Student Commentary to “Paying for Energy Peaks: Learning from Texas’s February 2021 Power Crisis”

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Extreme weather events are a growing threat to power grids across the country.1 Climate change is leading to an increase in the frequency, intensity, and duration of storms and other climate hazards.2 While many electric utility companies are investing billions of dollars into upgrading and hardening their electric grid infrastructure,3 the “energy-only” market in Texas provides little to no incentives to power companies to make “costly, upfront power investments when the financial payoffs of these investments depend upon an uncertain future.”4

While there was no single cause of the February 2021 blackouts across Texas, the two leading causes were Texas’s failure to account for climate change in the setup and maintenance of its power grid and its

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2 Id.


disconnect from the national grid. In the year since Texas’s power crisis, the state has tweaked some statutes and appointed new regulators, but despite the death, economic disaster, and embarrassment it suffered last year, very little has actually changed.

The Texas power crisis is an excellent example of the benefits of governmental regulations. The electric grid is a complex system, linking electricity producers with consumers who use it for their daily needs. These systems begin on a local level and are interconnected to form larger, more dependable networks stretching thousands of miles and connecting millions of businesses and homes. The continental U.S. power grid consists of three primary interconnections—the Eastern, Western, and Texas (ERCOT)—which operate largely independent of each other with minimal transfers of electricity between them. The Eastern and Western Interconnections are also linked with the Canadian power grid to increase redundancy, helping to maintain the reliability of the grid and preventing blackouts caused by transmission line or power plant failure. The Texas Interconnection, however, is maintained as a separate grid. The grid does not cross state lines, meaning Texas is not subject to federal regulation by

5 See Univ. of Tex. at Austin, The Timeline and Events of the Febuary 2021 Texas Electric Grid Blackouts 8–9 (2021) (explaining that the impacts of extreme weather were underestimated and some power generators were inadequately weatherized); Herman K. Trabish, Texas Must Increase Ties to the National Grid and DER to Avoid Another Power Catastrophe, Analysts Say, Utility Dive (Mar. 2, 2021), https://www.utilitydive.com/news/texas-must-increase-ties-to-the-national-grid-and-der-to-avoid-another-powe/595845 (implying that Texas could avoid future power outages if its energy infrastructure were connected to nearby states).


8 Electricity Explained, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php (Nov. 3, 2021) (“The Eastern Interconnection encompasses the area east of the Rocky Mountains and a portion of the Texas panhandle. The Western Interconnection encompasses the area from the Rockies to the west. The Electric Reliability Council of Texas (ERCOT) covers most of Texas.”).

9 Id.
the Federal Energy Regulatory Commission. When Texas disconnected from the power grid in 1999, it subjected its citizens to an untested and unproven experiment in deregulation of the energy sector. The state handed control of its entire electric system to a patchwork of private generators, transmission companies, and energy resellers.

The energy industry in Texas (lead primarily by Enron) lobbied for deregulation because it provided them the opportunity for far higher profits. Texans supported deregulation because they thought (as many people do) that less regulation is better, that government oversight is bad, and that free market capitalism in the electricity industry would lower monthly rates and give consumers more choices among energy providers. But research has shown this experiment of deregulation has largely failed since the beginning.

Texas touts its independent electric system and limited federal regulatory jurisdiction as the driver behind their unique electricity system, led largely by their seemingly endless supply of cheap natural gas that the state can advertise as “clean energy” without the emissions of coal. While natural gas does burn cleaner than coal, the process of extraction and refinement is anything but clean. The process known as fracking uses water mixed with sand and chemicals at high pressures to fracture deep underground rock formations to release trapped oil and gas. Wastewater injection from fracturing wells has resulted in a myriad of environmental impacts in these areas: from causing a spike in earthquakes to contaminating aquifers and major supplies of drinking water.

10 Kate Galbraith, Texplainer: Why Does Texas Have Its Own Power Grid?, TEX. TRIB. (Feb. 8, 2011), https://www.texastribune.org/2011/02/08/texpainer-why-does-texas-have-its-own-power-grid/ (“Basically, Texas has its own grid to avoid dealing with—you guessed it—the feds.”).
12 Id. at 8–9.
13 Id. at 61.
14 See id. at 13.
Additionally, fracking sites often experience explosions and fires.\textsuperscript{18} Studies have also linked fracking to “respiratory illnesses, cardiovascular problems, central nervous system damage, birth defects, cancer, [and] premature death . . . .”\textsuperscript{19} And “[w]hile most states with oil and gas production have rules requiring disclosure of chemicals used in fracking, those rules often contain exclusions for ‘confidential business information’ (CBI), which can be used to shield the identities of chemicals that are considered trade secrets.”\textsuperscript{20}

Natural gas as a “clean energy” source is, in fact, worse than coal in terms of global warming potential.\textsuperscript{21} A study by Cornell showed that the fracking process releases extraordinarily “large quantities of methane, and other harmful gases, yielding twenty percent more global warming per unit than coal.”\textsuperscript{22} “Methane is over [twenty] times more effective at trapping


\textsuperscript{19} Irena Gorski & Brian S. Schwartz, \textit{Environmental Health Concerns From Unconventional Natural Gas Development}, OXFORD RSCHE (ENCYCS. (2019).

