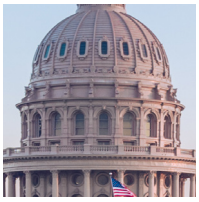


TEXAS PUBLIC POLICY FOUNDATION

Testimony

May 6, 2021

SB 3

Testimony in Support Before the Texas House State Affairs Committee

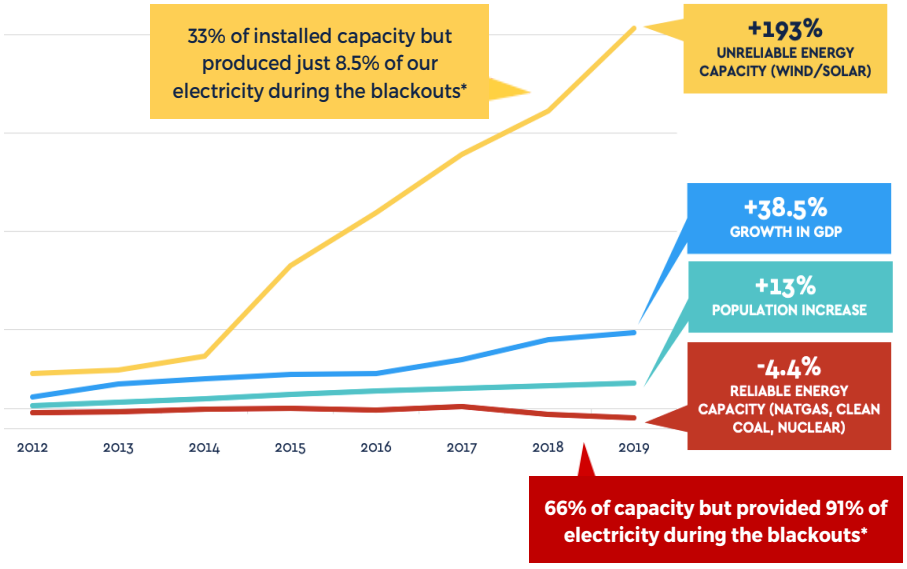
by Brent Bennett, PhD
Policy Director, Life:Powered

Chairman Paddie and Members of the Committee:

Thank you for the opportunity to testify in support of SB 3 today. Life:Powered and the Texas Public Policy Foundation appreciate this committee's thoughtful work on this bill as the Legislature converges on a set of solutions to prevent another crisis like the one that befell our electric grid last month.

While this bill addresses many important factors that precipitated that tragedy, including weatherization of power plants and improved resiliency of our natural gas infrastructure, these fixes alone will not solve our reliability problems. **The Legislature needs to address the market problems that Winter Storm Uri exposed, especially the diminishing quantity of dispatchable generating capacity in our grid and our increasing reliance on wind and solar generation without an appropriate reliability standard.**

Over the past 5 years, nearly 8 GW of gas and coal capacity was retired prematurely in the ERCOT market, with a net loss of almost 4 GW, and there is barely a GW of planned additions over the next 5 years. Texas has relied entirely on nearly 20 GW of new wind and solar generation to cover this loss and meet its demand growth.



*EIA data from February 15-18, 2021

Winter Storm Uri showed that the ERCOT market is lacking in dispatchable generation and is failing to properly account for the additional variability of wind and solar generators. Even if *every* generator that was online the night of February 14 had continued operating throughout the event without additional failures, ERCOT's demand forecast indicates that we still would have had outages lasting more than 24 hours, with a shortage up to 10 GW.

