

# The South Australian Experience

## Symphony of the renewables

World Wind Energy Conference 2023

Vince Duffy, Deputy Chief Executive | 9 November 2023

[energymining.sa.gov.au](http://energymining.sa.gov.au)



# Acknowledgement of Country

As guests here on Kurna land, we acknowledge everything this department does impacts on Aboriginal country, the sea, the sky, its people and their spiritual and cultural connection which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

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*Ngaityalngadlu taikunthitya yalaka*

*Yantupinarna Kurna yartangka, ngadlu tampinhi tupa yaintyu pirku wapinhi, wiwunthi yaitya yarta, yarlu, ngayirda, miyurnakuma paraku tuwila tapa purruna tarraitpayinhi. Muna tirntu parrka-parrka wanti.*

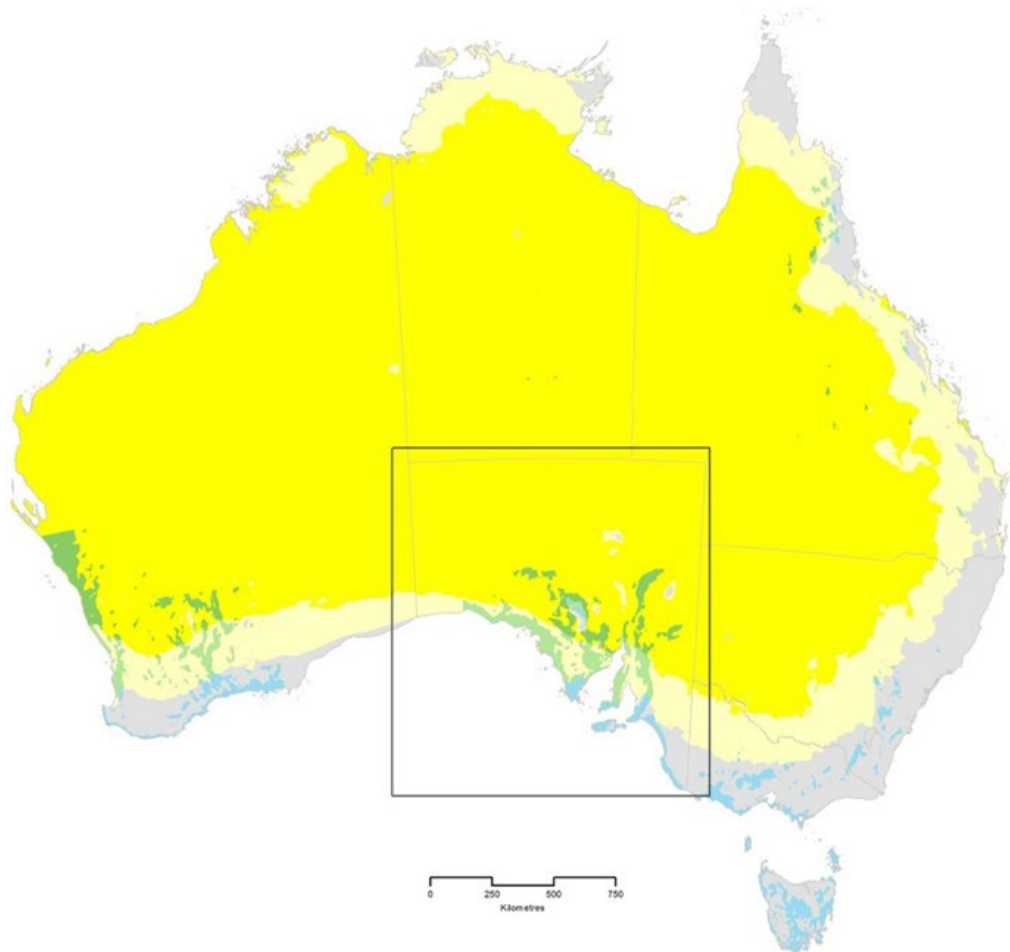
*Ngadluku taingi ngutu yungkurinhi, tampinhi yurni ngantanhi pukingka, niipurna pintyathi mankurrititya, taingintya tarrkarri pintyanhi.*