\textsuperscript{20} See generally Denchak, supra note 15.


heat . . . than [carbon dioxide], so it stands to greatly increase the pace of global warming, even over a short period of time.”

The majority of methane emissions come from leaks in the extraction process that are largely unseen and unmeasured. And while the Environmental Protection Agency and other federal agencies track emissions, ongoing rollbacks of regulations on monitoring and restricting emissions of methane will only worsen the problem. Methane leaked from gas wells can stay in the atmosphere for a decade. Carbon dioxide from burning it can linger for a century. It is imperative to ramp down emissions as quickly as possible. But every new natural gas power plant represents decades of drilling, mining, refining, and using fuel which will continue to produce severe greenhouse gas emissions.

Why is this so important? The true environmental costs of fracking are not reflected in its price, making it difficult for clean, more renewable energy options to compete. Natural gas is so inexpensive it makes up about 46% of Texas’s energy supply mix. While it’s often hailed as a clean

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27 Id.
source of energy, the fracking process makes it one of the worst climate producers.\footnote{See Alejandra Borunda, Natural Gas is a Much ‘Dirtier’ Energy Source Than We Thought, NAT’L GEOGRAPHIC (Feb. 19, 2020), https://www.nationalgeographic.com/science/article/super-potent-methane-in-atmosphere-oil-gas-drilling-ice-cores.}

When Texas withdrew from the national grid and set up their own, their new system was highly deregulated with few safeguards and even fewer enforced rules.\footnote{See Dyer, supra note 11, at 8.} The utilities were competing for consumers, constantly trying to undercut competitors’ prices.\footnote{See id. at 15.} This constant price battle left very little incentive for companies to invest in weather protection and maintenance.\footnote{Clifford Kraus et. al., How Texas’ Drive for Energy Independence Set It Up for Disaster, N.Y. TIMES (May 13, 2021).}

During the February 2021 power crisis, renewable energy quickly went offline because wind turbines were not equipped with de-icing equipment routinely installed in colder climates.\footnote{Lili Pike, Wind Turbines Can Handle the Cold Just Fine. Just Look at Iowa., VOX (Feb. 19, 2021, 4:10 PM), https://www.vox.com/2021/2/19/22290512/texas-winter-storm-wind-energy-power-outage-grid-fox-news.} Power lines were installed without insulation.\footnote{Jeremy Schwartz et al., “Power companies get exactly what they want”: How Texas Repeatedly Failed to Protect its Power Grid Against Extreme Weather, TEX. TRIB. (Feb. 22, 2021, 5:00 PM), https://www.texastribune.org/2021/02/22/texas-power-grid-extreme-weather.} The natural gas production process was unprepared—the cold temperatures caused freezeoffs at wellheads, processing facilities, compressor stations, and other natural gas system equipment.\footnote{Michael E. Webber, The Texas Power Crisis Didn’t Have to Happen, AM. SOCY MECH. ENG’RS (June 15, 2021), https://www.asme.org/topics-resources/content/the-texas-power-crisis-didn-t-have-to-happen (“[F]reezeoffs occur when water that is produced with oil and gas freezes, clogging and damaging wells, pipes, and other equipment.” This results in a drop in natural gas supply while demand spiked to heat buildings and drive production at power plants.).}

To make it worse, the cold weather caused failures at power plants that were unprepared, causing several gigawatts of capacity to go offline.\footnote{See UNIV. OF TEX. AT AUSTIN, supra note 5, at 8; Nicholas Bogel-Burroughs et al., Texas Winter Storm: What to Know, N.Y. TIMES (July 14, 2021), https://www.nytimes.com/2021/02/20/us/texas-winter-storm-explainer.html.} Then the ERCOT, tasked with overseeing the grid, started turning off power to parts of the gas production and distribution system, making the
supply shortage worse and accelerating the snowball of failures. The possibility, and high likelihood, of frequent cold-weather events was never built into infrastructure in a state where climate change is still a highly disputed topic. When the energy grid was overwhelmed by below freezing temperatures, deregulation meant that critical rules regarding power generation and distribution were not set by any laws. Instead, important decisions were left to a vast array of energy companies.

The possible solutions for Texas to prevent deadly events like the February 2021 power crisis in the future is to either reconnect to the national grid and comply with federal regulations or implement strong and enforceable regulations to maintain control of their existing grid. The state must also address increasing climate instability by requiring investment in clean energy research and development, particularly for technologies such as grid-scale energy storage and advanced nuclear. Finally, controlling emissions from fracking is a policy that could be a quick fix to stemming the rise of methane further. Methane is a short-lived gas in our atmosphere and reducing methane emissions would have an almost immediate climate impact. Together, these solutions and policy recommendations can help prevent future energy management disasters while promoting a more sustainable environment.