



MEMORANDUM

March 19, 2021

To: Subcommittee on Oversight and Investigations Members and Staff

Fr: Committee on Energy and Commerce Staff

Re: Hearing on “Power Struggle: Examining the 2021 Texas Grid Failure”

On Wednesday, March 24, 2021, at 11:30 a.m. (EDT) via Cisco WebEx online video conferencing, the Subcommittee on Oversight and Investigations will hold a hearing entitled, “Power Struggle: Examining the 2021 Texas Grid Failure.”

I. RECENT SEVERE WINTER WEATHER AND POWER OUTAGES IN TEXAS

Severe winter weather and extreme cold spread throughout much of the south central United States on February 14, 2021, disrupting energy systems and resulting in significant risks to the health and safety of millions of Americans, particularly in Texas.¹ As the cold weather led to record-high energy demand, the effects of the winter storm on power generation also limited the energy supply available in Texas, leading to extensive disruptions.² During a period of about four days, customers across Texas were subject to widespread electricity outages, especially in areas managed by the Electric Reliability Council of Texas (ERCOT). ERCOT is the independent operator of Texas’s power grid, which manages the flow of electric power to more than 26 million customers, representing about 90 percent of the state’s power.³

Beginning the morning of February 15, in an effort to preserve the stability of the power system and avoid a blackout of the entire grid, ERCOT initiated rotating power outages to reduce

¹ *How Texas’ Drive for Energy Independence Set It Up for Disaster*, The New York Times (Feb. 21, 2021); U.S. Energy Information Administration, *Extreme winter weather is disrupting energy supply and demand, particularly in Texas* (Feb. 19, 2021) (www.eia.gov/todayinenergy/detail.php?id=46836).

² U.S. Energy Information Administration, *Extreme winter weather is disrupting energy supply and demand, particularly in Texas* (Feb. 19, 2021) (www.eia.gov/todayinenergy/detail.php?id=46836).

³ *Id.*; ERCOT, About ERCOT (<http://www.ercot.com/about>).

energy demand.⁴ According to ERCOT, these actions allowed the system to avoid a cascading blackout by minutes.⁵ ERCOT did not begin returning to normal operating conditions until February 19.⁶

At the height of the crisis, Texas’s wholesale electricity prices skyrocketed to \$9,000 per megawatt hour—the maximum price permitted under state law, and significantly higher than the seasonal average of \$50 per megawatt hour.⁷ The surge in wholesale prices resulted in some residential customers reportedly receiving energy bills for as much as \$10,000 for one week’s worth of power.⁸

The crisis affected multiple aspects of life in Texas, including commerce, municipal water supply, and medical infrastructure. At one point, almost half of ERCOT’s generating capacity went offline and more than 4.5 million customers across Texas were without power.⁹ Many homes and businesses suffered damage from burst water pipes and low water pressure levels, with more than 14 million people subjected to boil-water notices.¹⁰ Hospitals paused non-emergency surgeries, coronavirus disease of 2019 (COVID-19) vaccination sites closed, approximately 1,500 COVID-19 vaccines spoiled, and at least 57 people died in connection with the extreme weather and resulting blackouts.¹¹ One preliminary economic analysis projected that the total cost of the storm in Texas could be as high as \$295 billion—more than Hurricanes Harvey and Ike combined.¹²

⁴ ERCOT, *ERCOT calls for rotating outages as extreme winter weather forces generating units offline* (Feb. 15, 2021) (press release).

⁵ NRRI Insights, *Regulatory Questions Engendered by the Texas Energy Crisis of 2021* (Mar. 2021).

⁶ ERCOT, *ERCOT will end emergency conditions today* (Feb. 19, 2021) (press release).

⁷ *As Texas deep freeze subsides, some households now face electricity bills as high as \$10,000*, NBC News (Feb. 19, 2021).

⁸ *Id.*

⁹ *Texas Power Grid Was Minutes From Collapse During Freeze, Operator Says*, Wall Street Journal (Feb. 24, 2021); *Texas largely relies on natural gas for power. It wasn’t ready for the extreme cold*, The Texas Tribune (Feb. 16, 2021); *Why a predictable cold snap crippled the Texas power grid*, Reuters (Feb. 20, 2021).

¹⁰ *Nearly 12 million Texans now face water disruptions. The state needs residents to stop dripping taps*, The Texas Tribune (Feb. 17, 2021); *Texans now face a water crisis after enduring days without power*, The Texas Tribune (Feb. 19, 2021).

