



ENERGY, NOT ELECTRIC. GRID THINKING IS KEY TO RESILIENCY

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Winter storm Uri messed with Texas. It does little good to rehash scores of particulars related to some of the most severe weather the state has ever seen, including an empathetic survey of the suffering endured by millions who went without power, then water, for days at a time in the midst of ice, snow and frigid temperatures. What does warrant additional attention, however, is the performance of the Texas grid as it absorbed all of what Uri had to offer. While a final analysis will add more texture, it will, without question start with these two truths: it was an unprecedented storm spanning the length and breadth of the state, and it buckled, nearly crashing, the state's electric grid.

By the snow-truck load, blame for the outages will fall upon ERCOT, the state grid's independent system operator (ISO) and steward of about 90% of the state's electric load. It's already been spread between everything from frozen turbines to frozen pipelines. But it's true, isn't it, that when a finger is pointed, three are pointing back? Those three fingers can help us, in this case, by shifting the blame conversation to better discussion. Let's count each as a dimension of an "energy grid" rather than just casting aspersions onto the electric grid.

A 3D energy grid is comprised of weather-resistant pipelines carrying natural gas, and someday, hydrogen. It also includes weather-resistant power lines energized by the former as well as wind, solar and nuclear. The third dimension is occupied by cleaner, more flexible energies that adapt to every weather condition. Propane, dimethyl ether and even ammonia, all three of which come in renewable form, live in this third dimension, and all of them support decarbonization at the same time they create resilience.

Anti-fragility is the goal of the 3D grid. The key to achieving the goal is to avoid one-dimensional thinking. All-electrification advocates suffer from this tunnel vision. Uri proved that an everything-electric future is not a resilient future. Pipeline advocates suffer from another form of one-dimensional thinking believing that only fossil fuels can ensure continued prosperity. Uri proved that theory wrong as well.

Uri's cold was a whole new level of cold for that part of the country and just the latest harbinger of things to come. In 2020, California wildfires, a derecho in Iowa and more hurricanes than the alphabet could handle all told us we are inside of climate change. Climate change is not a future

possibility – it is our present condition.

That stark reality tells us we need multiple energies working together to move us toward net zero while ensuring people's needs are met in every weather condition. When all three facets of a three-dimensional energy grid are working together, it is fair to say the sum becomes greater than the parts. Reliability and sustainability are the product, and they create a model upon which we can both improve -- and approve.