*Nata ngadlu padnitha, tirkatha Kuma kumangka warpulayi-utha.*



# Introducing South Australia

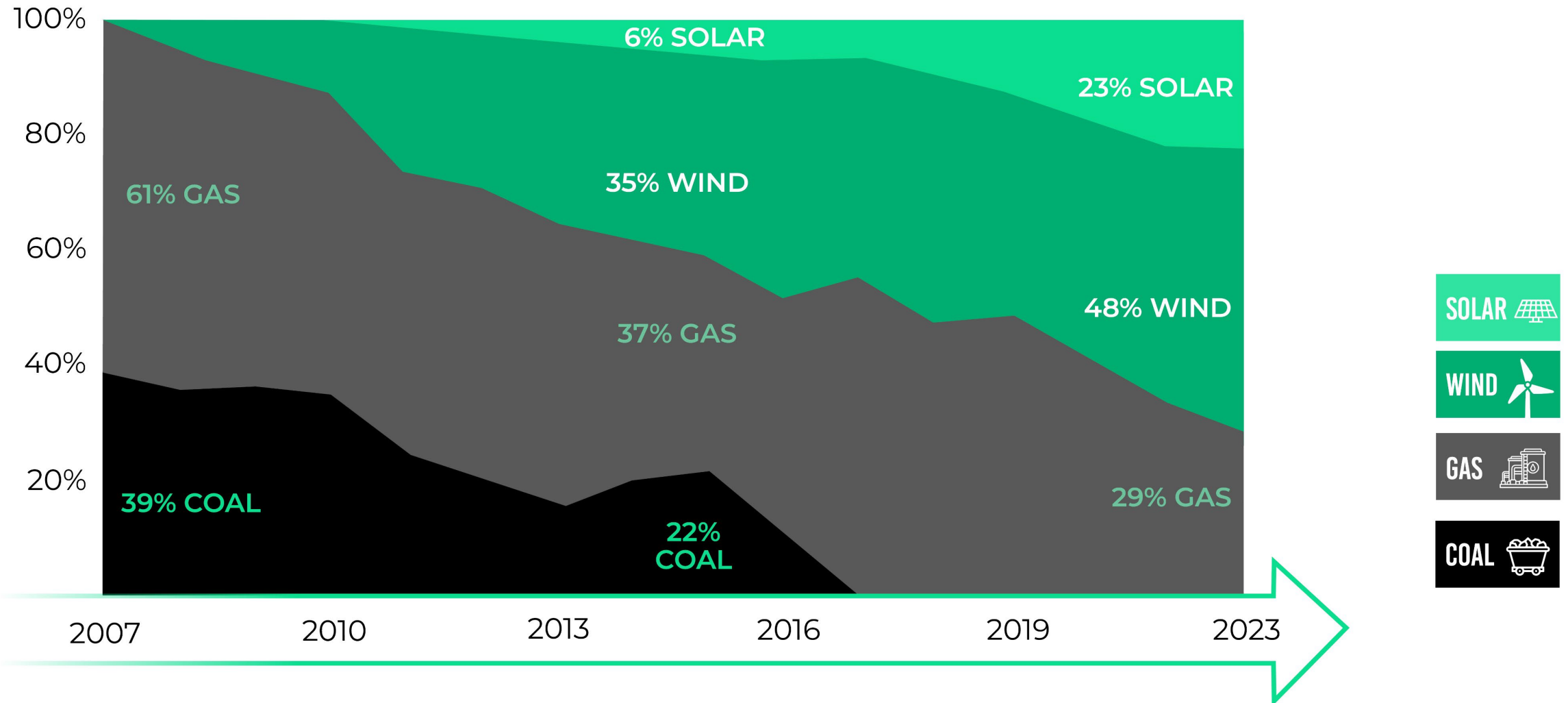
- Total land area of 983 482 square kilometres
- Shares borders with all other mainland states
- 1.8 million people in South Australia
- 1.3 million in Adelaide, state capital
- +9.30hr difference from GMT
- Liveable city
- Competitive low tax business environment
- Centres of excellence in research
- SA targets at least 50% of 2005 carbon emissions by 2030
- Committed to net zero emissions 2050



Source: AEMO ISP, 2020



# South Australia: a global leader in renewable energy



# SA's System Black event 28 September 2016



# A pioneer in energy storage

- 💡 Test -bed for innovation
- 💡 Modelling new-style energy solutions to the world



