



Extreme Weather Events in Australia

Ellise Harmer – Operations
17th / 18th June 2021

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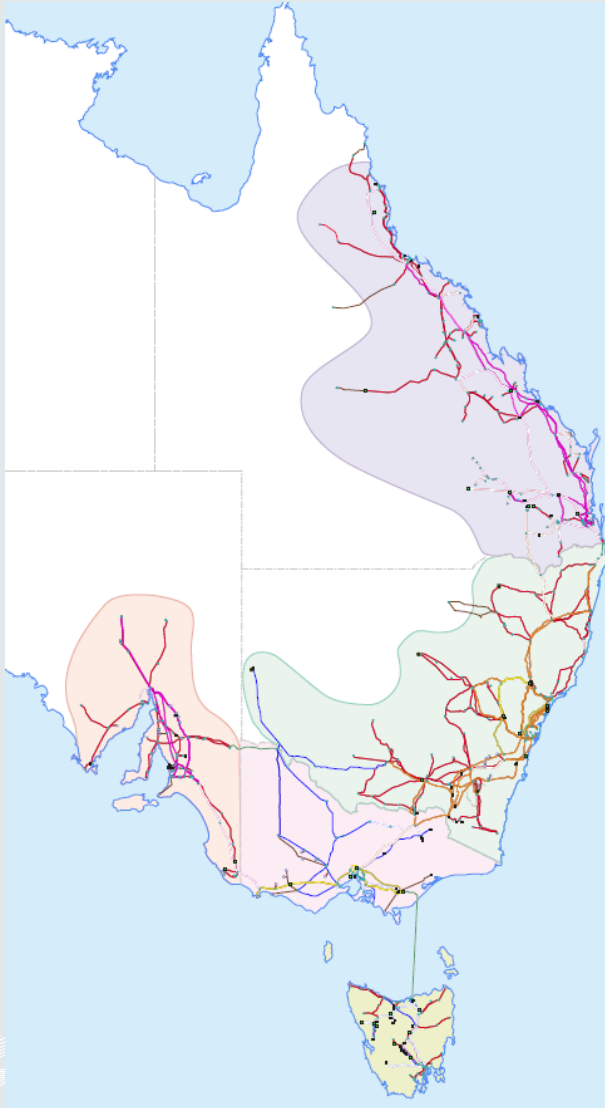
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Agenda

1. Introduction
2. Growth of variable renewable energy in Australia
3. Dust Storms
4. Bushfire Smoke
5. Cool Changes & Thunderstorms

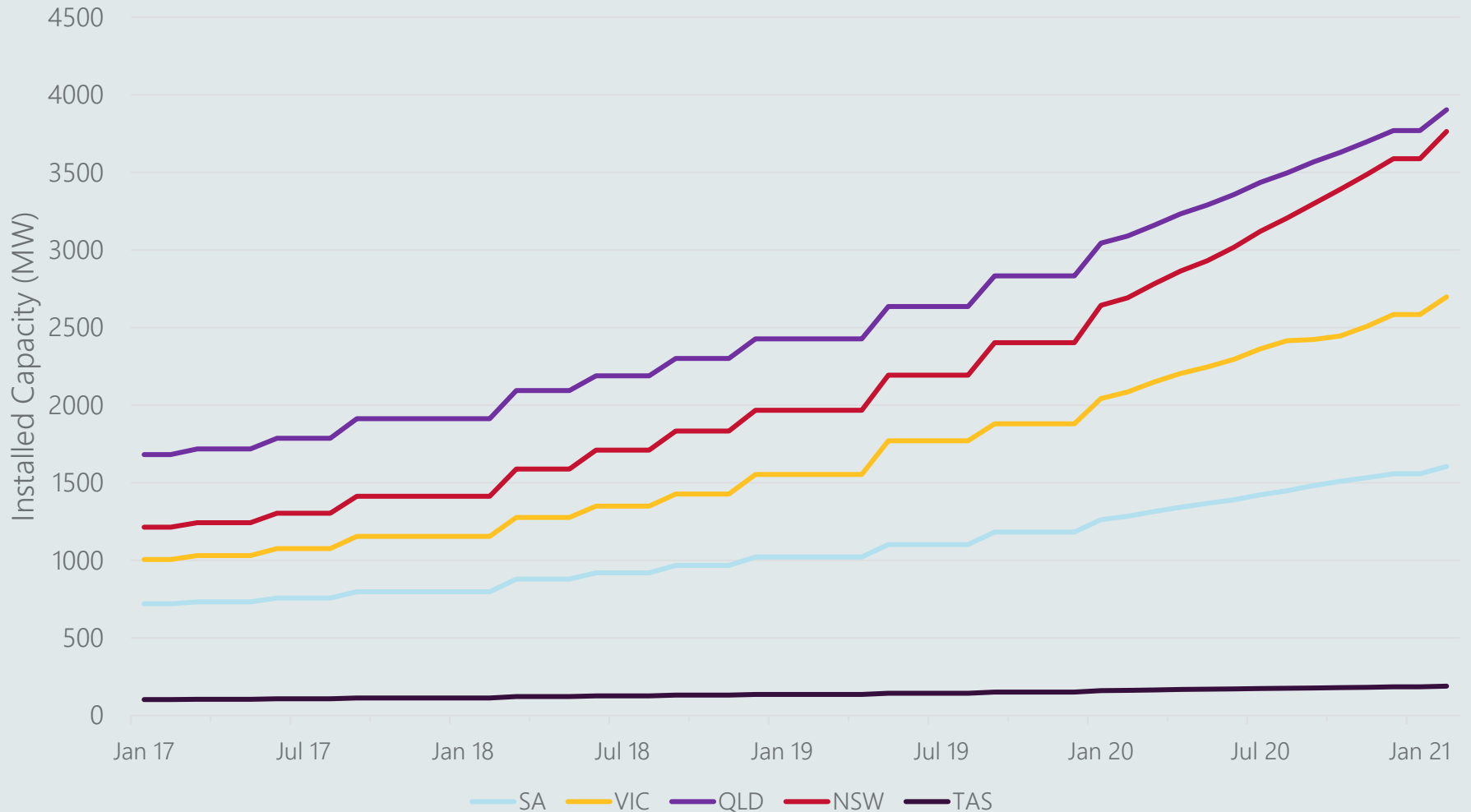
Power System & Market Operator



National Electricity Market (NEM):

