Twitter Thread by Ketan Joshi

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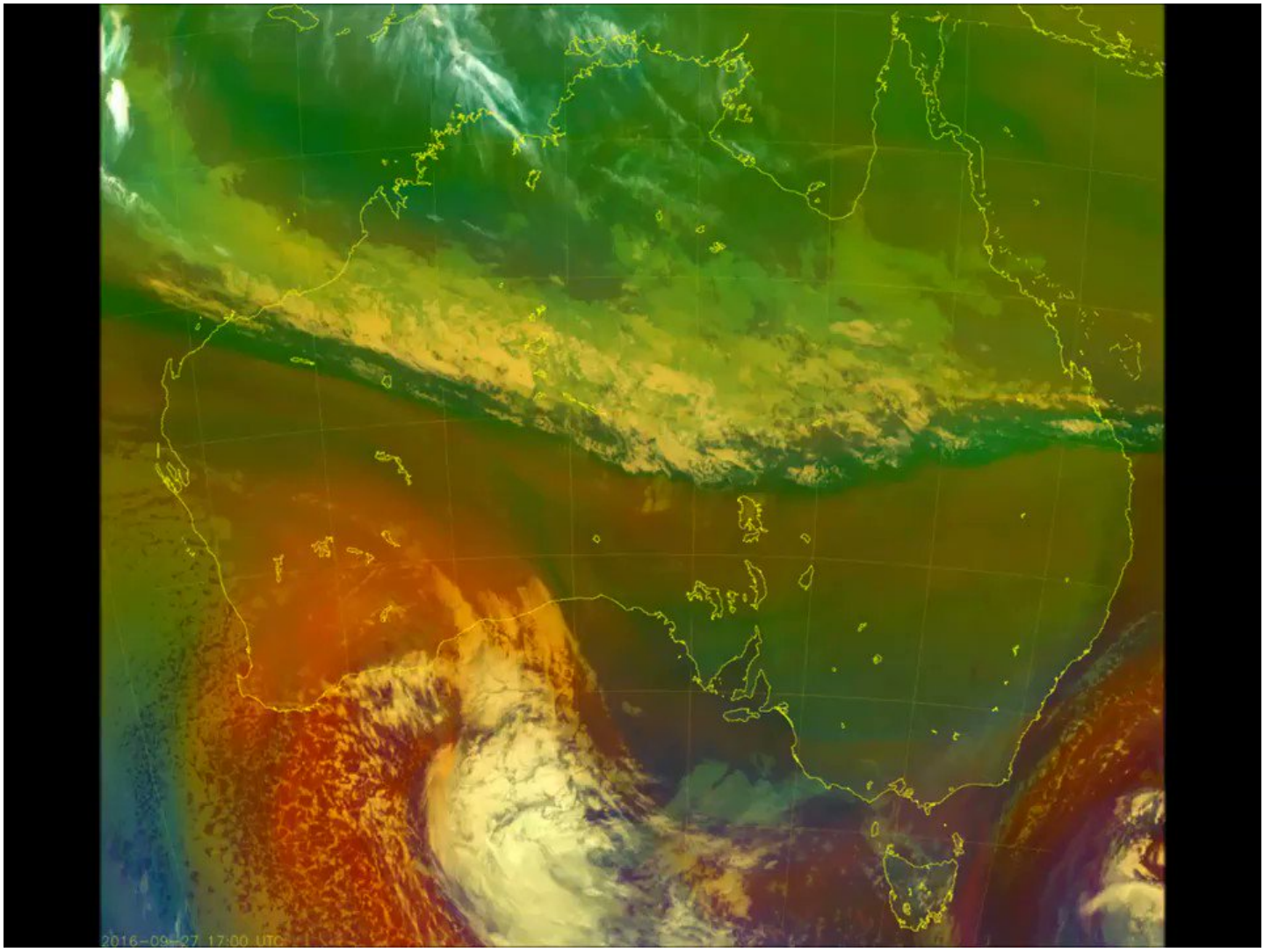
I don't have time to make this detailed, but here's a little thread about the world's first major politically-charged blackout that was blamed on renewables, in South Australia, in 2016.....

