



Renewable Energies

Glenferrie Rotary Club

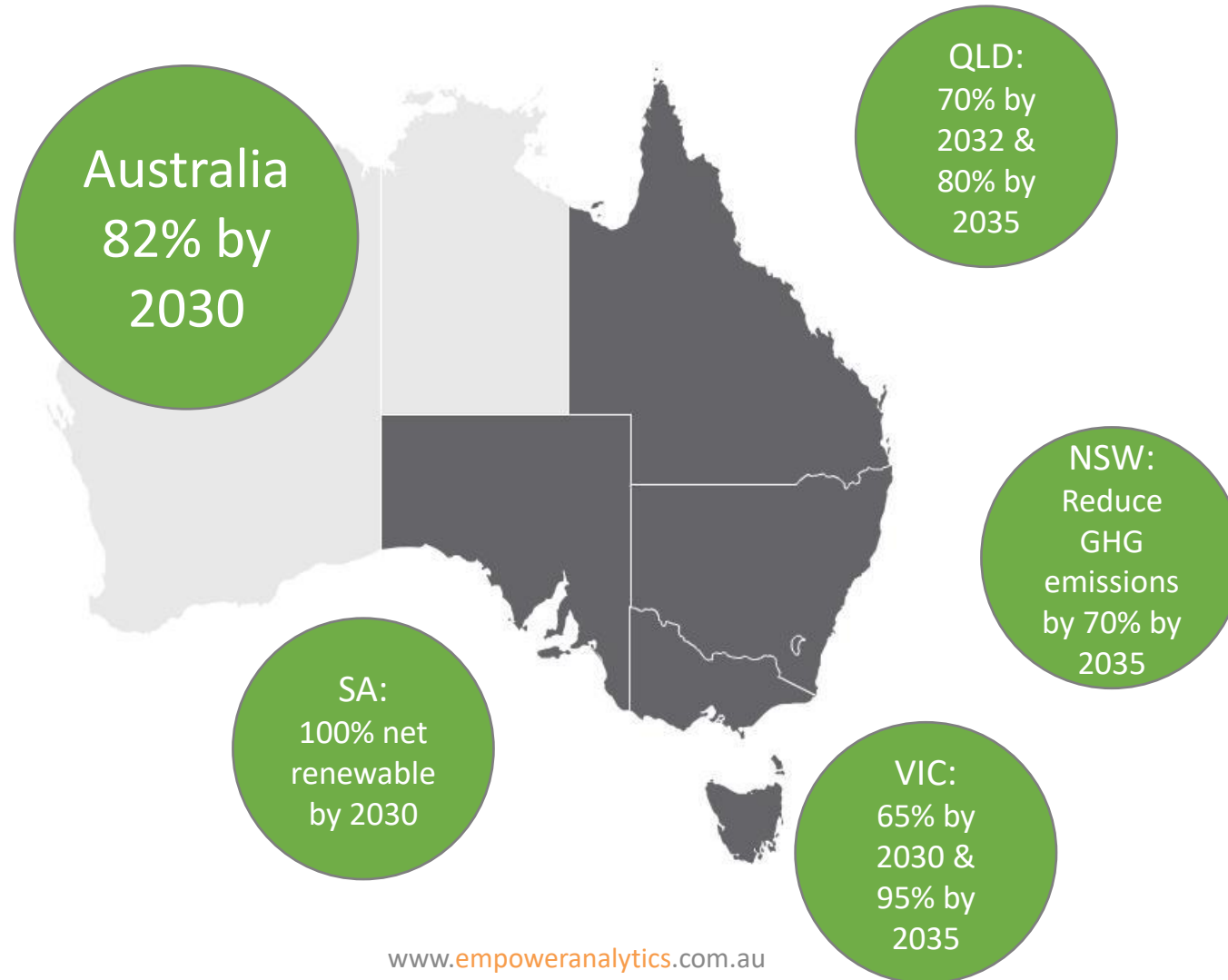
Carl Daley
Managing Director

23 April 2024

Agenda

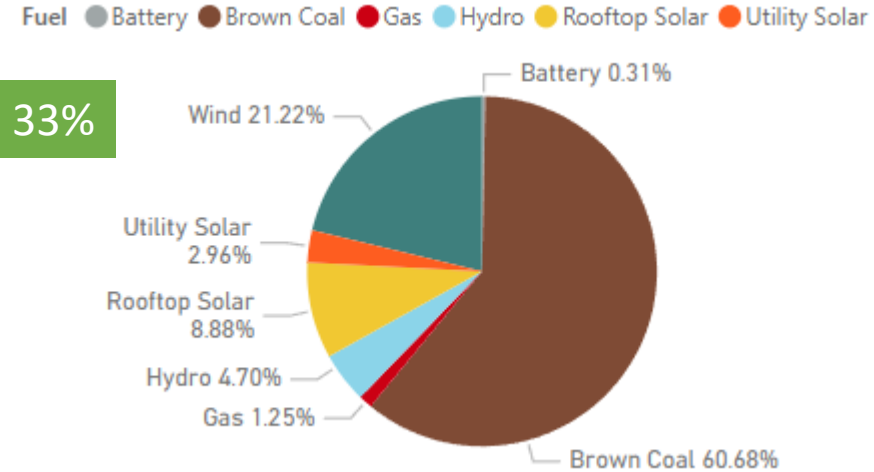
- Policy Landscape
- Market Pricing Trends
- The Transition Challenge
- Consumer Energy Resources
- Conclusion