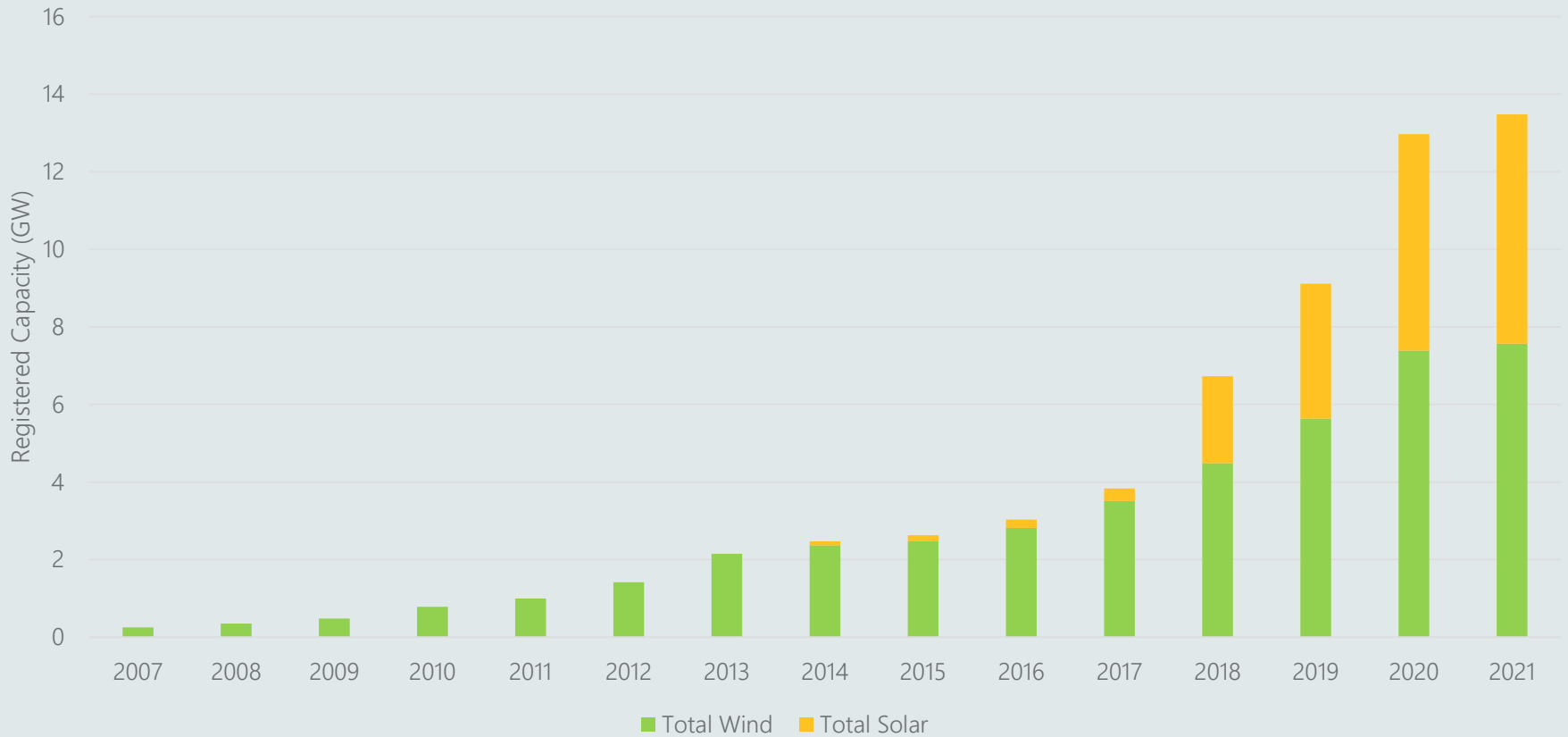
- Longest power network in the world at around 5,000 km
- Supplies about 200 TWh of energy annually
- System peak approximately 35GW
- 5 Regions with highly variable climate

Rooftop Solar Growth

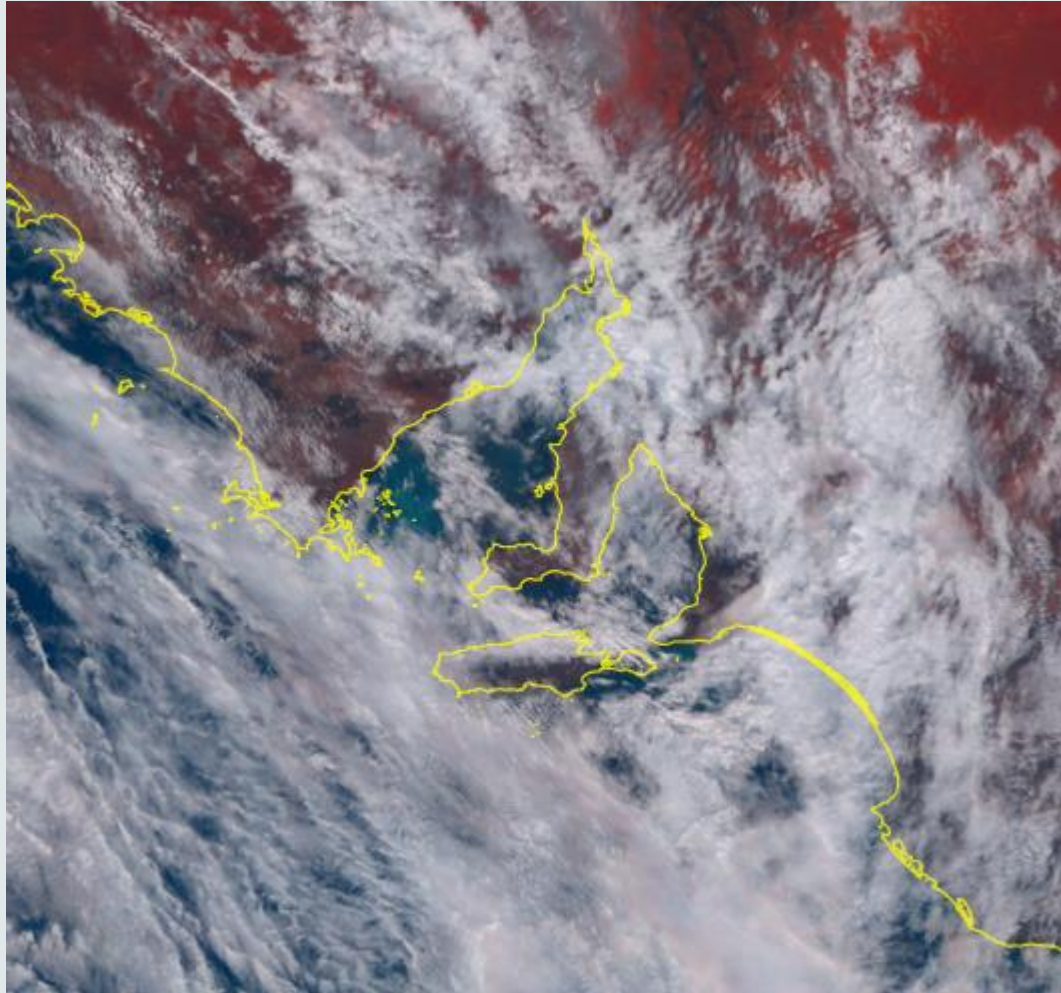


Wind & Solar Growth

Installed Wind / Solar Generation (Excluding Rooftop Solar)