On September 28, 2016, an unprecedented tropical storm progressed rapidly across South Australia. Truly - this thing was unusual. The sky folded in on itself. It tore towns to bits.



Australia's @climatecouncil pointed out that the storm was so unusual at least partly due to the influence of climate change, and that this is due to get worse.

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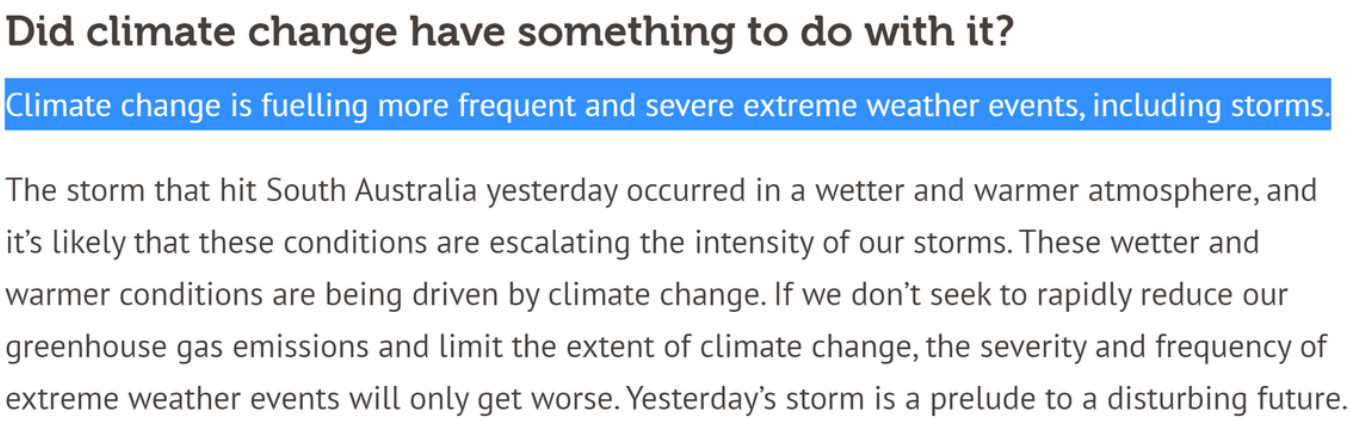


Did climate change have something to do with it?

Climate change is fuelling more frequent and severe extreme weather events, including storms.

The storm that hit South Australia yesterday occurred in a wetter and warmer atmosphere, and it's likely that these conditions are escalating the intensity of our storms. These wetter and warmer conditions are being driven by climate change. If we don't seek to rapidly reduce our greenhouse gas emissions and limit the extent of climate change, the severity and frequency of extreme weather events will only get worse. Yesterday's storm is a prelude to a disturbing future.

I'm going to use brief snippets from my book to fill this out! The storm's primary impact on the grid was the destruction of several major transmission lines. When I say destruction - I mean they snapped like twigs.

'Two F2 tornadoes almost simultaneously damaged a single circuit 275 kilovolt (kV) transmission line and a double circuit 275 kV transmission line, some 170 km apart. The damage to these three transmission lines caused them to trip, and a sequence of faults in quick succession resulted in six voltage dips on the SA grid over a two-minute period at around 4.16 pm', wrote the Australian Energy Market Operator (AEMO) in their final report on the impacts of the storm. The incredible winds had taken down key parts of the grid, which had caused flow-on impacts as the system's voltage fluctuated wildly in response. The photographs show rows of transmission towers bent grotesquely to the ground.[20] Both the storm and its impact on the transmission network were unprecedented.

The initial damage from the storm triggered several flow-on effects, each happening in fast, serialised sequence. When the grid is suddenly pocked with holes by the destructive force of a storm, voltage fluctuates. These rapid dips in voltage trigger protection systems – automated code that disconnects generators to protect machinery. Every wind turbine in Australia was programmed to tolerate a certain sequential number of dips in voltage. Some had the number set high; others were low. Ten of the 13 wind farms in the state saw their turbine's voltage 'dip threshold' triggered by six rapid disturbances that had occurred due to the lines being torn by the rare storm, and hundreds of wind turbines snapped offline.