Government Renewable Targets

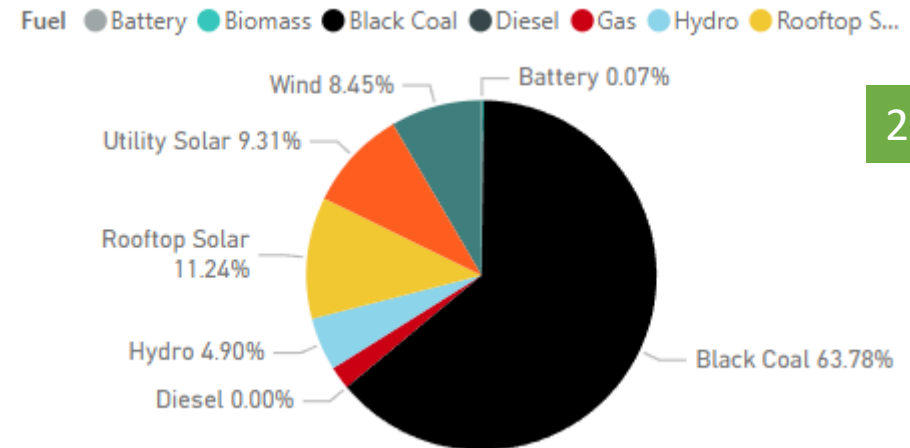


Generation Type Market Share 2023

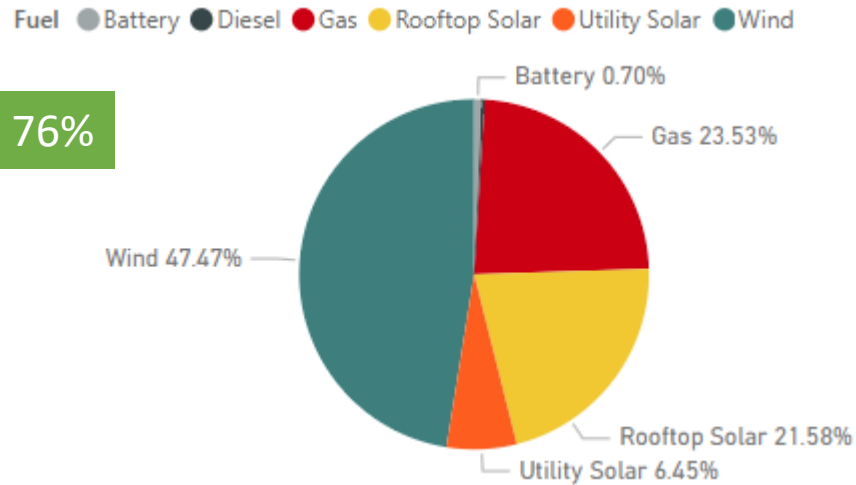
VIC



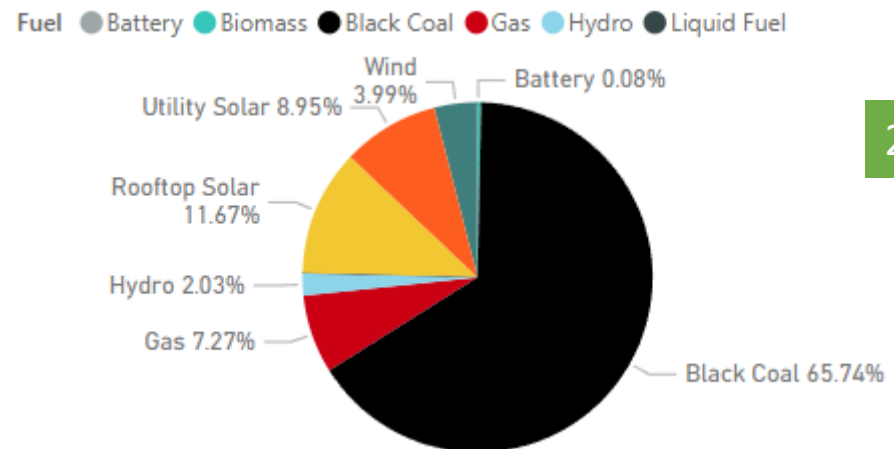
NSW



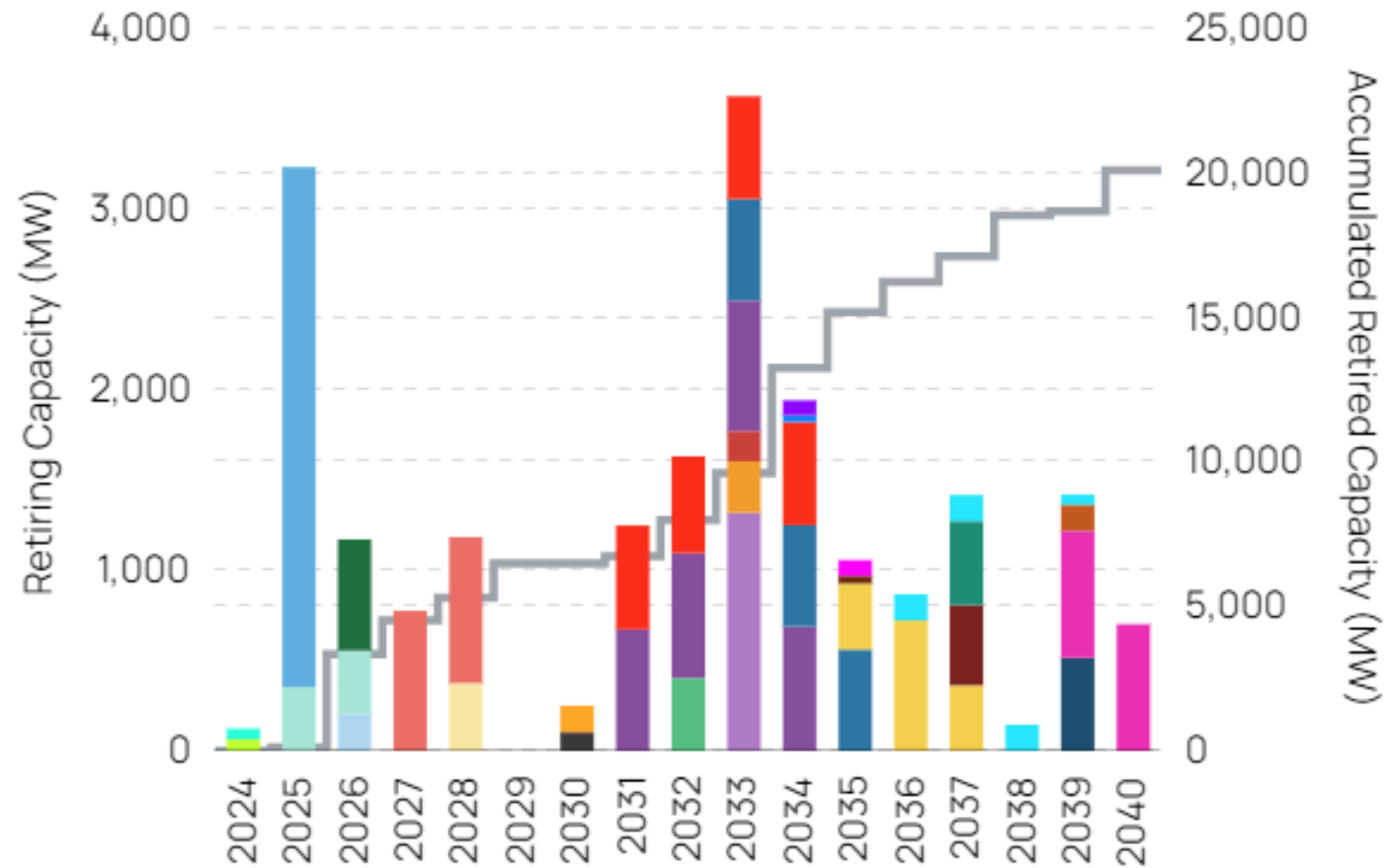
SA



QLD



Generator Retirement Plan



Green Certificates

Renewable Energy Target legislation



Expires 31 December

2030

Includes

1. Large Generation Certificates (**LGCs**) for large wind and solar farms (i.e. more than 100kW)
2. Small-scale Technology Certificates (**STCs**) for roof-top solar etc

Renewable Electricity Guarantee of Origin (REGO)

1. Proposed scheme
2. Not yet finalised
3. Would create certificates for:
 - All renewable generation including exported electricity
 - Renewable electricity dispatched from storage

