized and did fail at a greater rate than natural gas, even while they do encompass a smaller percentage of the energy mix. The images of frozen wind turbines or solar panels cover in snow and ice have become all too common. Engineering experts say that integrating more renewable energy into the system can pose its own challenges to keeping the lights on because grid operators must make sure there is enough easily dispatchable backup power for when the wind isn’t blowing and the sun isn’t shining. “Without storage, in my opinion, there’s no way we can have that high level of generation from wind and solar,” said Chanan Singh, a grid reliability expert and electrical and computer engineering professor at Texas A&M University. Nonetheless, without long-duration battery storage available, grid operators will be looking to natural gas or, potentially in the future, small modular nuclear reactors to balance out that load because they’ll need something that can last if resources fail for days as they did in Texas, said Ken Medlock, senior director of Rice University's Baker Institute for Public Policy’s Center for Energy Studies. “I know there’s a big movement that we can do all renewables, electrify everything, no gas, and maybe someday, we can, but technically, right now, we can’t.”

Immediately following the outages, Texas Governor Greg Abbott (R) told viewers during a Fox News interview that renewable energy plants in the state had failed to generate power under the bitterly cold weather, adding that “fossil fuel is necessary for the state of Texas.” However, ERCOT said the shutdowns at natural gas and thermal power plants during a surge in demand were also a contributing factor and a particular source of power generation was not at fault. According to ERCOT, as of February 17, 2021, “46,000 megawatts of generation were offline, with 185 generating plants tripped. ERCOT officials said 28,000 megawatts came from coal, gas and nuclear plants, and 18,000 megawatts were from

¹⁹ *State of Texas Energy Risk Profile* (U.S. Dept. of Energy, September 2016); https://www.energy.gov/sites/prod/files/2016/09/f33/TX_Energy%20Sector%20Risk%20Profile.pdf

²⁰ *Id.* at 2.

solar and wind.”²¹ And the following Monday, the governor corrected his earlier statement, tweeting that “The ability of some companies that generate the power has been frozen. This includes the natural gas & coal generators.” Governor Abbott noted that, “Many power generation companies facilities froze overnight and shut down their ability to generate power.”²² While ultimately walking back a focus on specific sources of electricity generation, Abbott began focusing on holding ERCOT accountable, saying the process has begun to reform ERCOT especially in light of meeting records that show that five days before the storm hit, the ERCOT CEO told the group’s board of directors, “We’re ready for the frigid temps to come our way.”²³ This prompted ERCOT to direct electric transmission companies to institute rolling, controlled outages to protect the state’s power grid from uncontrolled, prolonged blackouts. But this wasn’t enough because 40 percent of the state’s generators had been knocked offline due to the extreme low temperatures.

Holding ERCOT accountable began almost immediately with statewide hearings, but just one day prior four board members, including the chairwoman and vice chairman, abruptly submitted their resignations. In response, Governor Abbott released a statement lambasting ERCOT, saying, “When Texans were in desperate need of electricity, ERCOT failed to do its job and Texans were left shivering in their homes without power. ERCOT leadership made assurances that Texas’ power infrastructure was prepared for the winter storm, but those assurances proved to be devastatingly false. The lack of preparedness and transparency at ERCOT is unacceptable, and I welcome these resignations. The State of Texas will continue to investigate ERCOT and uncover the full picture of what went wrong, and we will ensure that the disastrous events of last week are never repeated.”²⁴

Texas Lieutenant Governor Dan Patrick (R) also said he will hold ERCOT accountable, vowing to subpoena top energy officials if they won’t willingly testify before the legislature. Patrick “insisted that top officials from the Public Utility Commission, the Electric Reliability Council of Texas, and generators and transmission companies would have to come testify themselves as hearings began [...] We don’t need middle management people coming in making excuses. We want the people who made decisions and who

²¹ *What percentage of Texas energy is renewable? Breaking down the state’s power sources from gas to wind* (Austin American-Statesman, February 19, 2021); <https://www.statesman.com/story/news/2021/02/17/texas-energy-wind-power-outage-natural-gas-renewable-green-new-deal/6780546002/>

²² *Id.*

²³ *Gov. Abbott: Remaining Power Outages in Texas Not Due to Lack of Generation* (NBC DFW, February 18, 2021); <https://www.nbcdfw.com/weather/weather-connection/watch-gov-abbott-update-on-power-outages-winter-weather/2556715/>

²⁴ *Four ERCOT Board Members Resign in Wake of Winter Storm, Statewide Power Outages* (NBC DFW, February 23, 2021); <https://www.nbcdfw.com/news/local/texas-news/four-ercot-board-members-resign-in-wake-of-winter-storm-statewide-power-outages/2561332/>

are in charge of these companies. And if we must, and we seldom use this power, but if we must subpoena people to come and testify, we will do that.”²⁵