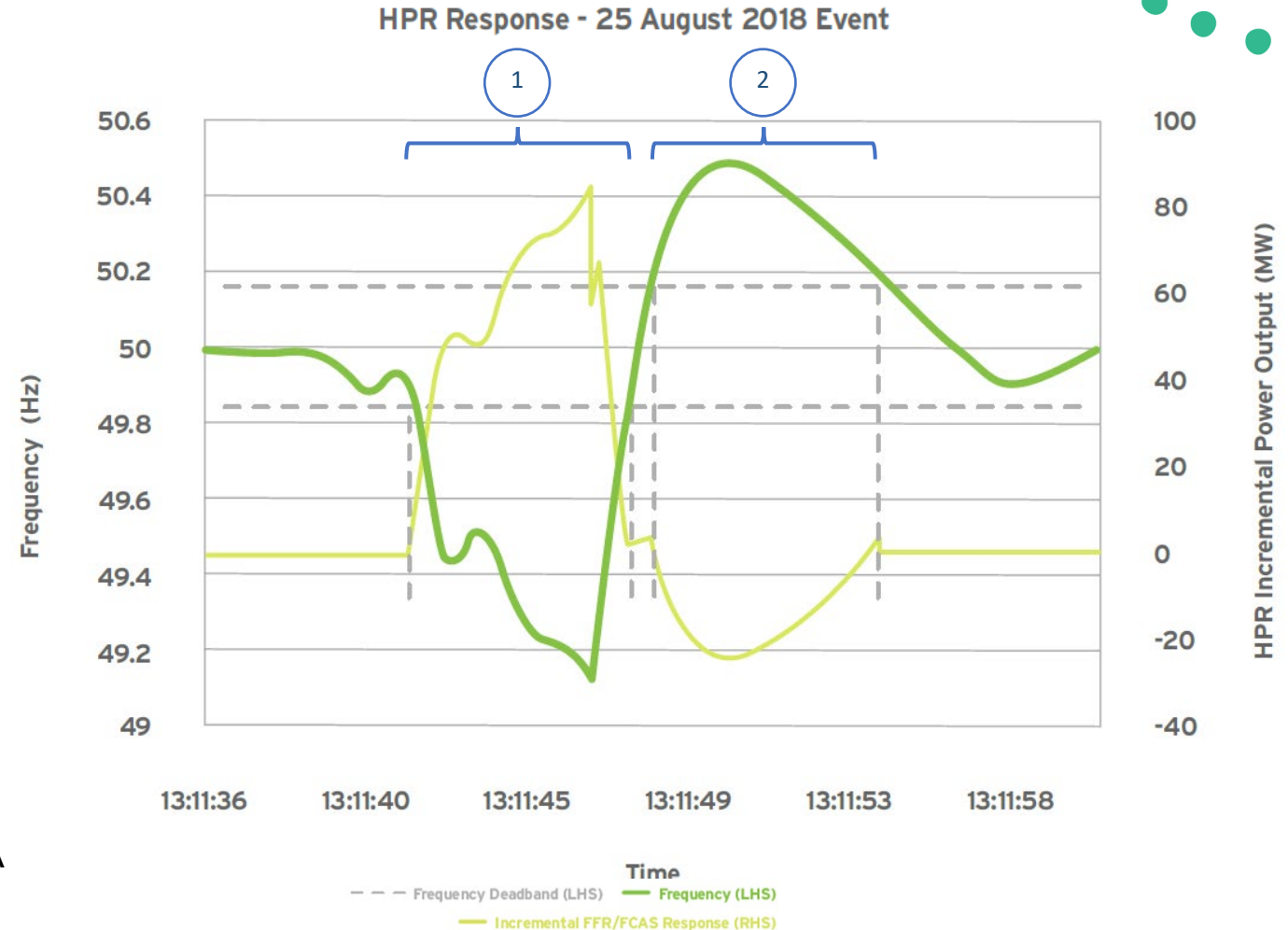
# Benefits of storage technology

## Fast Frequency Response

- First of its kind on the NEM
- Fast dispatch of active power in response to frequency disturbances (~ 100 ms)
- Slows RoCoF during contingency event and supports return to normal frequency band
- Expansion has demonstrated 'synthetic' inertia in 2022

### 25 August 2018 case study

1. Hornsdale Power Reserve (HPR) provides low frequency support to all connected mainland NEM regions
2. HPR provides high frequency support to the separated SA



# Rooftop solar

- More than one in three homes with rooftop solar.
- Among highest per capital level of installed solar in the world.