Here's what happened in the following seconds:

- A voltage spike from the line falls
- Wind turbines automatically shut off due to software settings that trigger shutdown during a spike
- The interconnector to Vic tried to compensate, failed and died
- All of SA blacked out

Within the next ~12 hours or so, nearly all customers without power were restored, due to the fast actions of the grid manager. But before that, a massive system of misinformation, media errors, misunderstandings and intentional lies began exponentially inflating in size.

On that night, Australia's national broadcaster aired an interview on the blackout between.....a anti-wind farm politician, and their political editor (who doesn't like wind either).

You can guess what happened: a stream of major falsehoods.

https://t.co/ZHuNT717X9

It was haphazard scattershot. All they knew is wind farms did it, they just didn't know how. They were blowing too hard. They were offline. The variation was too great. The power was "unsynchronised" (??). It was pure imagination.

THE POLITICAL POWER OF DARKNESS AND FEAR

During emergencies, Australians overwhelmingly turn to one place for reliable information: the Australian Broadcasting Corporation (ABC); surveys measuring trust in public institutions place the ABC at the top. On the night of the blackout, many millions of Australians would have tuned into the ABC's 24-hour news channel for the latest updates. And on that night, the channel's political editor Chris Uhlmann laid the seeds for how media and politics would react to the event during a nine-minute interview with Senator Nick Xenophon (the South Australian politician who'd led the inquiry into wind turbine syndrome). 'Forty per cent of South Australia's power is wind generated, and that has the problem of being intermittent. What we understand at the moment is that those turbines aren't turning because the wind is blowing too fast', declared Uhlmann, when he opened the segment. He would repeat that 40 per cent value during the interview, despite the mix being closer to 30 per cent for that month. The claim that the turbines were offline because the 'wind was blowing too fast' – completely false – was repeated three times.[24]

'[The South Australian government] hasn't taken into account what the consequences are when you put that kind of intermittent energy onto a grid', Uhlmann insisted, during the interview.

'It would seem that South Australia has produced this circumstance itself in some ways, on the power mix it is relying on', Xenophon eagerly concurred. 'The generators don't work when the wind is

All media outlets - the big ones, the small ones, the left-wing ones, the right-wing ones - worked on the assumption that something *inherent* to wind power was to blame

Except: the software settings that caused them to shut off during the voltage spike? It was fixed immediately

What conclusions have come from AEMO's investigations?

From its analysis of the Black System event, many of AEMO's conclusions provide valuable guidance for improving the management of extreme conditions in SA:

- Access to correct technical information about grid-connected equipment is critical for system security.
- Wind turbines successfully rode through grid disturbances. It was the action of a control setting responding to multiple disturbances that led to the Black System. Changes made to turbine control settings shortly after the event has removed the risk of recurrence given the same number of disturbances.