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Market Prices

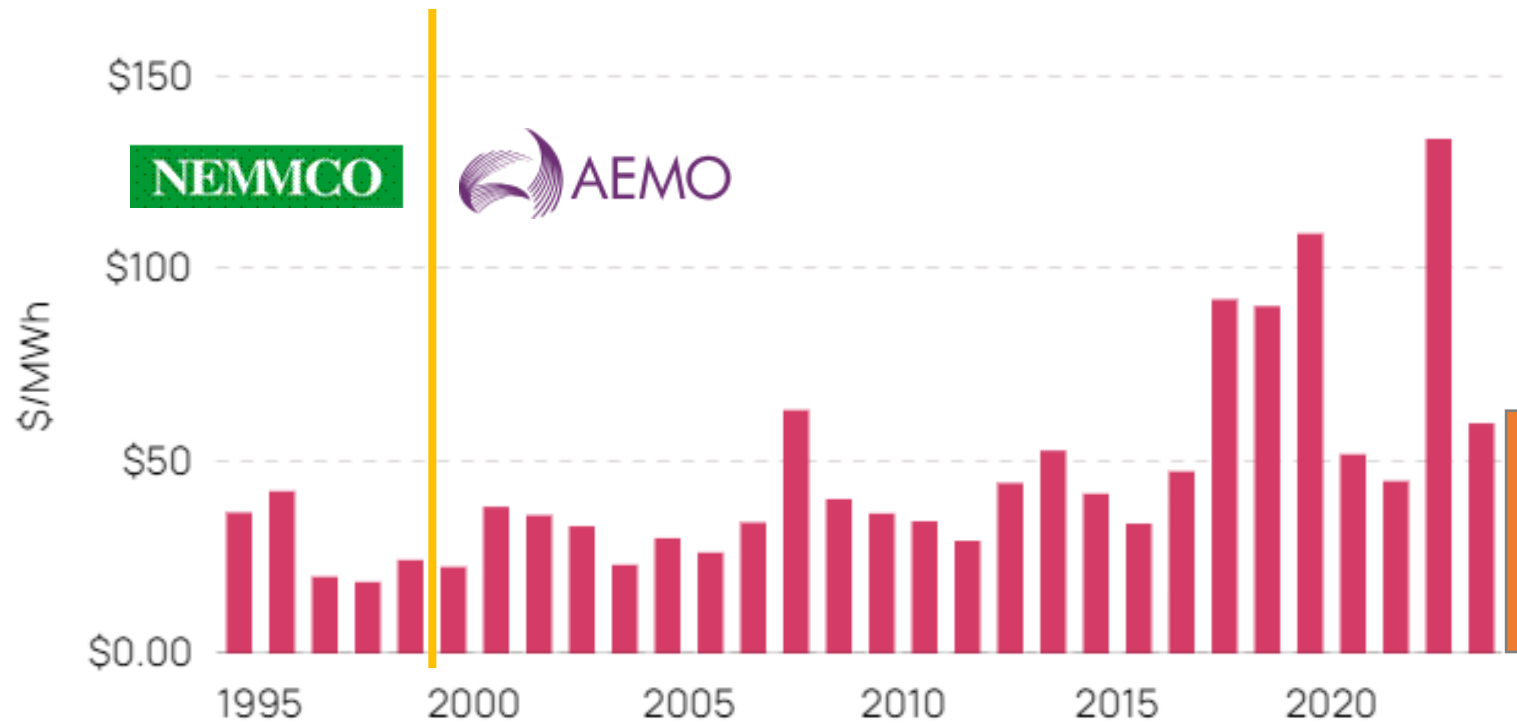
Spot Market

- Real time price set every 5 minutes of every day
- Minimum price is $-\$1,000/\text{MWh}$
- Maximum price is $+\$16,500/\text{MWh}$

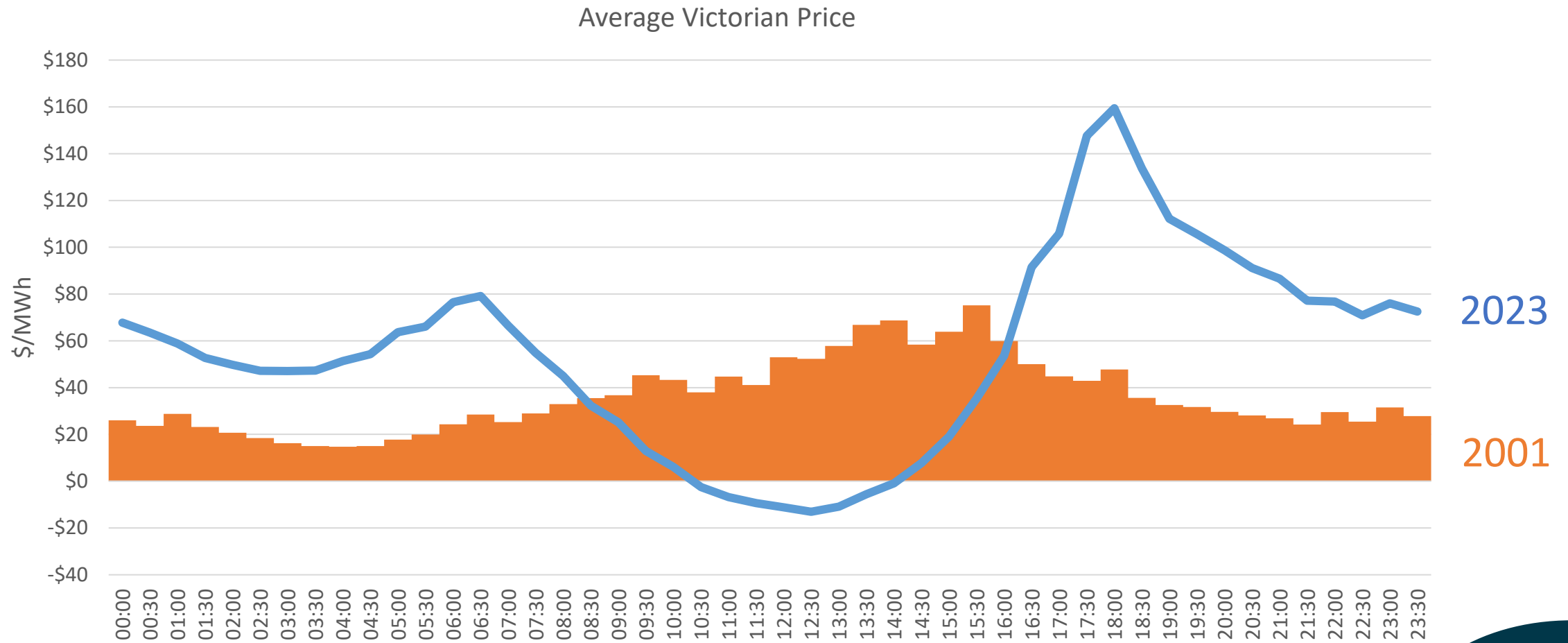
Forward Hedging Market

- Expectations of future spot prices
- Market players use these hedging instruments to hedge their risk and cost/revenue
- Most popular hedging instruments traded on ASX as futures contracts