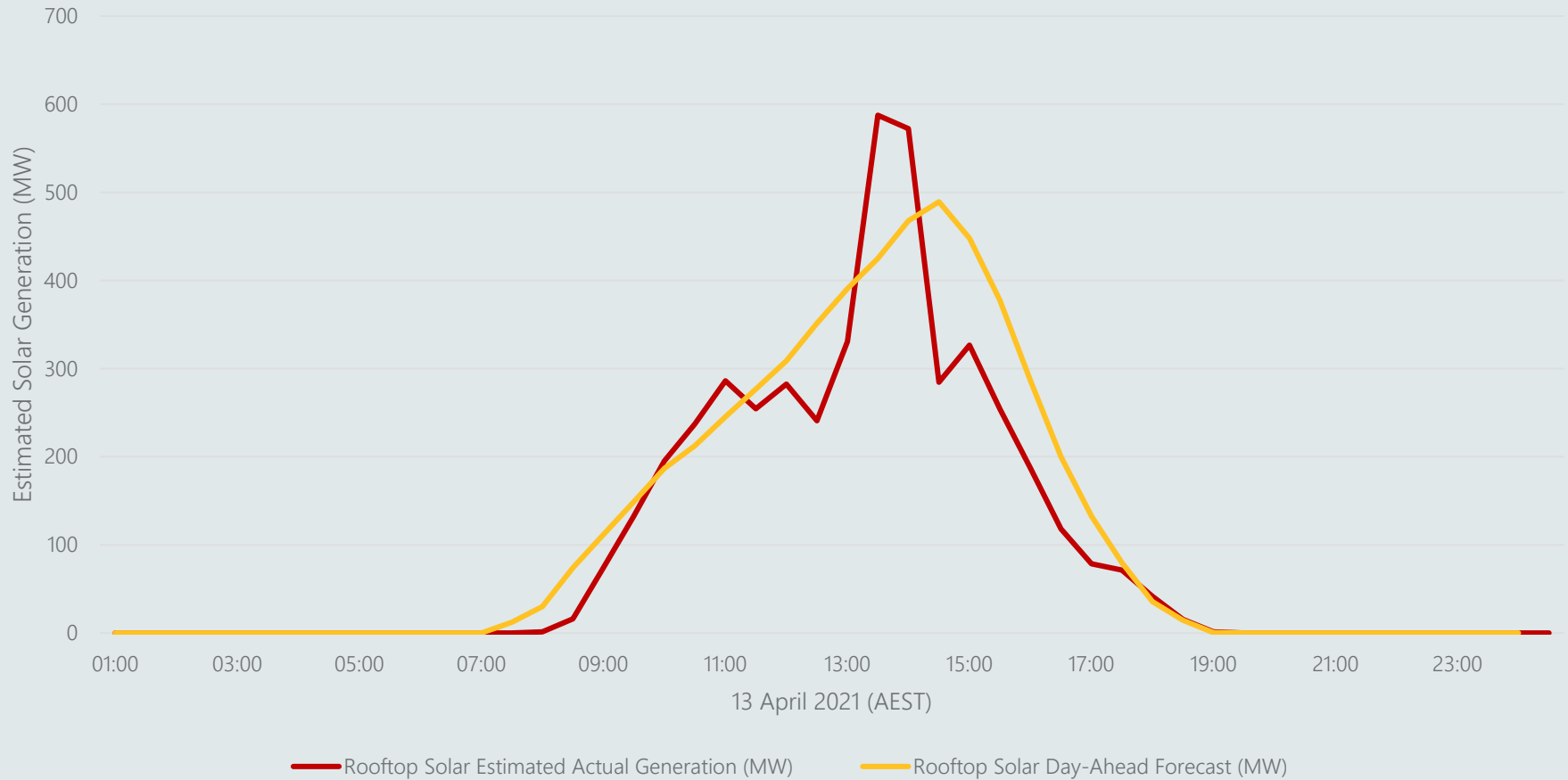


Dust Storms



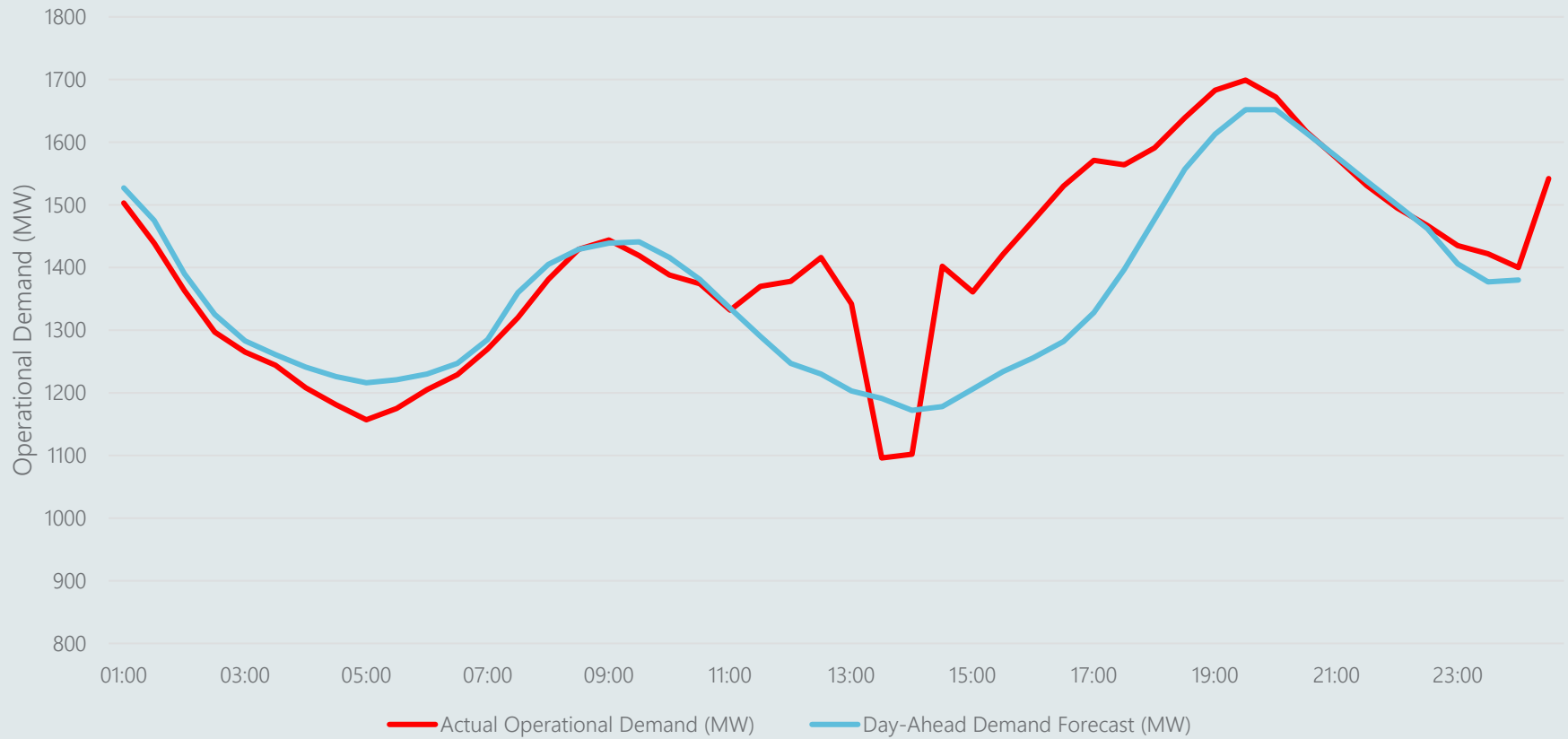
Dust Storms

South Australian Rooftop Solar: 13 April 2021



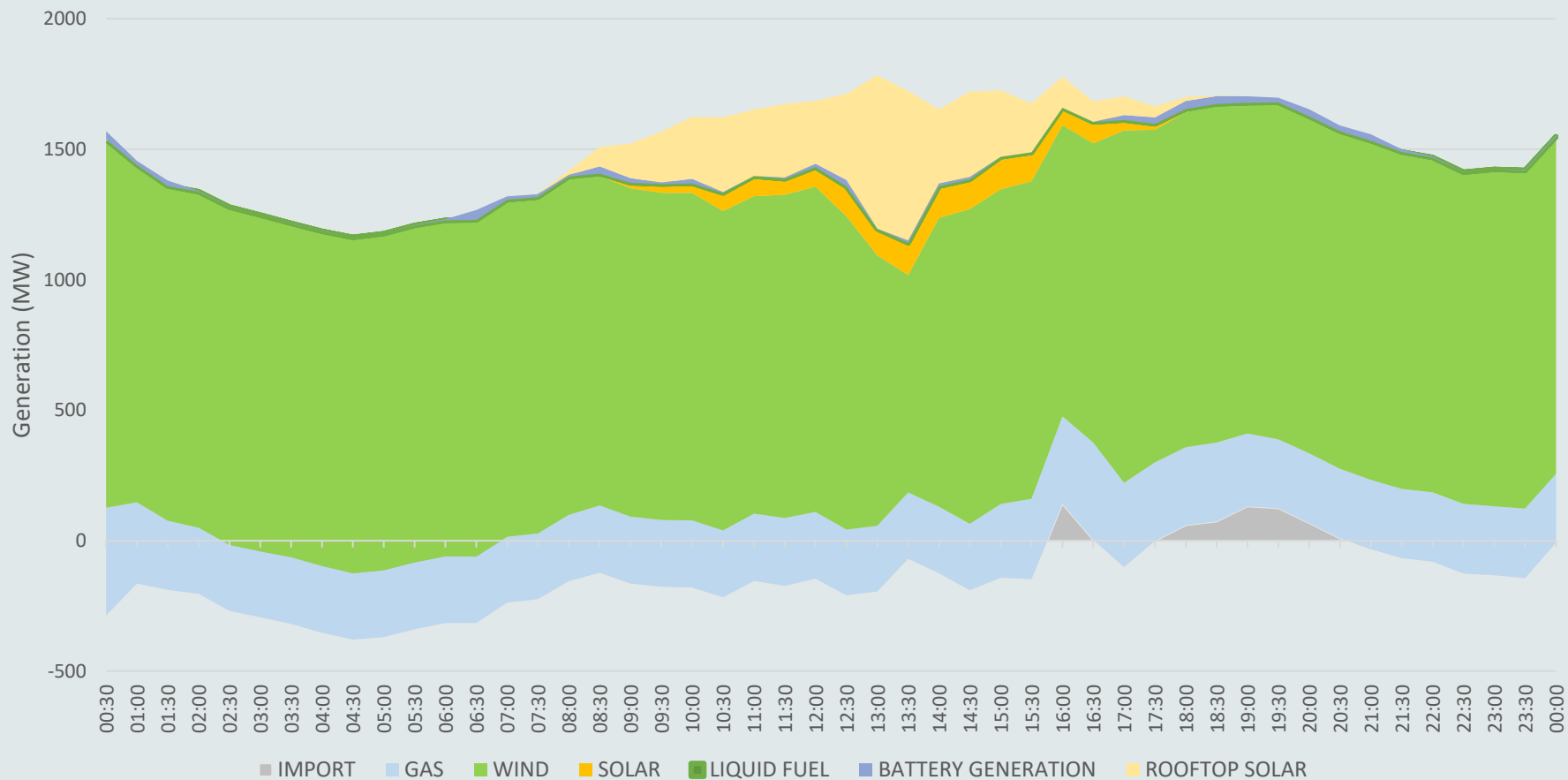
Dust Storms

South Australian Demand: 13 April 2021

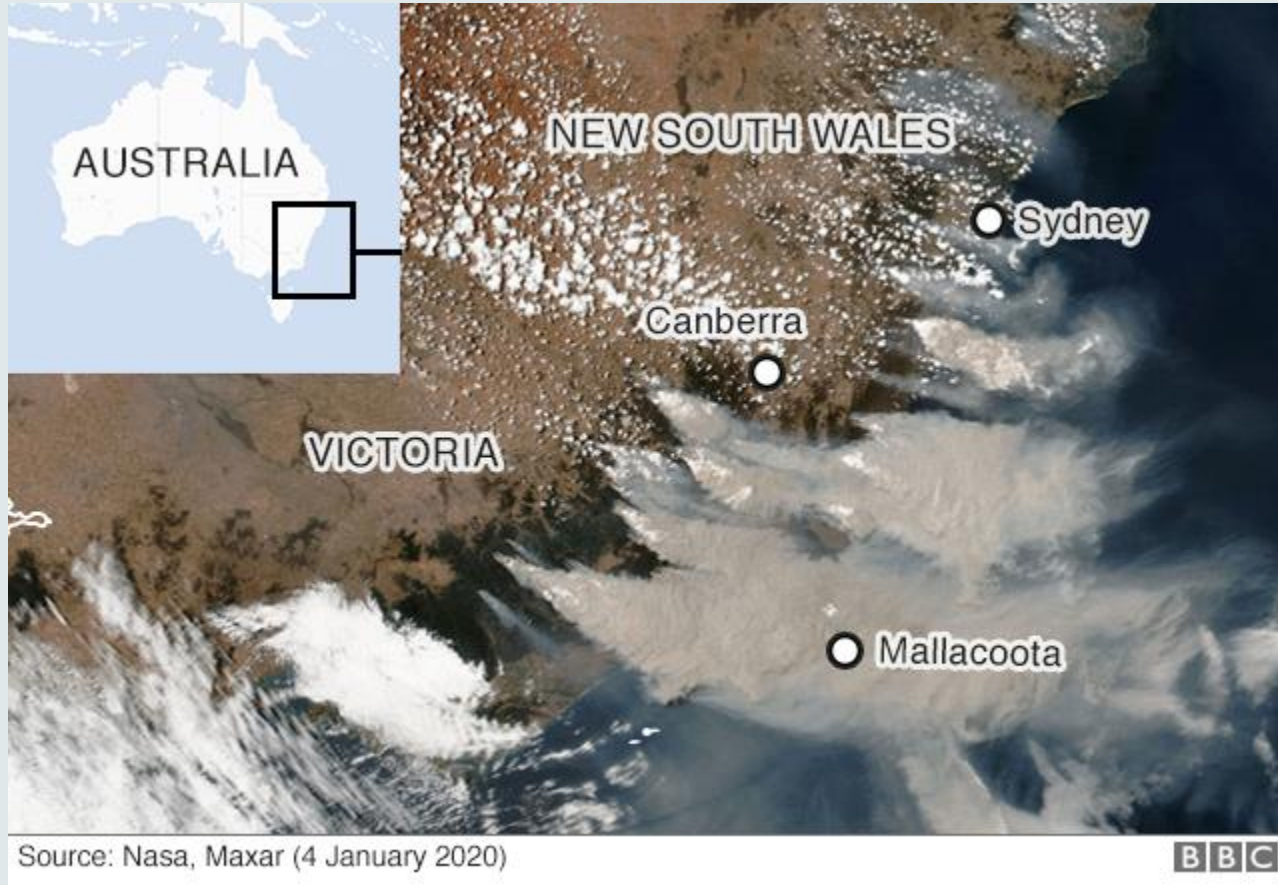