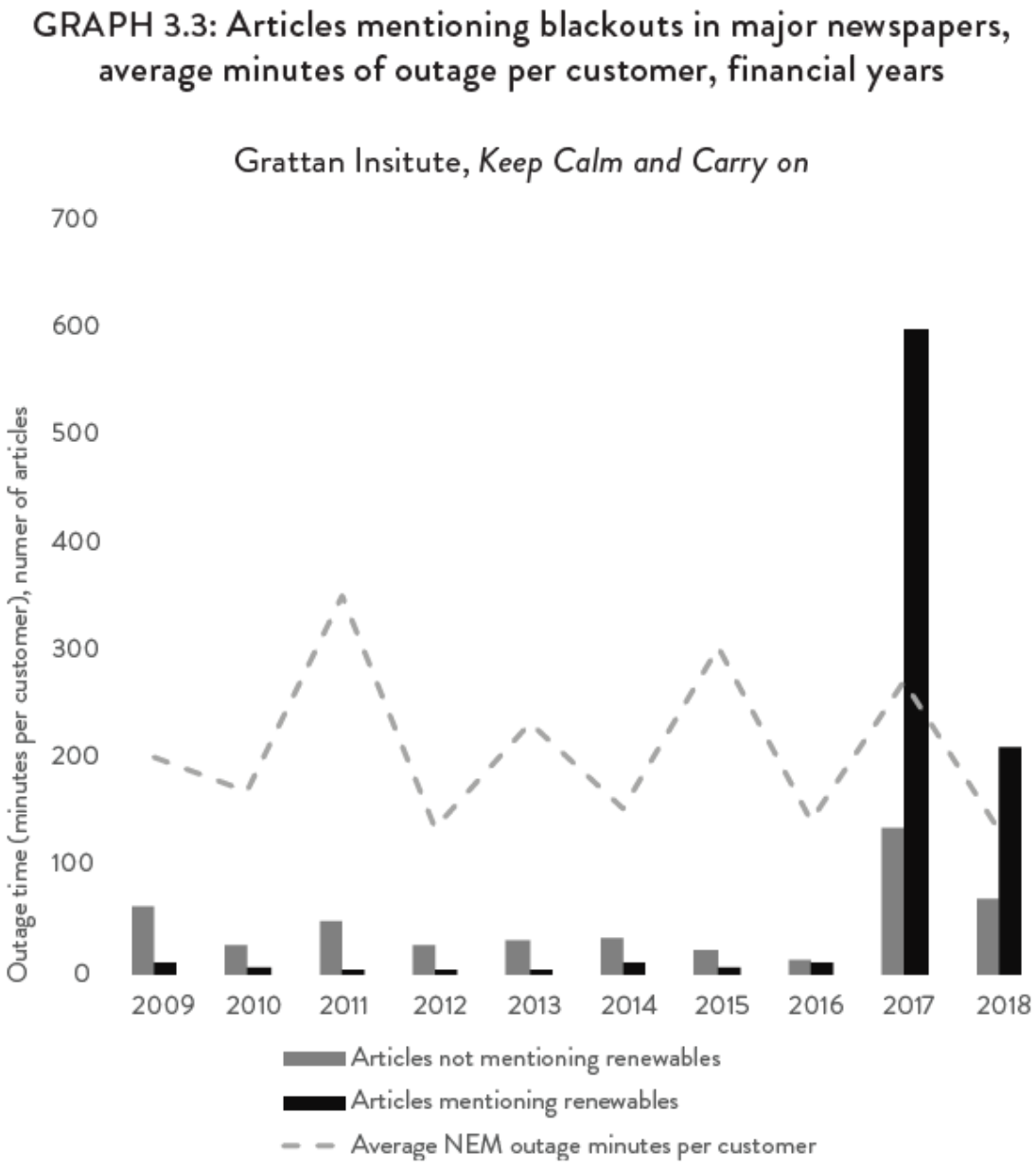
Every single blackout in Australia after Sep 2016 was blamed, in some way, on renewable energy. It became the default reaction - assume renewable energy did it, and ignore the lengthy reports that come out later demonstrating how failing thermal power stations were the cause