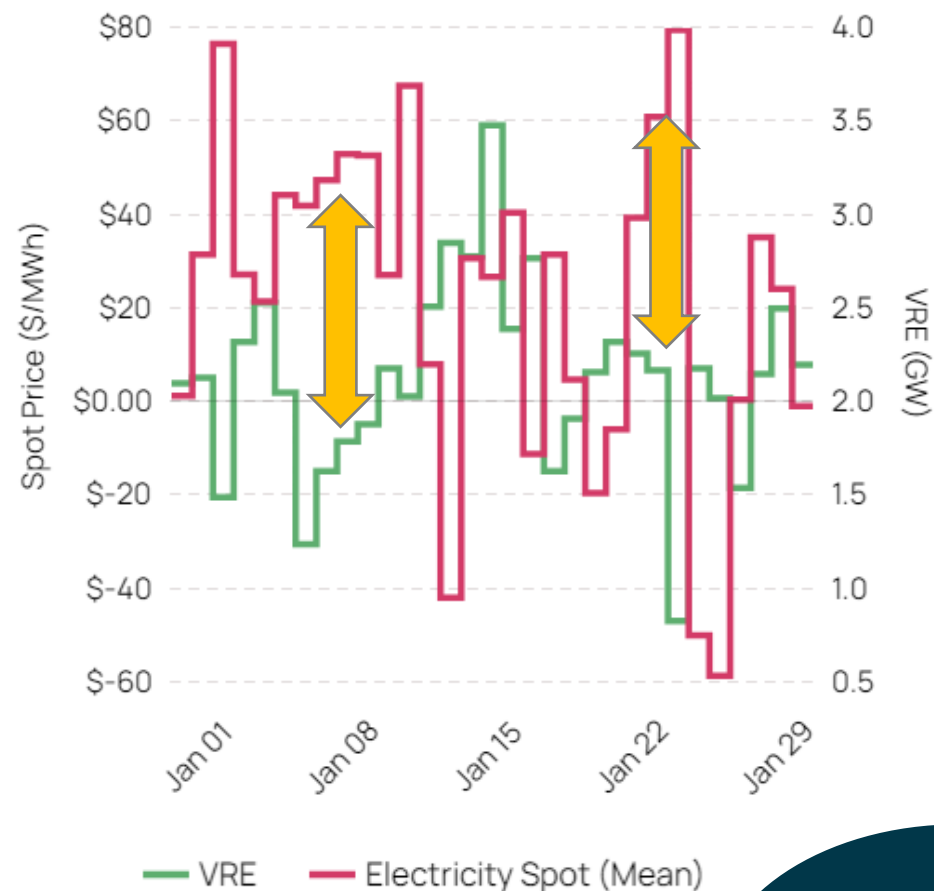
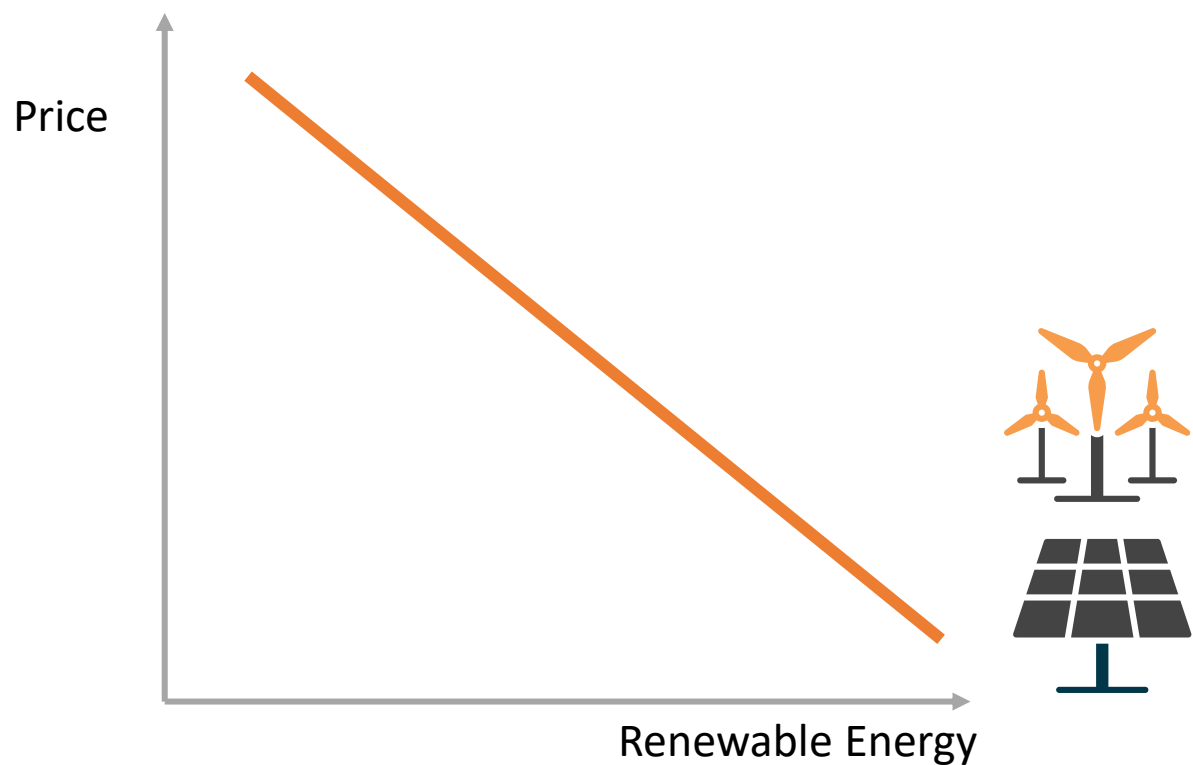
Victorian Average Spot Prices