¹¹ *Texas hospitals evacuate patients, conserve resources amid outages*, Axios (Feb. 19, 2021); *Nearly 1,500 doses of COVID vaccines went to waste from Texas power outages*, Houston Chronicle (Mar. 3, 2021); *CEO Of Texas Power Grid Fired After Massive Cold Weather Power Outages*, NPR (Mar. 3, 2021); *At least 57 people died in the Texas winter storm, mostly from hypothermia*, The Texas Tribune (Mar. 15, 2021).

¹² *Texas winter storm costs could top \$200 billion — more than hurricanes Harvey and Ike*, CBS News (Feb. 25, 2021).

The crisis has also raised concerns that lower-income households and areas may have been disproportionately impacted, as low-income individuals often lack access to backup equipment, such as generators, and may reside in poorly insulated homes.¹³ Last month, the Biden Administration declared a major disaster and state of emergency in Texas, directing emergency supplies to the state and making federal funding available to state and eligible local governments and individuals.¹⁴

II. TEXAS'S POWER GRID, ENERGY MARKET, AND KEY ENERGY REGULATORS

A. Background

The United States has three main electric power transmission systems: The Eastern Interconnection, the Western Interconnection, and Texas's power grid.¹⁵ Texas is the only state in the contiguous United States that operates its own isolated electric grid.¹⁶ By design, the Texas grid remains largely independent from oversight by the Federal Energy Regulatory Commission (FERC). According to Texas's grid operator, that is because the electric energy generated "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."¹⁷

Beginning in 1999, Texas pursued a deregulated electricity market, in which dozens of private companies generate, buy, sell, and deliver electricity to customers on the open market.¹⁸ Unlike other grid operators in the United States, Texas operates an "energy only" market, where generators are compensated only for electricity that is delivered, rather than an "energy plus

¹³ *Texas grid crisis exposes environmental justice rifts*, E&E News (Feb. 23, 2021); *4 takeaways from Texas blackout crisis*, E&E News (Feb. 24, 2021).

¹⁴ The White House, *President Joseph R. Biden, Jr. Approves Texas Emergency Declaration* (Feb. 14, 2021) (press release); The White House, *President Joseph R. Biden, Jr. Approves Texas Disaster Declaration* (Feb. 20, 2021) (press release); *Biden authorizes supplies for Texas amid power outages, approves new disaster declarations*, The Hill (Feb. 18, 2021).

¹⁵ Congressional Research Service, *Power Outages in Texas* (Feb. 17, 2021) (IN11608).

¹⁶ *"Power companies get exactly what they want": How Texas repeatedly failed to protect its power grid against extreme weather*, The Texas Tribune (Feb. 22, 2021).

¹⁷ ERCOT, *Clarification of ERCOT's Authority to Protect Its Jurisdictional Status, Background* (Dec. 21, 2017) (NPRR861).

¹⁸ *As Texans went without heat, light or water, some companies scored a big payday*, Washington Post (Feb. 27, 2021).

capacity” market, which would pay generators to produce energy capacity that is held in reserve for emergency circumstances.¹⁹

B. ERCOT

ERCOT operates Texas’s electric grid and manages the energy market for the vast majority of the state.²⁰ ERCOT is a nonprofit corporation governed by a 16-member board of directors. Its composition is set by state statute and includes five independent members, nine market sector representatives, one representative of residential consumers, and ERCOT’s president and chief executive officer.²¹ ERCOT’s primary responsibilities are to maintain a reliable power system, facilitate competitive wholesale and retail electricity markets, and ensure open access to transmission.²² Following the February winter storm event, seven ERCOT board members have resigned.²³

C. Public Utility Commission of Texas

The Public Utility Commission of Texas (PUC) regulates Texas’s electric, telecommunication, and water and sewer utilities.²⁴ The PUC focuses on oversight of competitive markets, including oversight of ERCOT, and enforcement of compliance with statutes and rules for the electric and telecommunication industries.²⁵ The PUC is typically composed of three commissioners appointed by the governor to six-year terms, with the

¹⁹ Congressional Research Service, *Power Outages in Texas* (Feb. 17, 2021) (IN11608); *Winter storm blackouts plagued Texas in 2011, too. Recommendations made afterward went unenforced*, USA Today (Feb. 19, 2021).

²⁰ ERCOT, About ERCOT (www.ercot.com/about); *How Texas’ power grid works*, The Texas Tribune (Feb. 25, 2021).

²¹ *Members of Texas energy council receive threats during blackouts in winter storm*, NBC News (Feb. 18, 2021); *“Power Companies Get Exactly What They Want”: How Texas Repeatedly Failed to Protect Its Power Grid Against Extreme Weather*, Pro Publica (Feb. 22, 2021).

²² ERCOT, Fact Sheet (Feb. 2021) (www.ercot.com/content/wcm/lists/219736/ERCOT_Fact_Sheet_2.12.21.pdf).