# Home Batteries

- Among highest uptake of residential batteries in the world.
- Over 43,500 batteries.
- Totalling 455 megawatt-hours of storage





# Virtual power plants

- 
 South Australia's Virtual Power Plant - Australia's largest
- 
 Energy equity - lowering electricity bills for social housing tenants
- 
 Supporting our grid
- 
 More than 12,000 batteries in Virtual Power Plants and expanding.



**Lower Electricity Bills**

The lowest electricity rate in South Australia, guaranteed.<sup>1</sup>



**Sustainable Electricity**

Access renewable energy while helping lower electricity prices across your community when solar is installed.<sup>2</sup>



**Blackout Protection**

Protect your home against blackouts with stored electricity when Powerwall home battery is installed at your home.<sup>2</sup>

# Making news!

Mega battery at Torrens Island comes online in push for greener power | 7NEWS

Share

7 NEWS

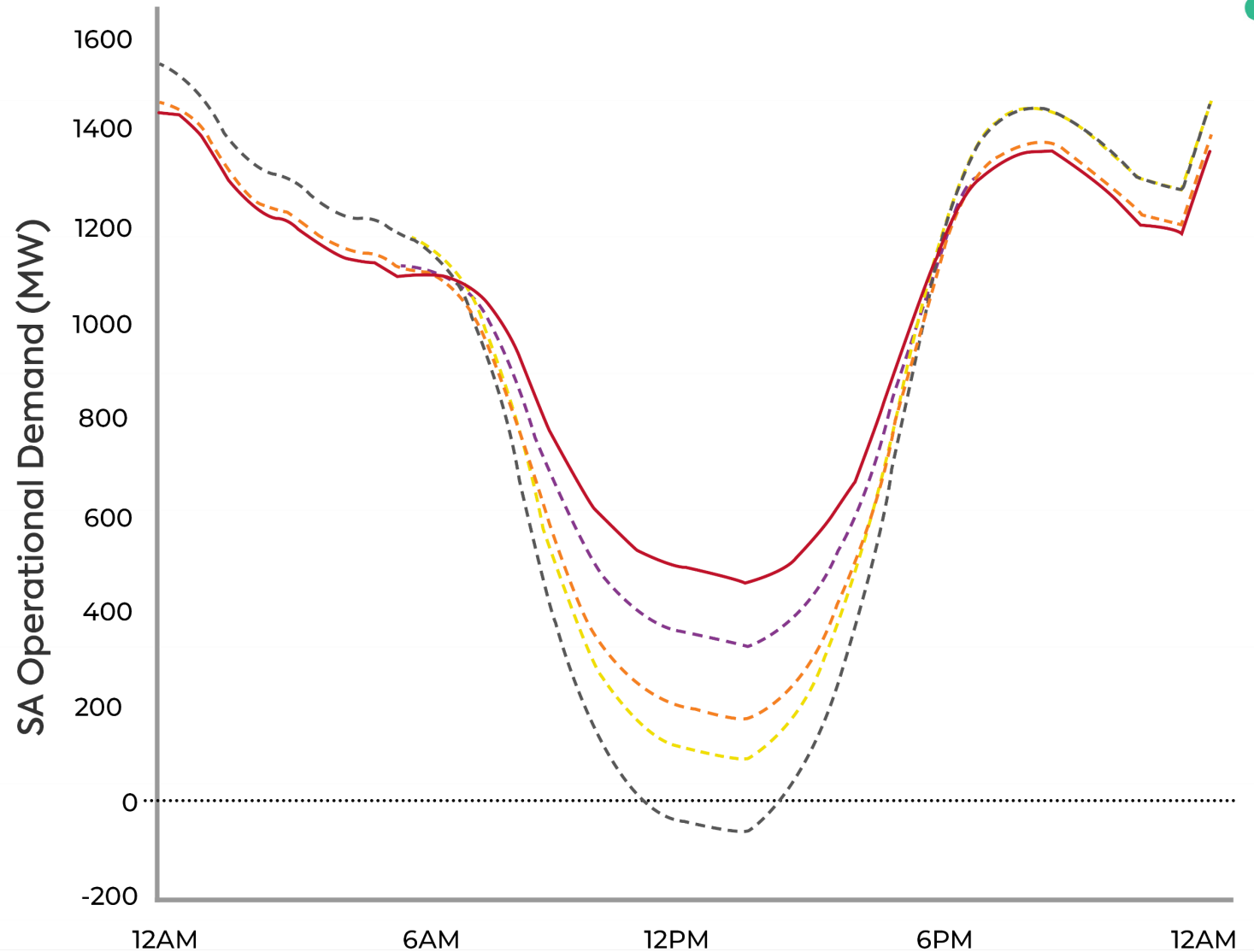
0:31 / 1:48

YouTube

This is a screenshot of a YouTube video. The main content is an aerial view of a large-scale battery storage facility. The facility consists of numerous rows of white, rectangular battery units arranged in a grid pattern. In the foreground, there is a complex of electrical infrastructure, including transformers and switchgear, all situated on a concrete pad. The background shows a body of water, a line of trees, and some industrial buildings under a clear blue sky. The video player interface includes a play button, a volume icon, a progress bar showing 0:31 / 1:48, and icons for YouTube, settings, and full screen. The 7NEWS logo is visible in the bottom right corner of the video frame.