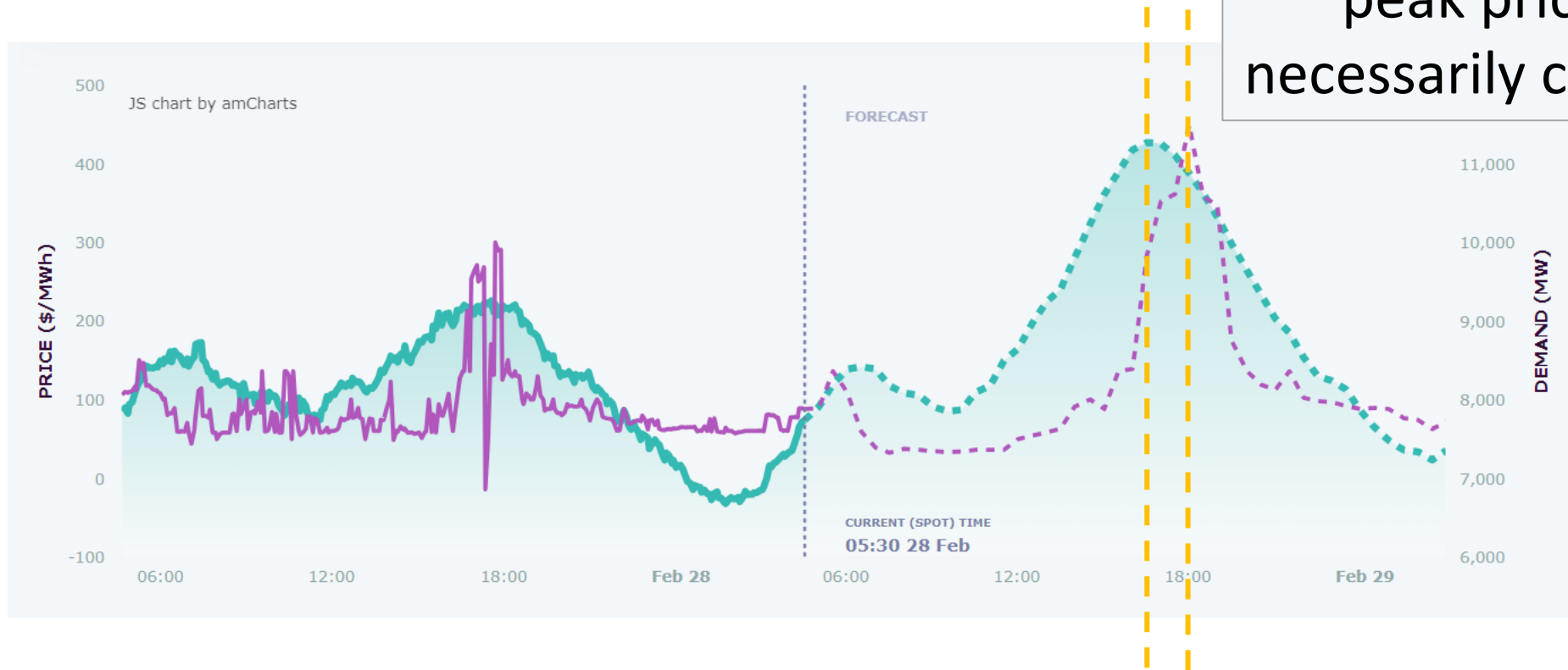
How time of day prices have changed ...