“As for the cause of the outages, Patrick initially seemed reluctant to cast blame before the investigations began. But he then pointed to frozen wind turbines, if not for causing the disaster, then at least for being the first domino in the chain of failures. More to the point, Patrick argued that adding to the state’s renewable energy capacity could not and should not be part of the solution to the problem, arguing that ‘reliable’ forms of energy like natural gas, coal, and nuclear power are the answer.”²⁶

This sentiment was echoed by the Texas Oil & Gas Association (TXOGA) which pointed out that at “the height of last week’s extreme cold weather event, natural gas was providing 67% of all power generation in Texas. Without natural gas, millions more Texans would have been without heat and power.”²⁷ Moreover, “natural gas increased its percentage of the Texas power generation mix, supplying more than 60% of electricity generation every single day last week.”²⁸ TXOGA also noted that during “the peak electricity demand of last week’s extreme cold weather, no other energy source delivered as quickly and reliably as natural gas.”²⁹

Daniel Cohan, an associate professor of civil and environmental engineering at Rice University, also said that some power plants may not have been operational due to the cold or had been undergoing routine maintenance. “Peak demand typically occurs in the summer, so it’s not unexpected for a coal or natural gas plant to be offline in an effort to tune up for the warmer months,” noted Cohan. “This is far beyond what the power system operators expected, a far deeper freeze and a far worse performance from our natural gas power plants than anyone anticipated.”³⁰

By some estimates, nearly half of the state’s natural gas production had screeched to a halt due to the extremely low temperatures, while freezing components at natural gas-fired power plants had forced some operators to shut down. Production of natural gas in the state plunged, making it difficult for power plants to get the fuel necessary to run the plants. Natural gas power plants usually do not have very much fuel storage on site, experts said. Instead, the plants rely on the constant flow of natural gas from pipelines that run across the state from areas like the Permian Basin in West Texas to major demand centers like Houston and Dallas. In early February, Texas operators were producing about 24 billion cubic feet per day, according to an estimate by S&P Global Platts. But during the storm, Texas production plummeted

²⁵ *Lt. Gov. Dan Patrick Vows To Subpoena Top Energy Officials If They Won’t Testify At Hearings* (Houston Public Media, February 22, 2021); <https://www.houstonpublicmedia.org/articles/news/politics/2021/02/22/392005/patrick-commits-to-major-electric-power-reforms/>

²⁶ *Id.*

²⁷ *Winter Storm Natural Gas Facts* (TXOGA, February 24, 2021); <https://www.txoga.org/natgasfacts/>

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.* at 3.

to a fraction of that. “Gathering lines freeze, and the wells get so cold that they can’t produce,” said Parker Fawcett, a natural gas analyst for S&P Global Platts. “And pumps use electricity, so they’re not even able to lift that gas and liquid, because there’s no power to produce.”

ERCOT said, “It appeared that the winterization we were doing was working, but this weather was more extreme than [past storms],” according to Dan Woodfin, a senior ERCOT director. “The loss of generation during the morning of Monday, after midnight, was really the part that made this a more extreme event than we had planned.” Upgrading equipment to withstand extremely low temperatures and other changes, such as providing incentives for customers to conserve power or upgrade to smart appliances, could help avoid disasters like this one, said Le Xie, a professor of electrical and computer engineering at Texas A&M University and assistant director of energy digitization at A&M’s Energy Institute. “We used to not worry too much about such extreme cold weather in places like Texas, but we probably need to get ready for more in the future,” said Xie.³¹

The joint FERC/NERC inquiry into the February winter storm grid reliability failures “will work with other federal agencies, states, regional entities and utilities to identify problems with the performance of the bulk-power system and, where appropriate, solutions for addressing those issues.” The announcement came one day after FERC Chairman Richard Glick issued a statement reflecting the ongoing public safety threats associated with power outages during these extreme weather conditions, confirming that FERC will be “examining the root causes of . . . reliability events” that have occurred throughout the country, “in particular in the regions served by the Electric Reliability Council of Texas.”³² According to Steptoe & Johnson LLP, “At this early stage, it is difficult to predict how the current joint FERC/NERC inquiry will proceed. Nevertheless, recent statements by Chairman Glick suggest that FERC’s Office of Enforcement may take an active role. For instance, when FERC’s annual enforcement report was released during the Commission’s November 2020 open meeting, then-Commissioner Glick stated his concern that the Commission had ‘gone AWOL’ on enforcement, opining that it was ‘worth asking whether the Commission remains committed to its enforcement responsibilities,’ and adding that ‘I’ve had my doubts.’”³³

Steptoe & Johnson LLP reports that, “It also appears that Congress may jump into the fray in some form. On February 16, 2021, Rep. Joaquin Castro (D-TX) delivered a letter – in which he was joined by other Democratic members of the Texas congressional delegation – demanding answers from

³¹ *Texas largely relies on natural gas for power. It wasn’t ready for the extreme cold* (The Texas Tribune, February 16, 2021); <https://www.texastribune.org/2021/02/16/natural-gas-power-storm/>