²³ *Another ERCOT board member resigns as lawmakers criticize power grid operator for massive electricity outages*, The Texas Tribune (Feb. 26, 2021).

²⁴ Public Utility Commission of Texas, About PUCT: Mission & History (www.puc.texas.gov/agency/about/mission.aspx) (accessed Mar. 17, 2021).

²⁵ *Id.*; *Just one Public Utility Commission member remains after another resignation in aftermath of winter storm*, The Texas Tribune (Mar. 8, 2021).

chairman of the PUC sitting on ERCOT's board as a non-voting member.²⁶ All three PUC commissioners have resigned following the February winter storm.²⁷

D. Railroad Commission of Texas

Texas's oil and natural gas industry is primarily regulated by the Railroad Commission of Texas (RRC), which has statutory responsibilities under state and federal laws for regulation and enforcement of Texas's energy industries.²⁸ Typically, the RRC is composed of three commissioners who are elected statewide to six-year terms and led by a chairman selected by the commissioners.²⁹

E. North American Electric Reliability Corporation

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority with a mission to assure the effective and efficient reduction of risks to the reliability and security of power grids under its jurisdiction.³⁰ Among other responsibilities, NERC develops and enforces reliability standards; annually assesses seasonal and long-term reliability; monitors the bulk power system through system awareness; and educates, trains, and certifies industry personnel.³¹ NERC's area of responsibility covers the continental United States, including ensuring the reliability of ERCOT. NERC is subject to oversight by FERC in the United States.³²

In recent years, Texas has experienced other severe winter weather events that have impacted the operation of its power grid, after which NERC and FERC made important reliability recommendations. For example, in 2011, a historic cold snap resulted in statewide

²⁶ *Gov. Greg Abbott taps new head of Texas utility regulator in wake of power outages*, The Texas Tribune (Mar. 3, 2021); *ERCOT, ERCOT Board of Directors elects new Chair and Vice-Chair* (Feb. 9, 2021) (press release).

²⁷ Public Utility Commission of Texas, About PUCT: Commissioners (www.puc.texas.gov/agency/about/commissioners/Default.aspx); *Just one Public Utility Commission member remains after another resignation in aftermath of winter storm*, The Texas Tribune (Mar. 8, 2021); *Texas' last Public Utility Commission member resigns at Gov. Greg Abbott's request*, The Texas Tribune (Mar. 16, 2021).

²⁸ The Railroad Commission of Texas, About Us (www.rrc.state.tx.us/about-us/).

²⁹ The Railroad Commission of Texas, About Us: Commissioners (www.rrc.state.tx.us/about-us/commissioners/).

³⁰ North American Electric Reliability Corporation, About NERC (www.nerc.com/aboutnerc/Pages/default.aspx).

³¹ *Id.*

³² *Id.*; *FERC, NERC to investigate mass outages across ERCOT, SPP, MISO*, Utility Dive (Feb. 16, 2021).

rolling blackouts, forcing nearly 200 power plants offline due to the resulting freeze.³³ After this event, NERC and FERC conducted a review and issued a report detailing recommendations for preventing a recurrence of the rolling blackouts and natural gas curtailments.³⁴ Among other recommendations, the report contained suggestions for winterization measures and communication best practices for providers, operators, and other market participants.³⁵ It also found that widespread generator failures may have been prevented if there had been increased energy reserve levels going into the storm.³⁶

Three years later, in 2014, a polar vortex swept across south central regions of the United States, including Texas, causing multiple generators to fail in the state.³⁷ Thereafter, NERC conducted a review of the effects of the polar vortex and issued a report containing a series of recommendations to improve performance ahead of and during cold weather events.³⁸ The report highlighted the need to improve winter performance of natural gas pipelines and detailed 62 examples of power-generating equipment failing during the severe winter weather event.³⁹

IV. FACTORS POTENTIALLY CONTRIBUTING TO THE RECENT POWER OUTAGES IN TEXAS

Although the February extreme winter weather affected multiple states, the impacts have been particularly acute in Texas.⁴⁰ Experts have cited a variety of factors that may have contributed to the duration and scope of the power outages and disruptions in Texas.

First, the lack of adequate weatherization of power plants, natural gas pipelines, and other power infrastructure has been frequently cited as a factor that constricted the power supply

³³ *How Texas' Drive for Energy Independence Set It Up for Disaster*, The New York Times (Feb. 21, 2021); *As Texans went without heat, light or water, some companies scored a big payday*, The Washington Post (Feb. 27, 2021).

³⁴ Federal Energy Regulatory Commission, *Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011: Causes and Recommendations*, at 195 (Aug. 16, 2011).

³⁵ *Id.* at 203 – 211.

³⁶ *Id.* at 8.