TABLE 3.1: Key moments from Australia's 'blame renewables' mania

Date	Event	Causes	Response
28 September 2016	State-wide blackout, South Australia	Storm, network damage, wind turbine software settings[48]	'[Windpower] wasn't working too well last night, because they had a blackout' – then deputy prime minister Barnaby Joyce[49]
30 November 2016	200 000 properties lost power, and BHP's Olympic Dam mine site forced to reduce from 170 megawatts of consumption to 100 megawatts of consumption for 3 hours	In Vic, a powerline failed, resulting in flow between states stopping, and SA required demand and supply to be re-matched rapidly[50]	'BHP Billiton had its giant Olympic Dam mine shut down for the second time in 2 months by SA's dodgy wind farms' – Sky News host Andrew Bolt[51]
8 February 2017	90 000 Adelaide homes lost power during a major heatwave	Higher temps and demand than forecast, a gas-fired power station unavailable, accidental tripling of load shedding due to software error[52]	'So the whole problem was the failure to provide sufficient wind. The only wind blowing in South Australia is the hot air of the Labor Party' – then energy minister Josh Frydenberg[53]
13 March 2017	One rotating stage at an Adele concert stopped rotating	The plug fell out of the wall	'[Sky News host] Chris Kenny says a blackout at Adele's Adelaide concert comes at the worst time for the SA government ... what an absolute embarrassment for South Australia and their state government'[54]
24, 25 January 2019	200 000 homes in Victoria lost power during a heatwave	The Yallourn and Loy Yang Victorian coal-fired power plants both suffered major outages, constraining supply[55]	'This started with what no one in the world is doing, shutting down its dispatchable power in the belief that it will be replaced by wind and solar. We have a renewables zealotry here' – coal owner Trevor St Baker[56]

Much of this was political, but much of it was driven by a media environment that, dominated by News Corp, was itself political, or ill-equipped to grasp the mechanics of the event itself

Even as total grid outages remained flat, media cov'g of renewables causing blackouts rose:



The emergence of the 'renewables cause blackouts' narrative is astonishingly stark, as shown in this data set from the Grattan Institute.

The blackout became a mechanism of delaying climate action. The prospect of a new 'clean energy target' was killed by the hammer of 'OH SO YOU WANT ANOTHER SOUTH AUSTRALIA??'.

Seen the pic of Aus' PM holding a lump of coal? That was about blackouts.

you lose; in this case, the company lost $60 000 through a fine.

But there were plenty of winners – a broad range of political and corporate players drew as much capital as it could by blaming wind farms for the consequences of the soothing nap the fossil fuel power station operator had taken in their home.

Another case neatly outlines the modern operation of this fear tactic. 'Not much of a mystery in, yet another, SA power blackout. Wind power clearly wasn't the issue … because there wasn't any', wrote Chris Uhlmann on 7 February 2017 on Twitter.[35] 'hahaha-haha … exactly. That's why it failed', Warren Mundine, a former Liberal Party candidate helpfully added in response.[36] This 'deep' analysis related to a heatwave that had struck Australia. The Pelican Point gas-fired power station had failed to notify the grid operator of extra generation capacity, and a software glitch in a distribution company meant 90 000 (instead of 30 000) customers had their power cut off. The Australian Energy Regulator is suing Pelican Point's owners, because their actions meant 'AEMO's ability to manage power system security was impaired.'[37] The day after the blackout, on 8 February 2017, then treasurer and current prime minister, Scott Morrison brought a lump of coal into parliament and waved it at the Labor Party sitting opposite, urging them to not be afraid.[38] 'Those opposite have an ideological, pathological fear of coal', yelled Morrison, adding that the South Australian Labor government is 'switching off air conditioners and forcing Australian families to boil in the dark as a result of their Dark Ages policies'.[39] Many mistook Morrison's globally recognised coal stunt as an expression of affection for coal. It was nothing of the sort: it was part of the broader campaign of blackout fears.

Turnbull played a large role in the campaign to both create a 'power crisis' narrative and to blame it on renewable energy. When asked about South Australia hosting the AFL grand final in 2017, Turnbull remarked 'It'd have to be a daytime match in Adelaide,

Since then, South Australia has grown into a renewable energy powerhouse. The grid operator implemented a few tricks, learnt lessons now manages roughly **double** the amount of wind and solar, with lower imports and falling gas output - including through Aus' worsening heatwaves

It's getting global attention. @NatBullard wrote recently about how the state's solar power has grown so significantly that there are brief moments where solar output matched grid demand.