Variable Renewable Energy (VRE) and Spot Price



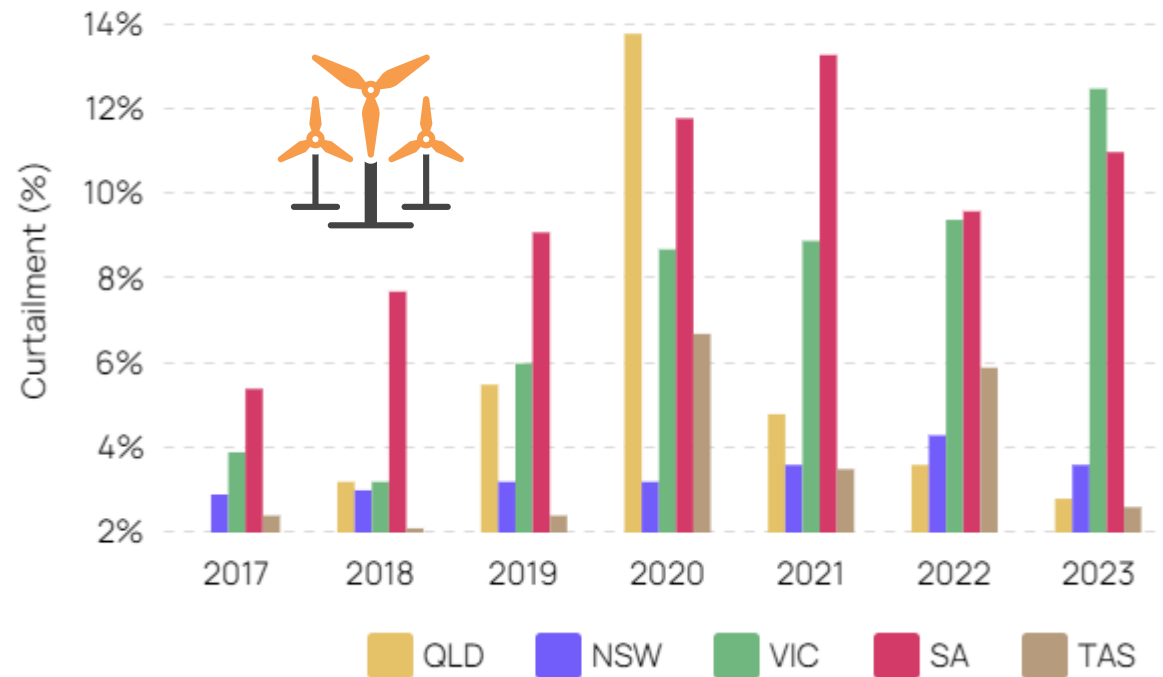
Twin peaks emerging



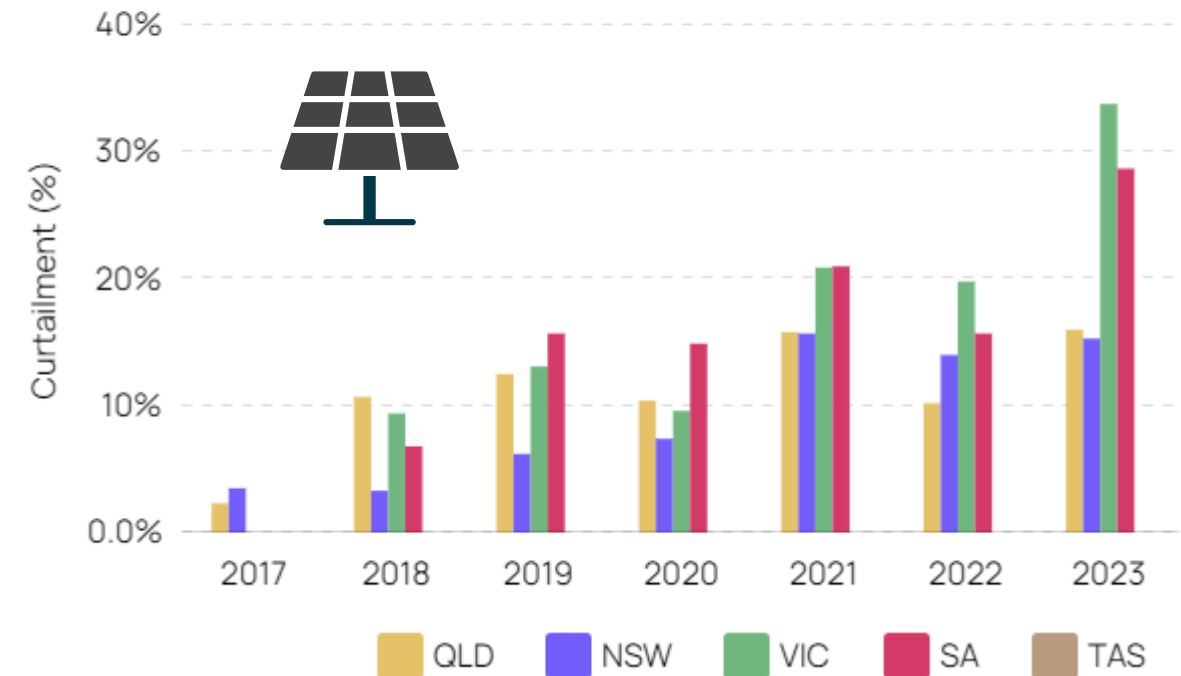
Peak demand and
peak price not
necessarily coincident

