



CLIMATE COUNCIL FACT SHEET: SOUTH AUSTRALIAN STORMS & POWER OUTAGES



The Climate Council is an independent, crowd-funded organisation providing quality information on climate change to the Australian public.

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Climate Council Fact Sheet

The South Australian storms and resulting power outages

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What happened in South Australia (SA) on Wednesday 28 September

A one-in-50 year weather event hit South Australia on Wednesday, with severe thunderstorms and damaging winds exceeding 90 km/h. Hail the size of golf balls struck the state with 80,000 lightning strikes reported. The severe storm resulted in catastrophic damage to power infrastructure, with more than 22 transmission towers taken out (one of the towers is pictured below). As a standard safety response, the South Australian energy system was isolated from the National Electricity Market. Overnight, the Australian Energy Market Operator and Electranet worked to gradually restore power to all but 75,000 of the 900,000 South Australian homes that lost power. The latest updates on work to restore power are available [here](#), SA power networks say people north of the state are unlikely to have power restored on Thursday due to damaged transmission lines.



The severe weather continues for South Australia. On Thursday morning, the Bureau Meteorology issued a further [Severe Weather Warning](#) for Damaging Winds as an intense low pressure system moves east from north of Kangaroo Island east across the state and winds of 50-75 km/h. Locally destructive winds of up to 140 km/h remain possible south and west of the Eyre Peninsula.

Climate change and storms

Climate change is fueling more severe extreme weather, including storms.

The storm which hit South Australia yesterday occurred in a wetter and warmer atmosphere, and it is 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.

Quotes from the experts

"This is one of the most severe weather events this state has faced in recent history."
Chris Beattie, Chief Executive, State Emergency Service

"The Australian Energy Market Operator (AEMO) advises that as at 16:18 AEST on 28 September 2016, a severe storm damaged transmission and distribution electricity assets within South Australia, leading to a state-wide power outage in South Australia. The considerable impact to important electricity infrastructure triggered the automatic disconnection of generation supply as part of the network's safety protection mechanism. AEMO is working closely with transmission network service provider ElectraNet and the South Australian government to coordinate the restoration of power supply across the state"
The Australian Energy Market Operator

"Storms can knock out electricity networks no matter where the power supply is coming from. And at the time of the blackout, 1000MW of wind power was being fed into the South Australian system.

"The fact is, the system brought down all the generators for safety reasons after three transmission lines and nine towers fell. And wind generators actually helped to restore power- the Snowtown wind farm was the second generator brought online."
Andrew Stock, energy expert and Climate Councillor

“Storms like the one which knocked out the entire South Australian electricity network yesterday are occurring in a warmer and wetter atmosphere. These conditions, driven by climate change, are likely increasing the intensity of storms like the one in South Australia.”

Professor Will Steffen, climate scientist and Climate Councillor

“There’s no evidence to suggest this was caused by too much wind power, or the dependence on wind power, or anything else.

If you’ve got a wind farm or a coal-fired power station at the end of a transmission line, and that system either is taken out by a storm or is forced to shut down to protect itself from a storm, it doesn’t matter what the energy source is

These systems are designed with a lot of redundancy, a lot of protected systems. At the end of the day, the main issue is to ensure the safety of people and the safety of the system is protected by the system itself automatically shutting down.”

Tony Wood, Grattan Institute

“If transmission lines fail it does not matter what the source of power is, whether it be coal, wind, solar or gas, the power system will fail. No amount of planning can insulate us from exceptional weather events.”

Bruce Robertson, analyst for the Institute for Energy Economics and Financial Analysis.

“In the past 24 hours there has been a 228% increase in enquiries from customers South Australia wanting to know more about battery power, with their locations directly correlating to more severely storm affected areas,”

Chris Williams, managing director of Natural Solar.

Questions and Answers

More than 40% of South Australia’s power is produced from renewable energy. Is this part of the reason that the whole state lost power?

No. Severe weather like that experienced in SA, took down high voltage transmission lines. This would have a major effect on power supply no matter the state or type of generation.

It’s also worth noting that other states with a lower amount of renewables in their energy mix have also been affected by storm related blackouts such as Victoria, Queensland and New South Wales.

What can we do to make our electricity networks in Australia more resilient?

The resilience of all our major infrastructure and essential services needs to be designed for the increasing intensity and severity of extreme weather which we are experiencing in the face of climate change. This could include increasing the use of battery storage and micro-grids which can help households and businesses to store energy during blackouts. For example, the managing director of Natural Solar, Chris Williams noted that *“in the past 24 hours there has been a 228% increase in enquiries from customers in South Australia wanting to know more about battery power, with their locations directly correlating to more severely storm affected areas,”*

In the case of South Australia more than 22 transmission towers were taken down, which makes it very difficult to avoid some blackouts. The important thing is to plan for responding back up power for example at hospitals, emergency services to protect vulnerable people while authorities work to restore power.

Have storms affected a whole state’s electricity supply in Australia before?

Whilst a severe weather event causing a whole state to lose power may be unprecedented in Australia, there have been severe weather related black-outs to hundreds of thousands of people before in Australia, such as:

[In 2009, more than 500,000 homes without power in Victoria due to heatwave](#)

[In 2011, more than 200,000 houses lost power in Victoria due to storms](#)

[In 2013, 250,000 homes in Queensland lost power due to storms](#)

[In 2015, 200,000 business and households in NSW faced extended blackouts of up to a week](#)

An increase in severe storms has serious implications for reliably supplying power to Australian homes.

What role did climate change play in the South Australian Storm on Wednesday?

Climate change is fueling more severe extreme weather, including storms. The storm which hit South Australia yesterday occurred in a wetter and warmer atmosphere, and it is likely that these conditions are increasing 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.

References and Resources

ABC (2016) South Australian weather: 'cyclone' expected to hit state. Accessed at <http://www.abc.net.au/news/2016-09-28/south-australia-weather:-cyclone-and-flood-watch-expected/7883104>

AEMO (Australian Energy Market Operator) (2016). Media statement 3: South Australia. Accessed at <https://www.aemo.com.au/Media-Centre/Media-Statement-3---South-Australia-Update>

BoM (Bureau of Meteorology) (2016) Severe Weather Warning: Damaging winds and abnormally high tides. Accessed at <http://www.bom.gov.au/products/IDS65503.shtml>

Climate Council (2016) Mythbusting: electricity prices in South Australia. Stock A and Stock P. Accessed at <https://www.climatecouncil.org.au/uploads/e993194468726947cbd7c4f7216a2316.pdf>

Courier Mail (2013) Almost 250,000 homes without power as weather hits SEQ electricity grid. Accessed at <http://www.couriermail.com.au/news/almost-250000-homes-without-power-as-weather-hits-seq-electricity-grid/story-e6freon6-1226563631914>

O'Keefe M (2009) Thousands still without power in Victoria after devastating blackout. The Australian. Accessed at <http://www.theaustralian.com.au/news/thousands-still-without-power/story-e6frg6n6-1111118717638>

Renew Economy (2016) SA Blackout may lead to more batteries, and micro-grids. Accessed at <http://reneweconomy.com.au/2016/s-a-blackout-may-lead-to-more-batteries-and-micro-grids-67618>

SA Power Networks (2016) Power Outages. Accessed at <https://outage.apps.sapowernetworks.com.au/OutageReport/OutageSearch?AspxAutoDetectCookieSupport=1>