Twitter Thread by Sean Casten



Sean Casten
@SeanCasten

For those wondering what the causes are of Texas blackouts, @JesseJenkins is doing a really good real time analysis of generator capacity and operation. (Short story: we have a natural gas problem in TX). A few additional thoughts to add:

> Confidential info from a market participant in ERCOT: As of ~10 AM Eastern time, the system has ~30 GW of capacity offline, ~26 GW of thermal -- mostly natural gas which cant get fuel deliveries which are being priorities for heating loads -- and ~4 GW of wind due to icing. https://t.co/Bfpn0WeRIq
>
> — JesseJenkins (@JesseJenkins) February 15, 2021

1/ As Jesse notes, natural gas is somewhat unique in that it is both a power plant fuel and a home heating fuel. When cold weather comes, regulators bias in favor of heating rather than power generation.

2/ New England - a region that is both cold and has long been more reliant than others on natural gas for power generation - has had to grapple with this for a long time.

3/ In most of the country, the tightest times for power markets are during hot summer days when demand peaks to run all that AC. In New England, the tightest times are often cold winter days when supply gets constrained as the gas is redirected to heat

4/ Texas isn't used to planning for cold snaps, but they are gas-dependent on the power grid. So they are, in essence, acting like New England right now.

5/ So far, this is just what Jesse said but in more tweets. But there's also another factor at play that bears mention: reliability guidelines.

6/ If you are an electric distributor or provider with responsibility for a given electric control region, you are required to maintain exceptionally high reliability standards. Those include but are not limited to...

7/ ...making sure you can continue to meet demand if your largest single generator goes down and designing a system that provides electricity with 3 - 5 9s reliability (e.g., 99.9% - 99.999% online). See here for details: https://t.co/uWZXJm9jEB

8/ But our gas grid has no equivalent standard. Nor for that matter does our coal delivery infrastructure. That means that as grids become increasingly reliant on natural gas supply, the gas supply infrastructure becomes the reliability bottleneck.

9/ Texas is particularly exposed to this because it is a stand-alone grid. (The US "grid" is really 3 grids: Eastern, Western and Texas. AKA, ERCOT.) https://t.co/CnQcvbcOZW

10/ So while gas dependency + lower pipeline supply reliability standards have the potential to create problems everywhere, Texas' grid structure makes them uniquely vulnerable. The cold snap exposed that vulnerability.

11/ Anyway, that's all I got on this for now. But follow @JesseJenkins for continuing analysis on this week in TX. I definitely will! /fin