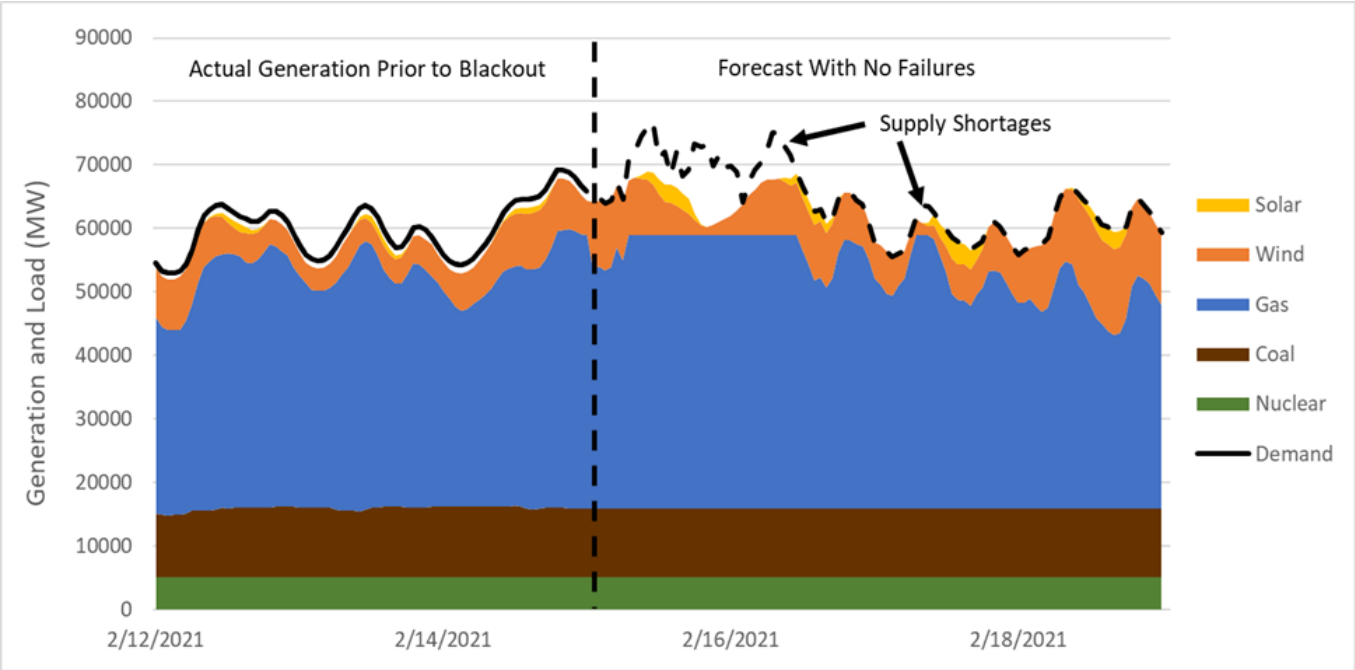
This outcome is the result of high demand coinciding with very low wind and solar output—less than 1 GW during what would have been one of the highest demand hours on the night of February 15. **The low output of wind and solar generation during the event was not a result of generator outages or transmission issues. It was entirely expected based on the typical weather following a cold front.** The forecast demand during the February event was far beyond any precedent for the winter but is entirely normal during the summer. Texas has narrowly avoided outages each of the last three summers, and all that is needed for an outage to occur is for low wind and solar to line up with peak demand.

If we pretend that Winter Storm Uri was simply a winter weather anomaly and fail to enact meaningful market reforms, we can be sure that problems will arise again very soon. In particular, there must be a robust discussion of new

continued

Figure 1

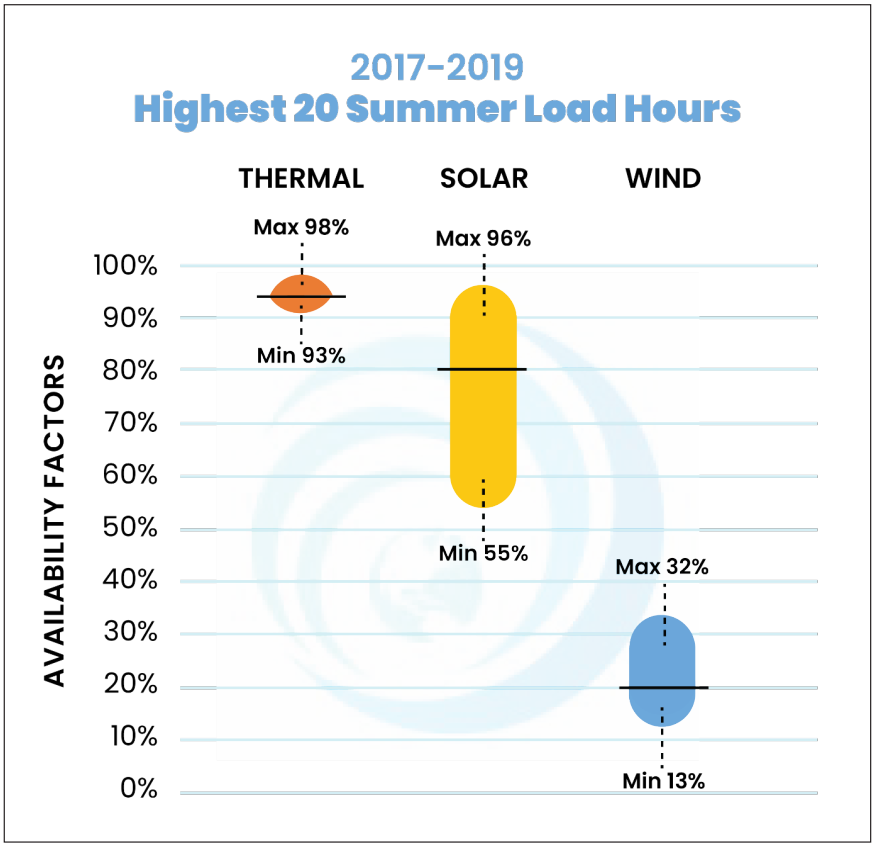
ERCOT's demand forecast indicates we still would have had outages lasting more than 24 hours, with a shortage up to 10 GW



Source: ERCOT

Figure 2

During summer peak demand hours, the variability of wind and solar resources from their average output is 5 to 10 times greater than thermal generation



Source: ERCOT

reliability measures to account for the additional variability of wind and solar—including but not limited to additional backup generation, demand response, and energy storage—and how those measures should be paid for.