Dust Storms

South Australian Generation: 13 April 2021

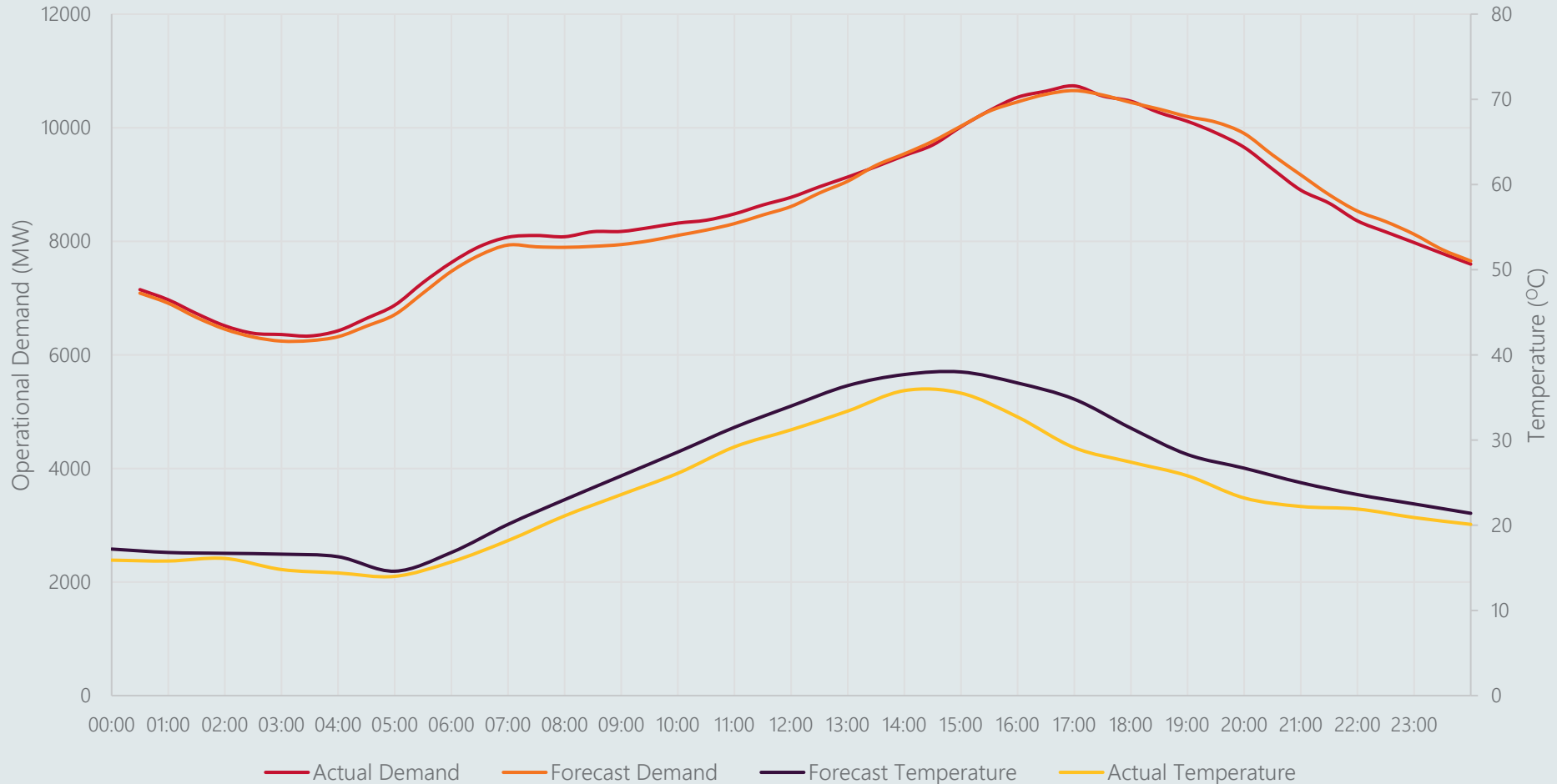


Bushfire Smoke



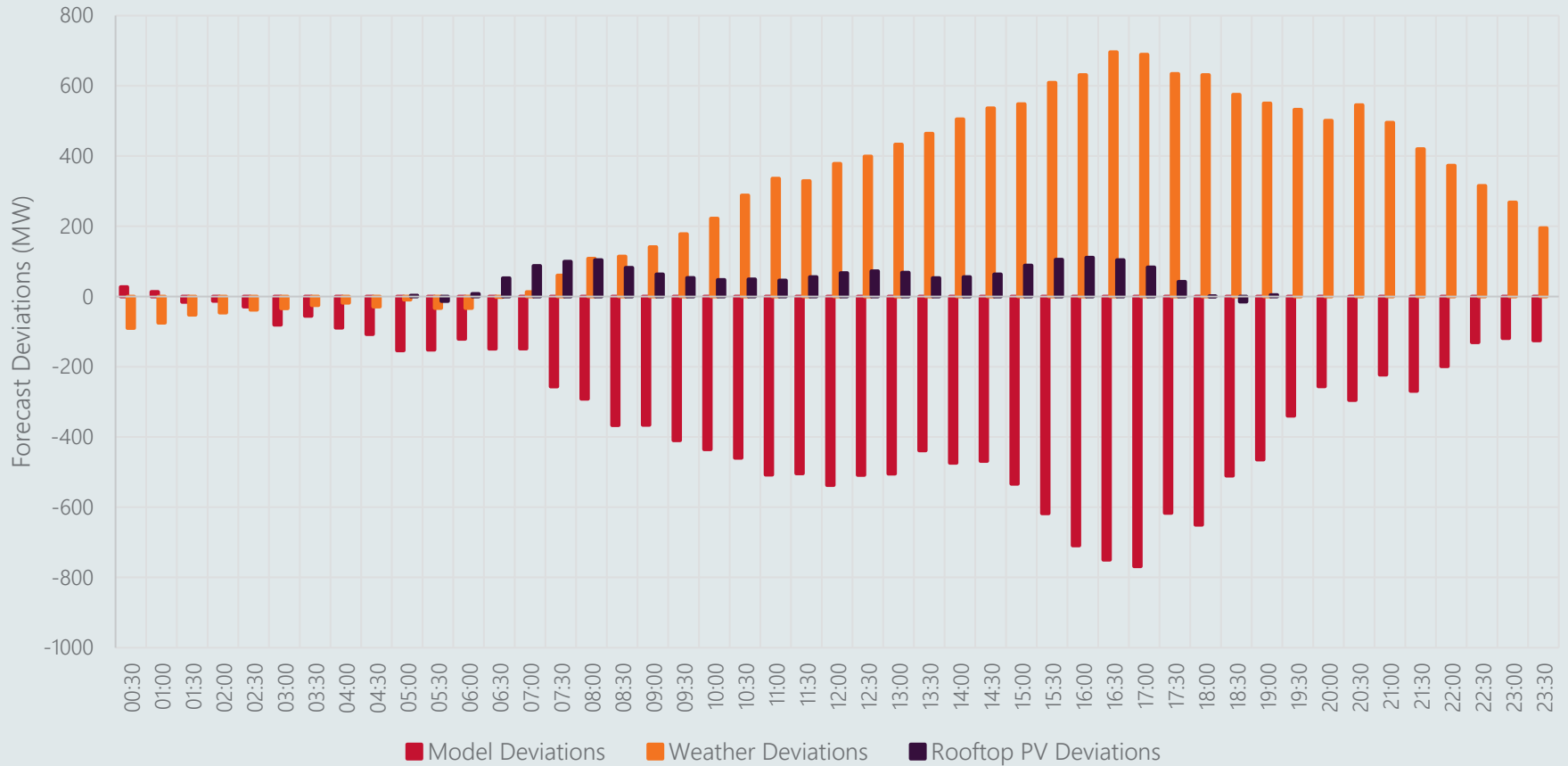
Bushfire Smoke

New South Wales Demand & Temperature: 21 November 2019

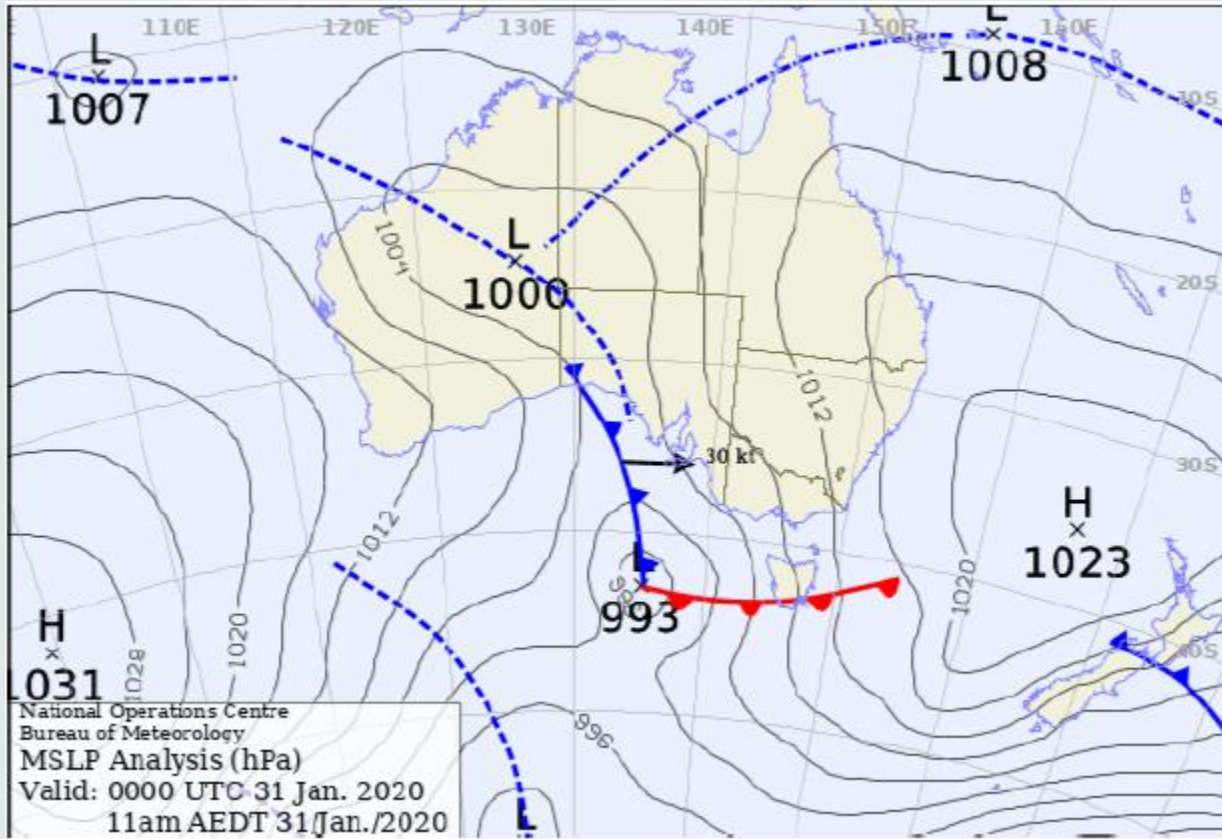


Bushfire Smoke