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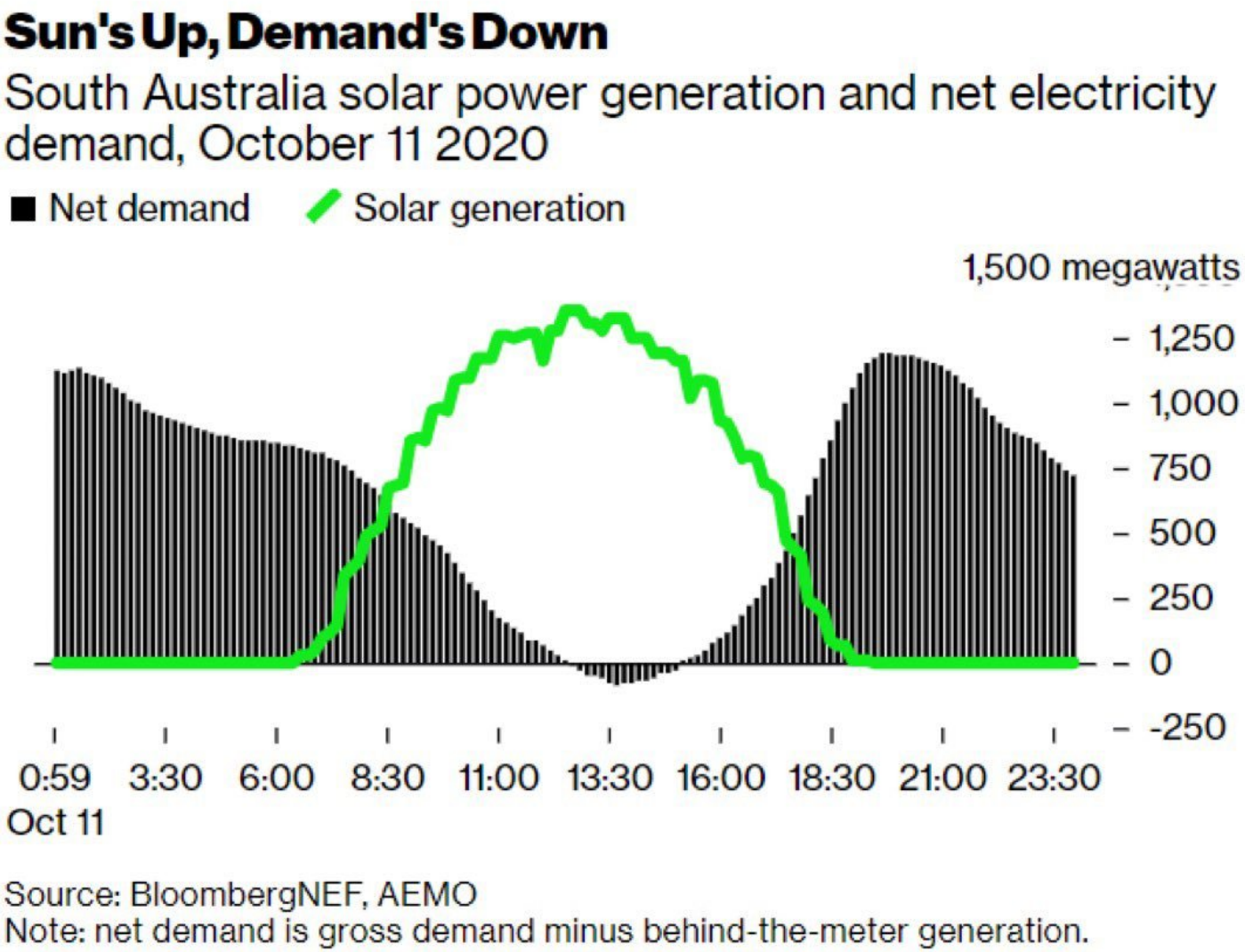

Australia's fantastic grid operator, @AEMO_Media, led by @aazibelman, has been creating 'integrated system plans' that model different amounts of VRE. SA will be > 100% renewables pretty soon - exporting clean power to other states.