It is important to quantify the variability of wind and solar and to clarify why they are less reliable than thermal generators. First, the average capacity factors of wind and solar are far lower than thermal generators during peak demand hours. Second, their capacity factors are far more variable about their averages. This additional daily and seasonal variability creates more volatility and uncertainty in market prices and increases the odds of sudden shortages. For example, during summer peak demand hours, the variability of wind and solar resources from their average output is 5 to 10 times greater than thermal generation—up to 40% of their installed capacity. The ERCOT market is designed to account for changes in demand, but it does not have a mechanism to account for this huge variance in supply.

Moving back to the broader theme of market reforms, the reforms proposed during this legislative session tend to fall in or near the following 3 categories.

1. **Minor reforms to prices and protocols → low prices, higher risk of shortages.**
   This has been the primary mode of market reform since the ERCOT market was deregulated. If the only reforms enacted are changes to existing pricing structures without adding new market mechanisms and reliability standards, prices will remain low for consumers, but the market will continue to undervalue reliability, increasing the odds of future shortages.

2. **Subsidize new or existing dispatchable generation without reforming the competitive market → greater reliability, far higher prices.**
   Subsidizing dispatchable generation through consumer fees without further reforms will lead to a bifurcated system of subsidized wind and solar and subsidized thermal generation. This is the mode of many European countries right now, where electricity prices are up to three times higher than in Texas.

3. **Balance the market by adding additional reliability measures and allocating the cost proportionally among generators.**
   The ERCOT energy-only market only works when paying for energy also inherently involves paying for a certain level of reliability. Wind and solar contribute less to reliability than thermal generators, which means that a reliability deficit is being incurred in the absence of specific market measures to address that deficit. Only by requiring wind and solar to make up that deficit can the reliability of the market be improved at the lowest cost possible to consumers.

We agree with the proposal in Section 13 of this bill that wind and solar be required to pay for more reliability and delivery costs. This reliability requirement is necessary to create a properly functioning market that values our various needs and provides the resources to meet those needs. Socializing the cost of reliability while continuing to subsidize more unreliable energy will either lead to more risk of outages or to a rapid escalation in costs for consumers.

With additional refinements to the language to clearly define both the cost allocation and the amount of ancillary services and replacement power that must be procured, Section 13 can be a vehicle for significant and lasting market reform. Our team has been exploring the possibility of creating a firming requirement for wind and solar since last year, and we stand ready to help the Legislature in this

endeavor. We hope the committee retains and improves upon Section 13 of this bill because it is the most critical reform for ensuring that Texas has a reliable electric grid for years to come.

Finally, it is incumbent upon the elected members of the Legislature, not the PUC, to set guidelines that weigh the costs and benefits of increasing electric reliability for all Texans. The committee should include clear reliability goals in this bill to give the PUC appropriate direction for additional market reforms. The PUC can then get to work implementing that mandate. The need for market reform is urgent as demand is growing and more reliable generation is expected to be lost over the next few years. We implore this committee and the Legislature not to leave this session without initiating the reforms proposed here.

ABOUT THE AUTHOR

Brent Bennett, PhD, is the policy director for Life:Powered, an initiative of the Texas Public Policy Foundation that reframes the national discussion on energy and the environment. As part of the Life:Powered team, Bennett regularly speaks with policymakers, energy experts, and industry associations across the country. He is responsible for fact-checking the team's work and spearheading many of the team's policy and regulatory initiatives. He has written extensively on how America has improved its environment while growing its energy use and on the physical limitations of renewable energy and energy storage.

Prior to joining the Foundation, Bennett worked for a startup company selling carbon nanotubes to battery manufacturers, and he continues to provide technology consulting to energy storage companies. His early years were spent in the oil country of Midland, Texas—the heart of the oil patch—where he has been a student of energy his entire life.

Bennett has an MSE and PhD in materials science and engineering from the University of Texas at Austin and a BS in physics from the University of Tulsa. His graduate research focused on advanced chemistries for utility-scale energy storage systems.

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