New South Wales Demand Deviations: 21 November 2019

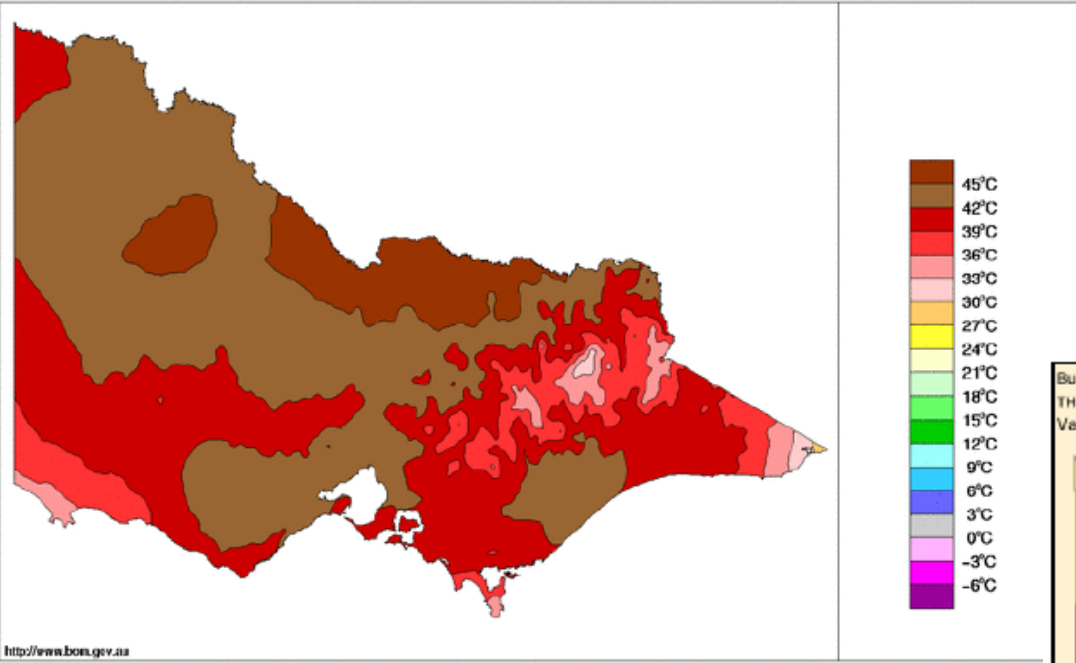


Cool Changes & Thunderstorms



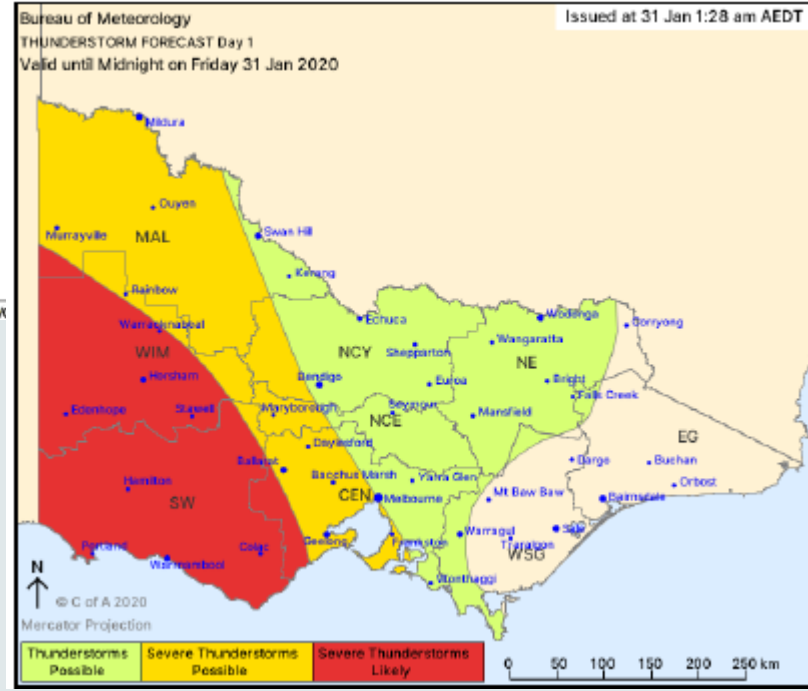
Cool Changes & Thunderstorms

Maximum Temperature (°C) 31st January 2020
Australian Bureau of Meteorology



<http://www.bom.gov.au>
© Commonwealth of Australia 2020, Bureau of Meteorology ID code:AWAP

Issued: 031



Bureau of Meteorology
THUNDERSTORM FORECAST Day 1
Valid until Midnight on Friday 31 Jan 2020
Issued at 31 Jan 1:28 am AEDT

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Mercator Projection
0 50 100 150 200 250 km