³² *FERC/NERC Open Joint Inquiry Amidst Plunging Temperatures* (Steptoe & Johnson LLP, February 19, 2021); <https://www.steptoelaw.com/en/news-publications/fercnerc-open-joint-inquiry-amidst-plunging-temperatures.html>

³³ *Id.*

ERCOT and the Public Utility Commission of Texas “as to the cause, duration, and equitable distribution of power outages across Texas.”³⁴ The letter requires regulators to answer a series of questions regarding the outages, grid reliability, and planning processes that led to the systemic failures.³⁵

On February 17, the Texas Republican congressional delegation also delivered its own letter to ERCOT demanding answers to critical questions such as how did ERCOT prepare for this weather event and anticipate energy demand prior to when the controlled blackouts began; how this will affect customer rates; how were the various types of energy generation impacted by the extreme cold weather; what is the likelihood of similar weather events impacting Texas’s electric grid again; and what measures can be taken to improve grid resiliency in Texas in the future?³⁶

In the end, the historic winter storm event exposed vulnerabilities in Texas’ electric grid reliability but also bolstered the argument that natural gas remains a clean, efficient, and vital source of power generation for years to come. An energy mix study conducted by utility provider CenterPoint Energy – which serves some of the country’s coldest regions – found that natural gas is 90% more efficient than other power sources and offers lower greenhouse gas, sulfur dioxide, and nitrogen oxide emissions while burning more cleanly than other fossil fuels, such as coal.³⁷ According to Shell, natural gas is also versatile. “A gas-fired power station takes much less time to start and stop than a coal-fired plant. This flexibility makes it a good partner to renewable sources of energy such as solar and wind, which are only available when the sun shines and the wind blows.”³⁸ And according to XTO Energy, natural gas “can help meet the demand for cleaner energy in many sectors, including the growing demand for power generation. As a result of the growing role played by natural gas in generating electricity, our air is getting cleaner and the country has lowered greenhouse gas emissions to levels not seen in two decades.”³⁹ Moreover, the American Petroleum Institute (API) has projected that American consumers “could save \$100 Billion or \$655 per household by 2040 from the increased use of natural gas for

³⁴ U.S. Rep. Joaquin Castro demands Texas regulators explain power outages (San Antonio Current, February 17, 2021); <https://www.sacurrent.com/the-daily/archives/2021/02/17/us-rep-joaquin-castro-demands-texas-regulators-explain-power-outages>

³⁵ Congressional letter to the Electric Reliability Council of Texas and Public Utility Commission of Texas (February 16, 2021); <https://castro.house.gov/imo/media/doc/2.16.21%20Letter%20Texas%20Power%20Outages%20.pdf>

³⁶ Republican congressional delegation letter to the Electric Reliability Council of Texas (February 17, 2021); https://pfluger.house.gov/sites/evo-subsites/pfluger.house.gov/files/evo-media-document/02.17.2021%20Letter%20to%20ERCOT%20-%20Winter%20Power%20Crisis_0.pdf

³⁷ *Natural Gas and Electricity: Natural gas is your best energy value* (CenterPoint Energy); <https://www.centerpointenergy.com/en-us/Services/Pages/natural-gas-electricity-cost-comparison.aspx?sa=mn&au=bus#sthash.oLxTGmRM.dpuf>

³⁸ *Natural gas and its advantages* (Royal Dutch Shell plc); <https://www.shell.com/energy-and-innovation/natural-gas/natural-gas-and-its-advantages.html>

³⁹ *Benefits of natural gas and oil* (XTO Energy, June 30, 2019); <https://www.xtoenergy.com/Energy-and-environment/Unconventional-resource-development/Benefits-of-natural-gas-and-oil>

manufacturing electricity generation.”⁴⁰ API also notes that while “dramatically increasing production the industry has significantly reduced emissions. Thanks to natural gas, our air is cleaner than it’s been in decades and CO₂ emissions are at 25-year lows. As we continue to rely on electrical power for our homes and businesses, natural gas is the essential component to powering a cleaner tomorrow, today.”⁴¹

While it may be many months before a complete analysis is provided by government officials, engineering experts, and industry stakeholders, there is no doubt that the debilitating impacts of the Texas winter storm will require a new approach to electric grid resiliency and demand structural changes to ensure the lights stay on in Texas. As Rep. August Pfluger (R-TX) – who represents Midland, Odessa, and the Permian Basin in Congress – notes, the storm was “an example of just how dire the circumstances can be without power and energy. Texas must have a reliable base load for our energy grid and a level playing field for all forms of energy production – and affirms the importance of the oil and gas industry.”⁴²

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⁴⁰ *Natural Gas Solutions* (American Petroleum Institute); <https://www.api.org/news-policy-and-issues/natural-gas-solutions>

⁴¹ *Id.*

⁴² *Interview with Rep. August Pfluger (R-TX)* (Fox News, February 20, 2021); https://video.foxnews.com/v/6233963153001?fbclid=IwAR1NEU0bGXNXWEU_-0-BLYKkNCdjB85gsuotU1q34hHg-SnjDlbad6WYs6Y#sp=show-clips