³⁷ “*Power companies get exactly what they want*”: *How Texas repeatedly failed to protect its power grid against extreme weather*, The Texas Tribune (Feb. 22, 2021).

³⁸ North American Electric Reliability Corporation, *Polar Vortex Review*, at iii-iv (Sept. 2014).

³⁹ *Id.* at 13 – 16; “*Power companies get exactly what they want*”: *How Texas repeatedly failed to protect its power grid against extreme weather*, The Texas Tribune (Feb. 22, 2021).

⁴⁰ Congressional Research Service, *Power Outages in Texas* (Feb. 17, 2021) (IN11608).

available across much of Texas during the storm.⁴¹ Some experts have noted that state officials and the electric and natural gas industries failed to implement weatherization recommendations from NERC and FERC following prior severe cold weather events that could have fortified Texas’s power infrastructure against the most recent storm.⁴² Texas Governor Greg Abbott recently called on the Texas Legislature to mandate the winterization of power plants.⁴³

Additionally, because Texas does not require a reserve margin of additional generation to be available above expected demand, some experts have noted there is little incentive for generators to voluntarily build an energy surplus for emergency situations, leading to insufficient supply during such events.⁴⁴ Also, by remaining largely unconnected from the two major U.S. energy grids, Texas’s ability to access out-of-state energy supply is limited.⁴⁵

Poor communication from regulators and other state officials may have exacerbated issues in the state’s preparation and response efforts.⁴⁶ For example, during recent hearings in the Texas Legislature, witnesses and state lawmakers underscored a series of communication challenges that occurred leading up to and during the emergency, including a lack of communication between state entities and providers, as well as ineffective public communications.⁴⁷

Finally, some experts have pointed to Texas’s deregulated “energy only” market as an environment in which utilities, competing for consumers seeking the lowest prices, have

⁴¹ *Texas grid fails to weatherize, repeats mistake feds cited 10 years ago*, Houston Chronicle (Feb. 16, 2021); *How Texas’ Drive for Energy Independence Set It Up for Disaster*, The New York Times (Feb. 21, 2021).

⁴² *E.g., Texas grid fails to weatherize, repeats mistake feds cited 10 years ago*, Houston Chronicle (Feb. 16, 2021).

⁴³ *Abbott calls for winterization of Texas energy system: ‘What happened is completely unacceptable,’* KWTX 10 (Feb. 19, 2021).

⁴⁴ *E.g., How Texas’ Drive for Energy Independence Set It Up for Disaster*, The New York Times (Feb. 21, 2021).

⁴⁵ *The Two Hours That Nearly Destroyed Texas’s Electric Grid*, Bloomberg Green (Feb. 20, 2021); *Five things to know about Texas’s strained electric grid*, The Hill (Feb. 17, 2021).

⁴⁶ *As Texans endured days in the dark, the state failed to deliver vital emergency information*, The Texas Tribune (Feb. 19, 2021); *Power Outages Main Cause of Oil, Gas Shut-Ins*, Bloomberg Green (Feb. 25, 2021).

⁴⁷ *Watch live, get live analysis as Texas lawmakers question ERCOT, energy regulators about power outages*, Austin American-Statesman (Feb. 25, 2021); *Catastrophic Texas power outages prompt finger pointing and blame shifting at legislative hearings*, The Texas Tribune (Feb. 25, 2021); *At Texas Capitol Hearing, Oncor CEO Explains Whose Lights Stayed On & Why Outages Lasted Longer Than Intended*, CBS Dallas-Fort Worth (Feb. 26, 2021).

insufficient financial incentive to invest in facility maintenance or equipment upgrades that could guard against system failures prompted by severe cold weather events.⁴⁸

Going forward, the U.S. Government Accountability Office (GAO) has reported that many extreme weather events may become more frequent and intense due to changes in the Earth's climate.⁴⁹ In its report, GAO also indicated that extreme-weather events have been the principal contributors to an increase in the frequency and duration of power outages in the United States.⁵⁰

V. WITNESSES

The following witnesses have been invited to testify:

The Honorable Sylvester Turner

Mayor
City of Houston

Bill Magness

President and Chief Executive Officer
Electric Reliability Council of Texas

The Honorable Christi Craddick

Chairman
Railroad Commission of Texas

Michael Shellenberger

Founder and President
Environmental Progress

James Robb

President and Chief Executive Officer
North American Electric Reliability Corporation

⁴⁸ *How Texas' Drive for Energy Independence Set It Up for Disaster*, The New York Times (Feb. 21, 2021).

⁴⁹ U.S. Government Accountability Office, *Electricity Grid Resilience: Climate Change is Expected to Have Far-reaching Effects and DOE and FERC Should Take Actions* (Mar. 2021) (GAO-21-346).

⁵⁰ *Id.*