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Texas' grid should diversify to reduce interdependencies

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This is like a replay of a movie we've watched before. The most energy-abundant state in the nation suffered a catastrophic energy shortage. Again.

Almost a decade ago to the day, Texas endured a statewide freeze in February 2011. That cold snap caused some large thermal plants to trip offline, which triggered a cascading series of power plant failures elsewhere, leading to rolling blackouts for millions of people across the state.

Flash forward a decade and it happened again but worse. There were failures throughout the power sector. Some solar farms were coated in snow, and some wind turbines had ice on their blades, reducing renewable output to the grid. More critically, Texas lost over 30 gigawatts of thermal capacity — natural gas, coal and nuclear power plants — because of frozen equipment, outages and freezes in the natural gas supply system. It's as if we didn't learn a thing from 2011.

Unfortunately, because of Texas' independent grid, we also did not have the ability to import power from neighboring states. And, critically, we reject climate science, which means we are not prepared for the reality of changing weather patterns.

What needs to change is that we need to build climate science into our planning so that we're not building the infrastructure of tomorrow for yesterday's weather. Scientists have been warning us for years that increasing accumulation of greenhouse gases in the atmosphere will manifest itself in several ways: ocean acidification, higher sea levels, and warmer air and ocean temperatures — meaning more frequent and intense weather events. Our recent experiences with cold snaps are consistent with a weakening jet stream, which allows cold air from the North Pole to move thousands of miles further south than was typical a few decades ago.

Instead of just pretending we live in a hot state, we need to recognize these arctic fronts are an ongoing part of our future. That means we need to winterize the gas supply and power plants with insulation, heat tracing, temporary or permanent enclosures to keep out the wind and precipitation, on-site heaters for thawing equipment, cold climate packages for wind turbines, and snow removal for solar panels.

But there's more.

Texas' grid should diversify to reduce interdependencies and over-reliance on gas. The natural gas system depends heavily on electricity, and the electricity system depends heavily on gas. In a vicious downward spiral, power constraints inhibit the ability to supply gas and vice versa. Reducing the power sector's needs for gas lets us continue to prioritize the gas supply for home heating. Adding more sources such as geothermal, wind and solar that do not rely on gas will reduce that vulnerability. Nuclear and coal could be alternatives to gas, but they are much more expensive and have their own reliability problems. In fact, in 2021 and the 2011 snow storm, several coal plants failed due to the wintery conditions.

Moving forward, we should interconnect to the Eastern and Western grids so we can sell them clean renewable power for a profit most of the time while getting reliability benefits for those rare periods when the grid is struggling to keep up.

We should also implement efficiency and conservation into building codes to reduce the energy we need to heat and cool our homes. That saves consumers money and eases the load on the state's energy systems. And we should modernize our energy system with distributed energy resources, energy storage, and microgrids to improve resilience rather than simply depending on a far-flung system of large, remote power plants and transmission lines that can fail when loaded with ice.

Our biggest risk now is that we're going to seek the wrong scapegoats and blame the wrong problem, and therefore fail to make the right decisions or implement the proper solutions. That next severe winter storm will come, and power will most likely be lost again. The choices now will dictate how vulnerable we are in the future.

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