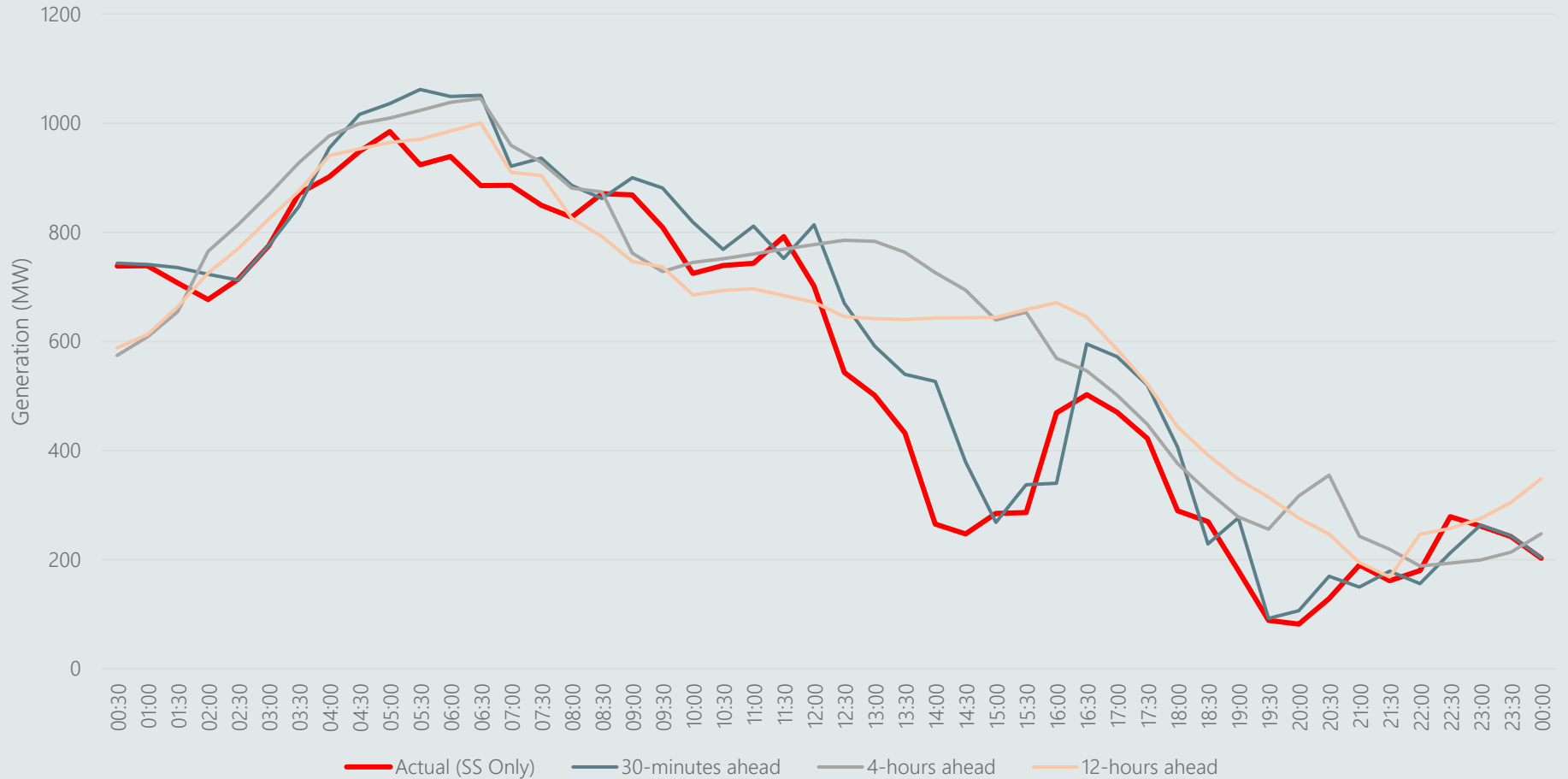
Cool Changes & Thunderstorms



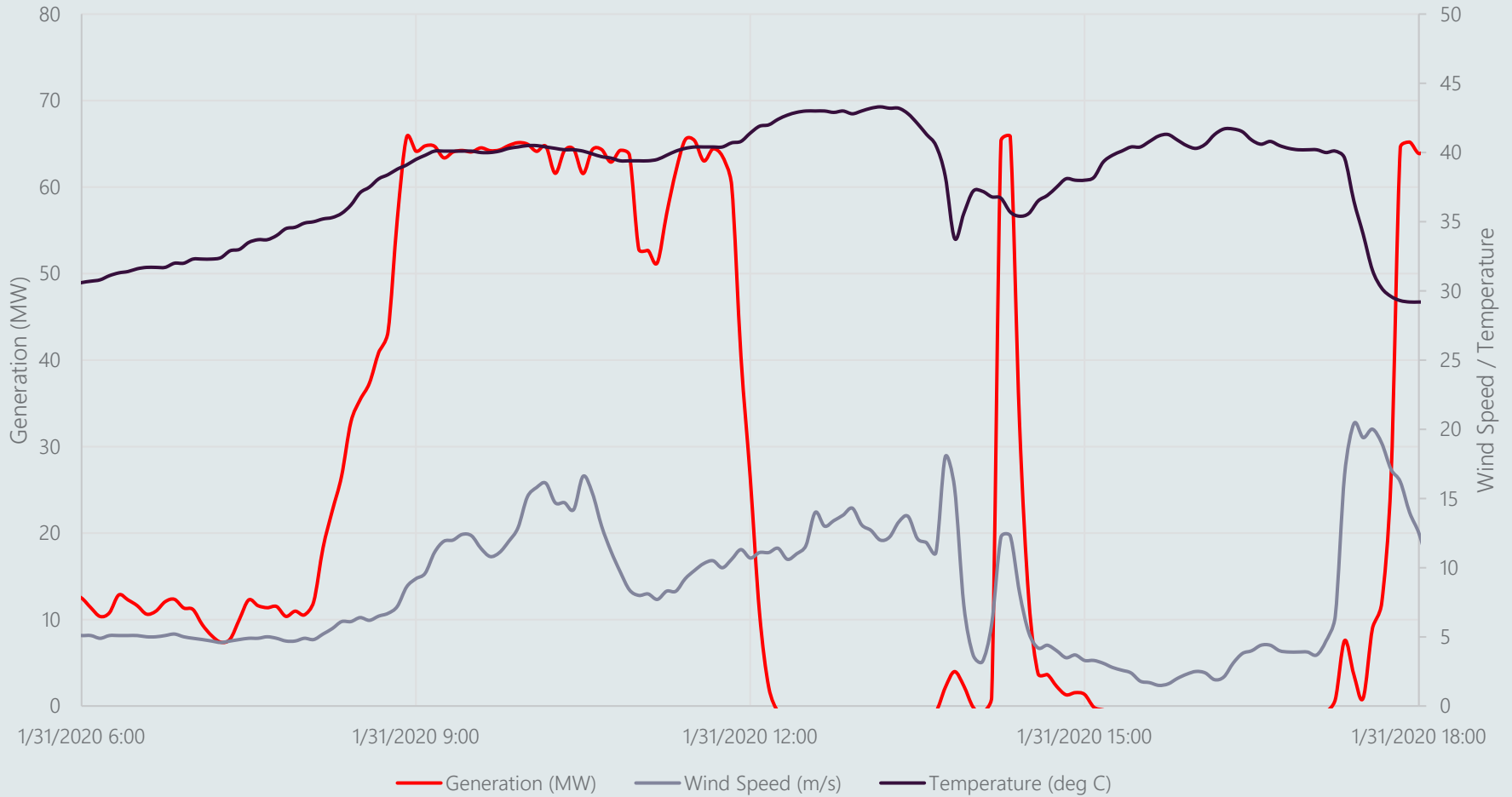
Source: Australian Energy Regulator

Cool Changes & Thunderstorms

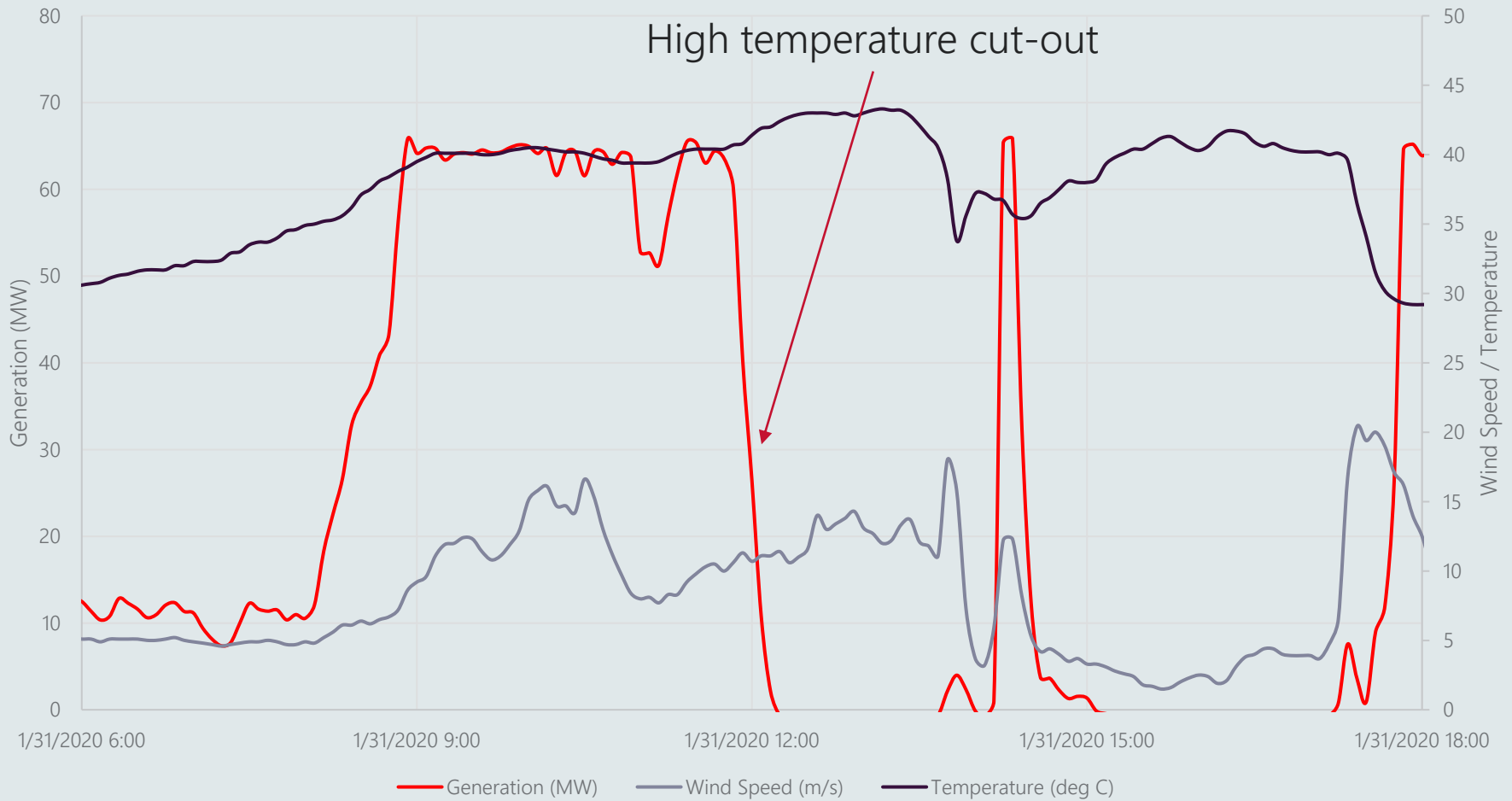
Victorian Semi-Scheduled Wind: Forecast Target vs Actual Generation



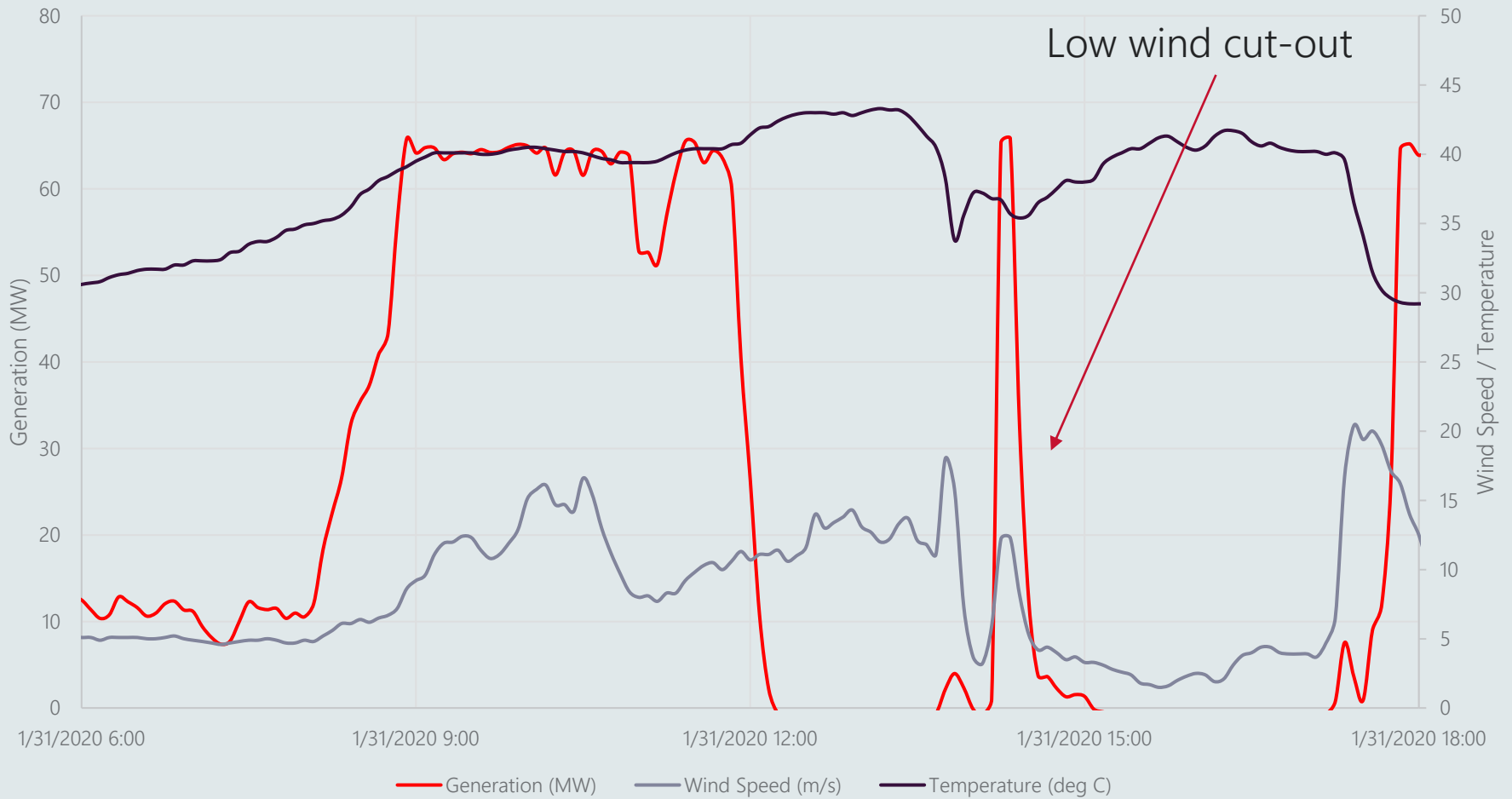
Cool Changes & Thunderstorms



Cool Changes & Thunderstorms



Cool Changes & Thunderstorms



Summary

- With the increased installations in wind and solar generation, different weather events are now having large impacts on system operations
- These events can be very difficult to forecast in a meaningful way
- AEMO is continuing to work with the weather forecasting industry to ensure we have the right tools to manage the emerging risks to the power system

References

- [Amperon Study: Attenuation of Large-Scale Solar PV Production by Bushfire Smoke in South-East Australia](#)
- [AEMO 2019-20 Summer NEM Operations Review](#)
- [Australian Energy Regulator, AusNet Application: Transmission Towers Restoration, 31 January 2020](#)

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