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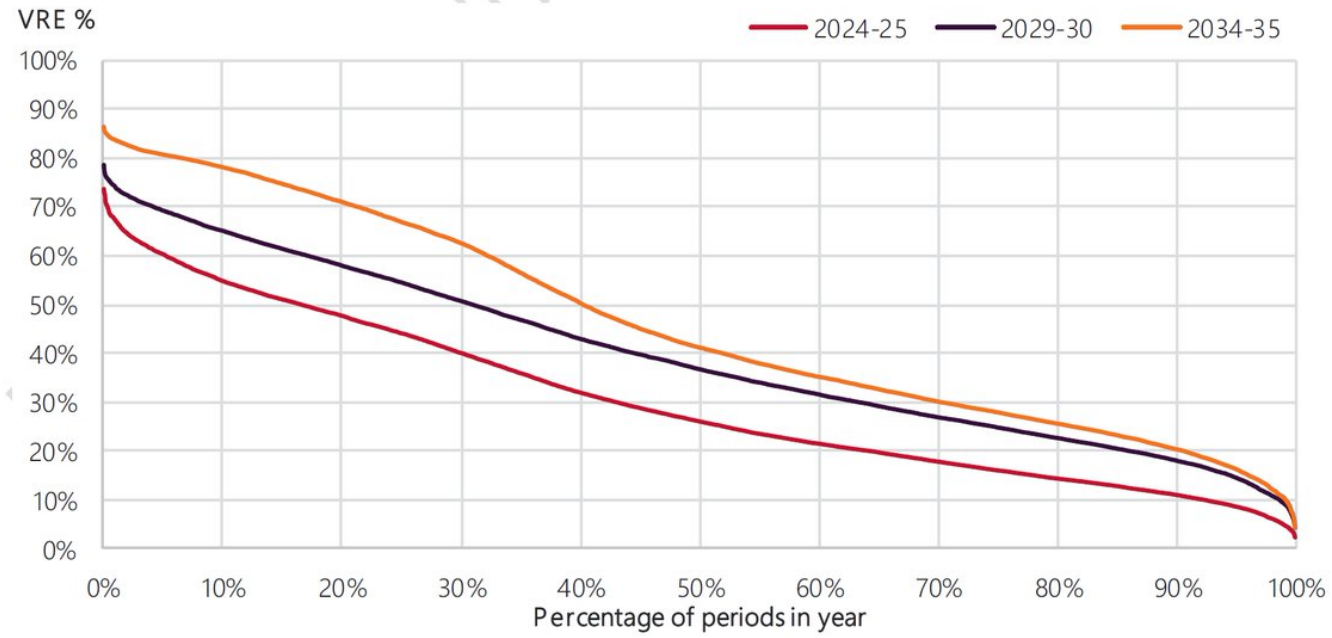
Figure 27 By 2034-35, renewable generation may at times deliver 85% of generation



All this good stuff? It was badly delayed by a huge 4-5 years of total wasted time. Pointless, circular debates that all missed the heart of the problem, widespread misinformation, and a culture within media and politics that actively loathed evidence or critical analysis.

This is what both Texas and California potentially face. Every single blackout is now caused by renewables, until proven otherwise. Narratives will be set by large media outlets and worsened by political operatives.

Or: they could skip it entirely and pre-empt the delayers

Anyway, if you'd like to read the full story, please Buy My Book™. We're solidly in the era of the 'Climate blackout' now - in cause, in blame, consequence and solutions. And South Australia has the template that all the worst players are going to follow

https://t.co/l5JiWwOJ6f

Oh also links I forgot to post:

Blackout report from grid operator https://t.co/770Pgci2Vl

A post I did on it: https://t.co/tijq9EGQNE

Live Aus grid data: https://t.co/RjzssuC5OX

V v v good VRE integration study: https://t.co/kqCPZpzuIw

Oh! also - a relatively detailed study by Aus' grid operator on the potential impacts of climate change on a grid that is undergoing a transition. Every high-VRE grid in the world is going to have a 'South Australia' moment - so this is important!

https://t.co/p5Y5p8NztL

Augh, I totally forgot to include it, but there's also the time that the West Australian mining lobby paid for fake accounts to content trying to spread fear and doubt and panic about renewables causing blackouts:

https://t.co/ftEZQfqEFD