

<http://waterheatertimer.org/Names-of-parts-on-electric-pole.html>

We helped design ERCOT; here's how to fix it

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The Arctic weather system that hit the South Central United States in February 2021 led to the deaths of almost 200 Texans (many more by some estimates), extended power outages for two-thirds of Texas residents and caused more than \$100 billion in damages to Texans' homes and property. These outages were a wake-up call that, as our power system evolves and threats increase, we must do more to keep our electric system reliable.

As past commissioners of the Public Utility Commission of Texas, we helped to design and implement many elements of the Electric Reliability Council of Texas' electric system and market structure between 1995 and 2004. Some of today's problems were not obvious then, and much has changed in ERCOT over the last decade.

The February 2021 disaster resulted from multiple policy, operational and planning failures across our state's electric, natural gas and water systems. We must address those failures to protect Texas' future.

The Texas Legislature has just passed new laws to address many of the problems behind this disaster. Requiring minimum winterization standards for power plants to prepare for extreme events is a strong first step. Changes to electric scarcity pricing rules and securitization of some of the high bills from the February disaster are also helpful. But there is more to do to protect customers and ensure that our entire energy infrastructure supports a robust Texas economy.

**We offer 12 recommendations to Texas officials and citizens for this purpose.**

Because we all share a common grid, failures by some players affect everyone. Natural gas will remain an essential fuel for Texas power generation for years to come. Thus, natural gas supplies must be more reliable in the future, with formal performance standards for the natural gas production and delivery systems.

In February, as gas deliveries fell off, prices rose by 100 times or more. We need to figure out how to determine when natural gas prices reflect market-appropriate scarcity versus price gouging.

We need to weatherize our homes too. The spike in demand that led to February's outages occurred because too many Texas homes have inefficient heaters and air conditioners with little thermal insulation. We must adopt better building codes for new homes and make existing homes more energy efficient. Homes that are easier to heat and cool will reduce the burden on the electric grid, protect Texans' health and comfort during future storms and heat waves, create jobs and save money.

We must handle grid emergencies better. Instead of voluntary emergency programs, we should pay more customers to cut their load when grid conditions are tight. If we ever need to roll outages across the state, industrial and commercial customers should drop load before cutting residential neighborhoods. We should treat all critical infrastructure equally, protecting all from load cuts while requiring them to have better backup power systems.

Utilities need to segment their systems into smaller pieces so they can rotate load fairly among customers. And ERCOT must reexamine methods to restart the grid after any future collapse.

ERCOT is responsible for short-term and longer-term system planning. They must build more extreme weather threats and compound failures into seasonal and long-term planning analyses.

Positive change won't occur without better governance. Although the Legislature is adding two more commissioners to the Public Utility Commission, it must add additional staff and funds as well.

The Legislature also changed the ERCOT board structure. Still, this crucial entity [ERCOT] should be run by an independent, non-political board made up of the best engineers, economists and policy experts in our nation.

Last, good decisions require good information. All investigative findings of the February outage should be made public so that the public and policymakers understand where and why natural gas supplies, power plants and the market failed and who profited from the disaster. And although there is some transparency into the electric system, there are minimal data collection requirements for Texas natural gas production and pipeline performance. The state should fix this with appropriate data collection requirements.

We do not recommend creating a capacity market or a backup generation reserve at this time. Those are complicated and costly changes that may not be effective. We had enough steel (generating capacity) on the ground in February; the issue was that some of it simply wasn't ready or fueled up for the extreme weather. If we have more reliable power and gas supply and lower demand, we may not need a costly backup capacity mechanism. The new law gives specific guidance to the PUC and ERCOT how to address this issue.

Many of the above measures can be implemented using state agencies' current authorities. Others will need future legislative action.

Texas is the world's ninth-largest economy. The future power grid is coming of age here thanks to our rich wind, solar and hydrocarbon base, and welcoming open market. We owe it to our fellow Texans to learn from this event so events similar to this major electricity failure never happen again.