# Net Negative Demand

- 2019
- - - 2020
- - - 2021
- - - 2022
- - - 2023



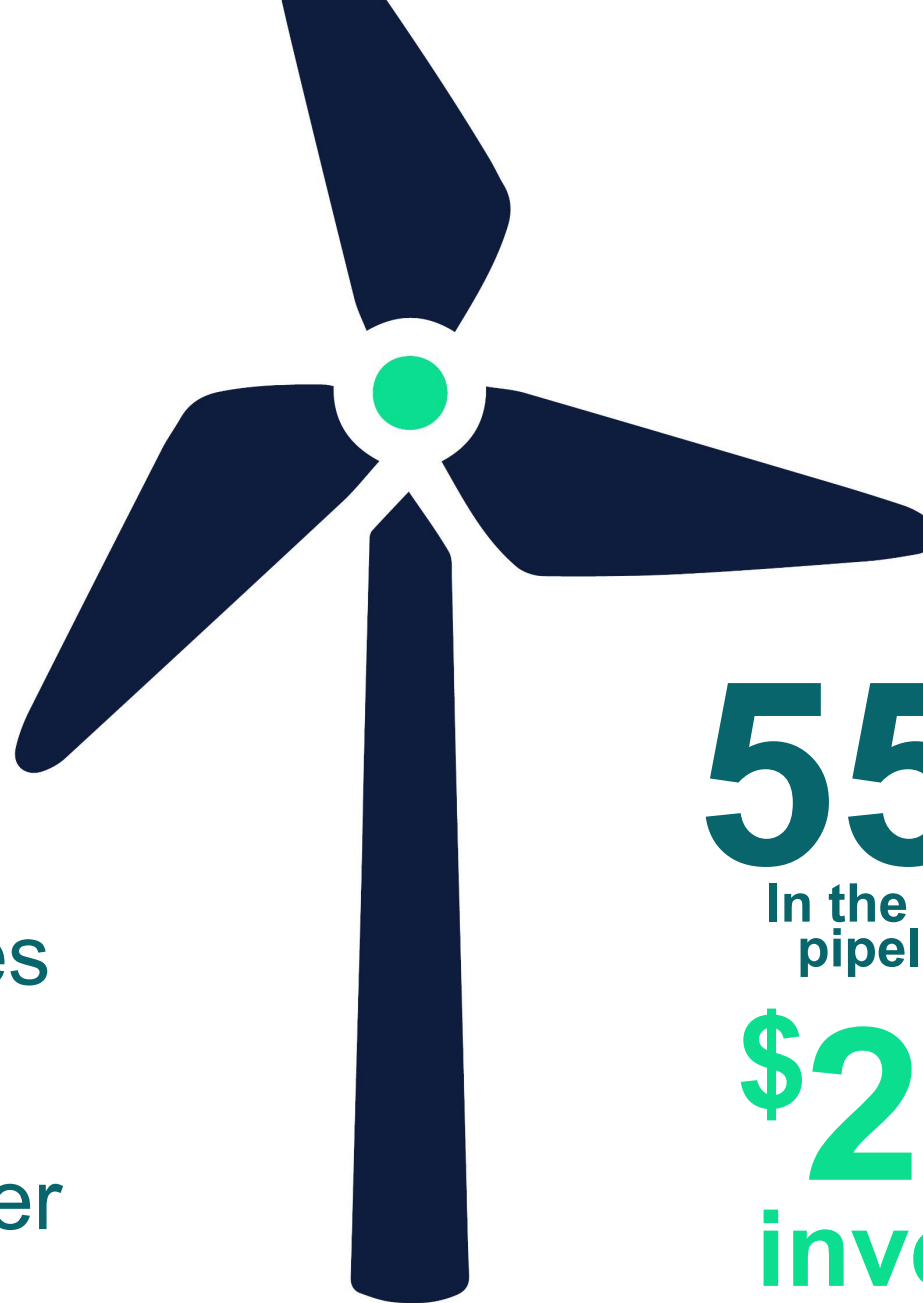
# Smarter Homes package



- Smart standards for inverter-based generation
  - **Remote disconnection and connection**
  - **Voltage disturbance ride through**
- Registered Agent facilitates emergency control
- Improved minimum smart meter requirements for DER integration
- Retail pricing to incentivise energy use in low demand periods

# Projects in operation

- ⚡ 24 wind farms
- ⚡ 5 solar farms
- ⚡ 6 grid scale batteries
- ⚡ Australia's largest hydrogen electrolyser



**55** Renewable Energy Projects

In the development pipeline totalling

**\$21bn**  
investment

# Ideally positioned to produce green hydrogen

Optimal location for:

