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There has been a lot of confusion over the drivers of the Texas blackouts. While more will become clear in the coming days, neither renewables nor insufficient gas capacity were the culprits. Rather, it was the lack of resiliency of to extreme cold conditions.

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Texas has seen an explosion of cheap wind power in recent years. Wind now produces around 20% of Texas' electricity. However, at the same time Texas has also been building a lot of gas capacity; gas generally works well with wind, able to quickly ramp up to fill in gaps. 2/

Because it is intermittent, the grid manager [@ERCOT_ISO](#) does not rely much on wind to meet extreme demand events such as the one we are experiencing right now. Rather, they have enough gas (and nuclear/coal) capacity on standby just in case high demand coincides with low wind. 3/

As such, adding more wind to the grid would not have that big an effect on the amount of gas capacity needed for peak demand events. The narrative that the current blackouts are due to over-investment in wind and underinvestment in gas miss this important dynamic. 4/

Texas has plenty of gas capacity to meet current demand. The problem is that around 40% of it went offline, due to a combination of frozen equipment and insufficient gas supply. Supply was low due to lower production (frozen wells) and extreme home heating demand. 5/

Building more gas capacity would not really solve this problem. Rather, what is needed is more resilient gas supplies to ensure that similar shortages do not occur in the future. 6/

Similarly, while frozen wind turbines are a problem (due to not installing deicing technology in Texas wind farms due to infrequency of extreme cold events), intermittent renewables at times over-performed and at times underperformed the (conservative) [@ERCOT_ISO](#) assumptions 7/

So what should we learn from this? Texas needs to make its energy system more resilient to extreme cold events. Its not about building more gas or more wind to solve the problem, its about making sure both technologies (as well as coal and nuclear) don't fail in extreme cold. 8/

While extreme cold events will likely become less common at the world warms, as we see this year they are still far from impossible. And the jury is still out whether a warming world may lead to the polar vortex occasionally reaching further south. 9/