**SOLAR FARM**

DNI greater than 23.5 MJ/m<sup>2</sup>

**SOLAR FARM**

DNI greater than 20.5 MJ/m<sup>2</sup>

**WIND FARM**

Predicted wind speed above 7.31 m/sec

**WIND FARM AND/OR SOLAR FARM**

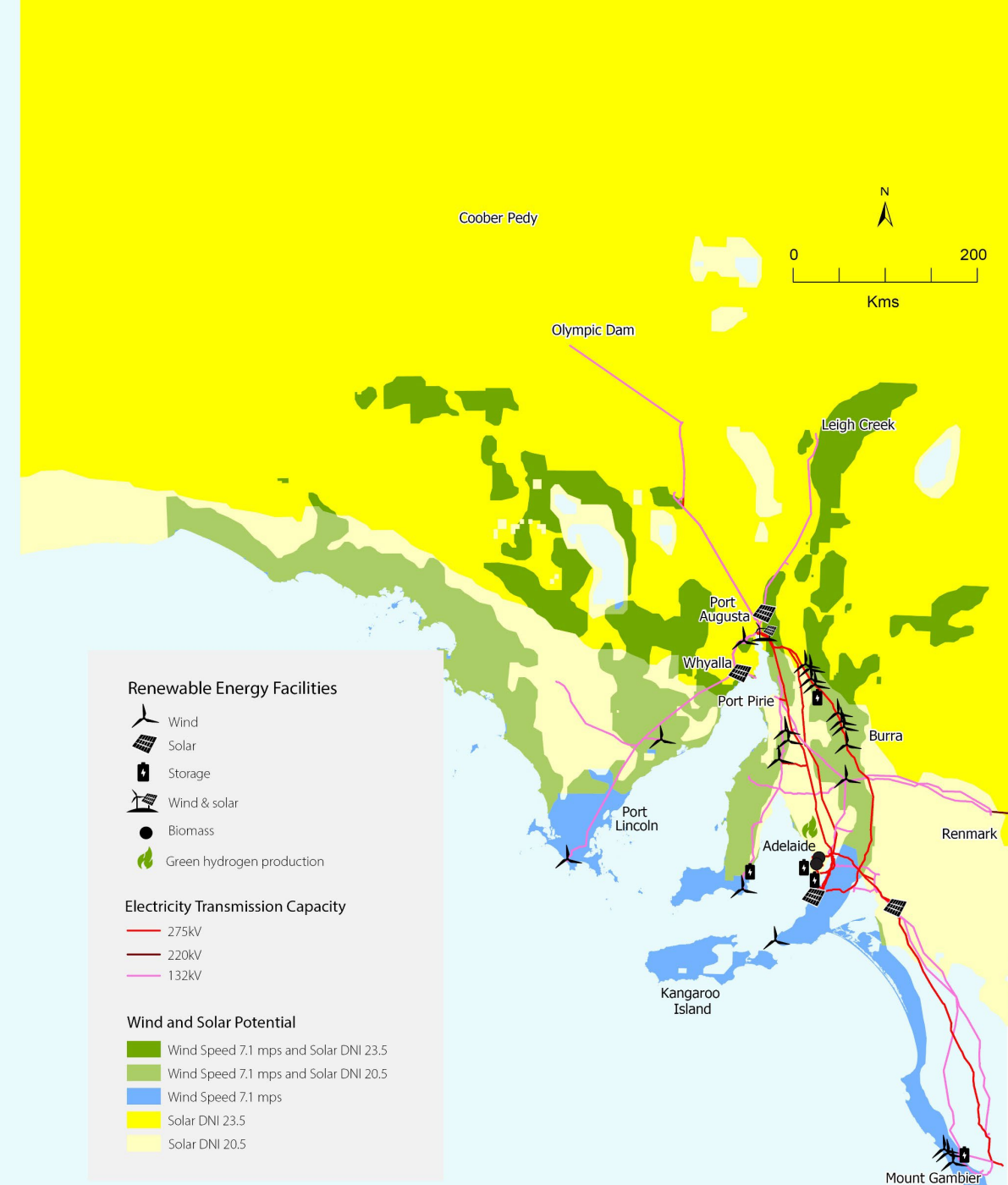
Predicted wind speed above 7.31 m/sec

DNI greater than 23.5 MJ/m<sup>2</sup>

**WIND FARM AND/OR SOLAR FARM**

Predicted wind speed above 7.31 m/sec

DNI greater than 20.5 MJ/m<sup>2</sup>



# Hydrogen Jobs Plan



250MWe HYDROGEN PRODUCTION FACILITY



200MW HYDROGEN POWER PLANT



250MWe electrolyser



200 MW hydrogen fuelled power plant



hydrogen storage facility



land identified in the Whyalla area

# Hydrogen and Renewable Energy Act

- A new Act to slash red tape, streamline processes, and build on South Australia's global leadership in decarbonisation.
- Government owned land and waters where renewable energy projects can be hosted will be identified by the South Australian Government.
- Government will have the ability to go to market and companies will compete for licences to access.
- New, fit for purpose licensing arrangements will be established for projects across all land types, enabling regulation of the whole project life cycle.



**Comprehensive framework  
for sustainable growth**

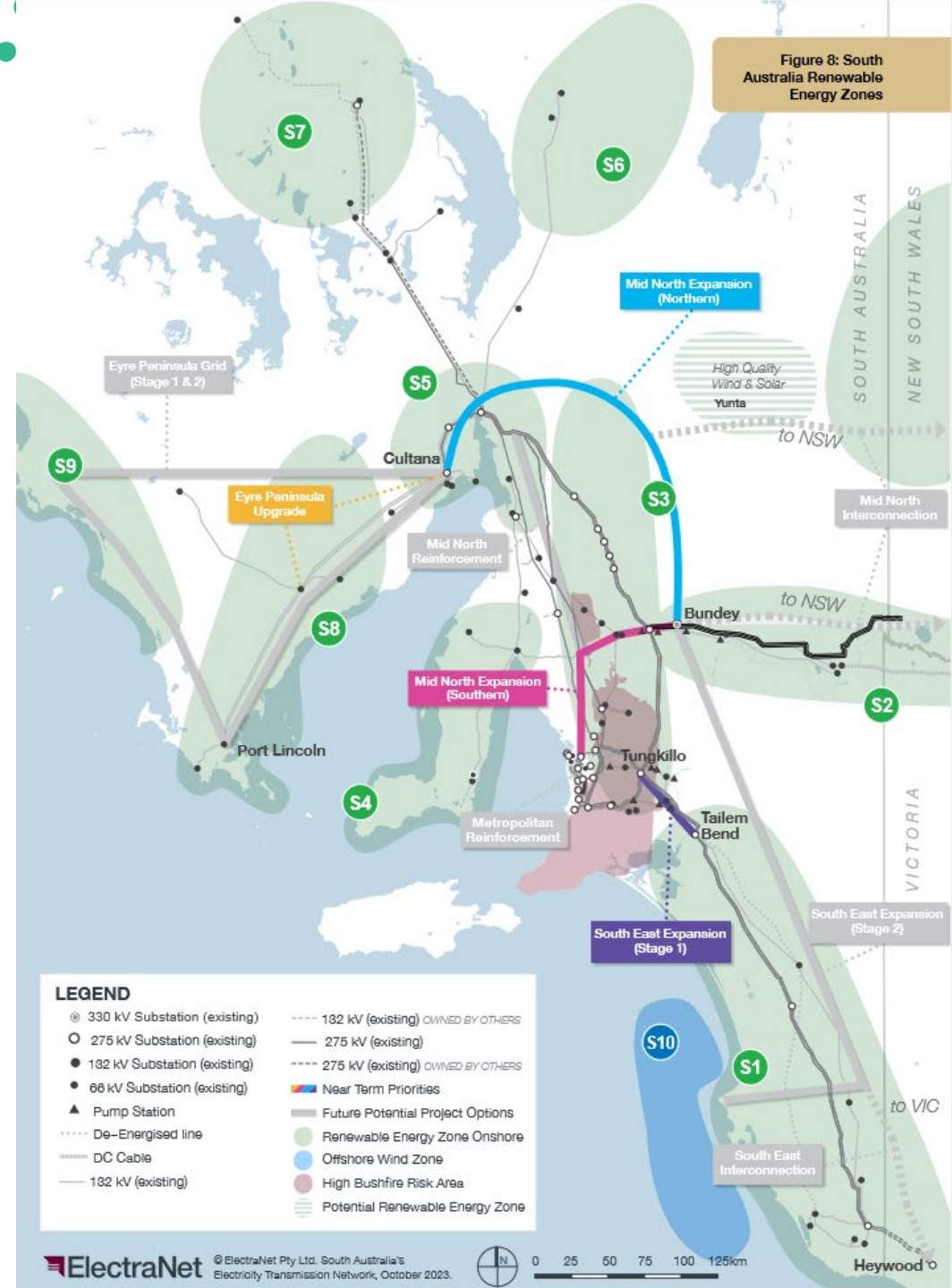


# Electranet South Australia Renewable Energy Zones

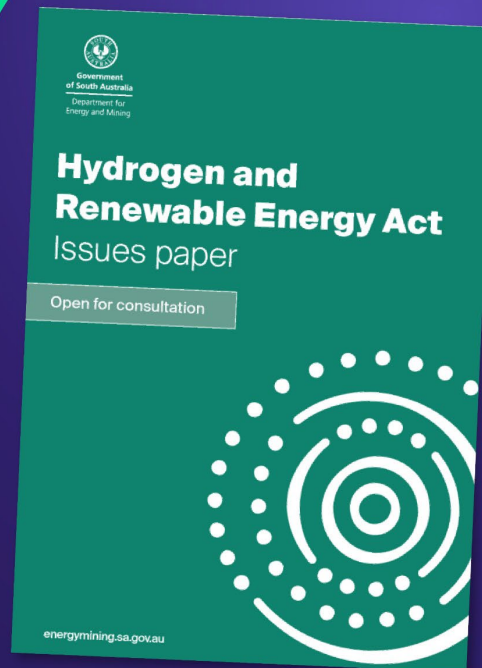
Table 1: REZ rankings

REZ	Economic rank	Strategic rank	Composite rank
S3 Mid North SA	1	3	1
S2 Riverland	6	1	2
S6 Northern SA	8	1	3
S8 Eastern Eyre Peninsula	4	5	4
S1 South East SA	2	8	5
S6 Leigh Creek	4	6	5
S10 Offshore South East SA Coast	3	9	7
S4 Yorke Peninsula	6	7	8
S7 Roxby Downs	10	4	9
S9 Western Eyre Peninsula	9	10	10

Electranet Transmission Annual Planning Report  
October 2023



- ✓ Wind
- ✓ Solar
- ✓ Storage
- ✓ Hydrogen Power Plant
- ✓ Steelworks
- ✓ Magnetite
- ✓ Copper
- ✓ Desalination Plant
- ✓ Port Bonython hydrogen hub
- ✓ Cape Hardy hydrogen hub



# Contacts

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