Mandatory Curtailment

Generation Curtailment

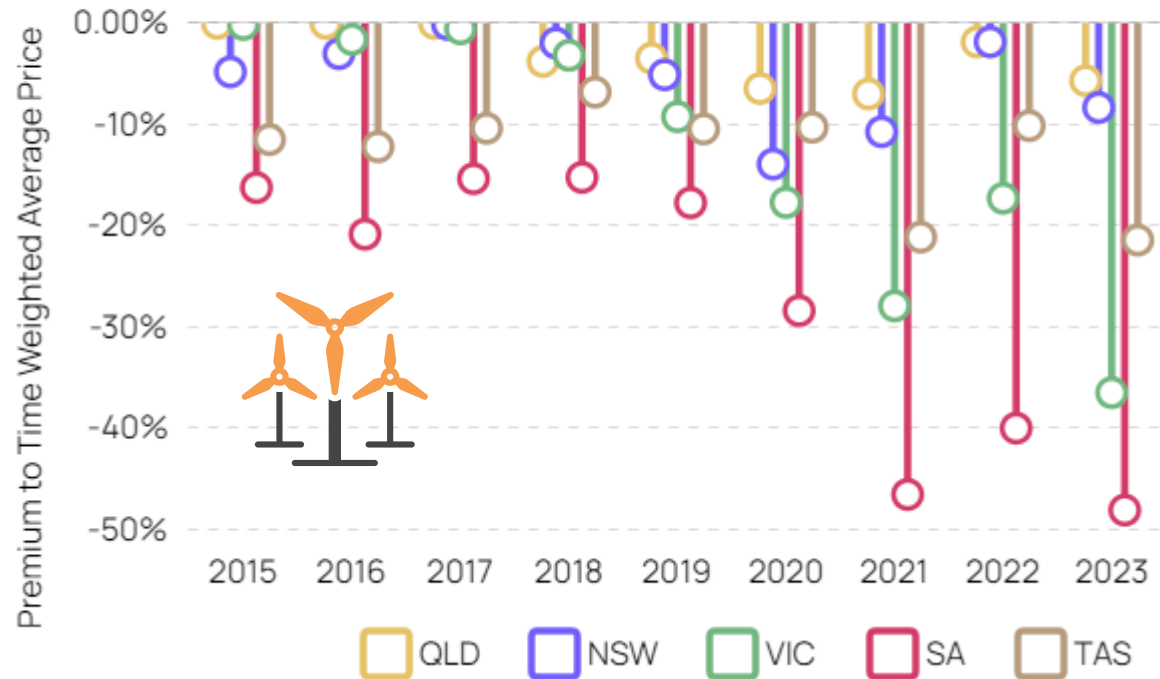


Generation Curtailment

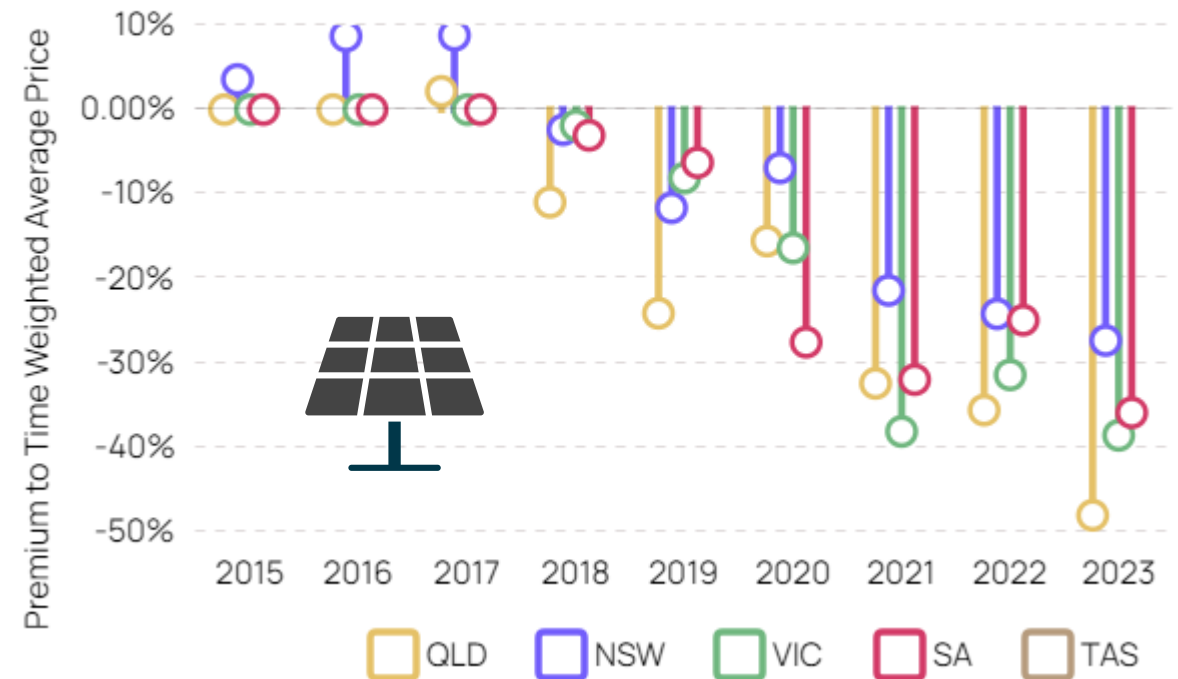


Spot Price Earnnt

Generation Weighted Spot Price Premium



Generation Weighted Spot Price Premium

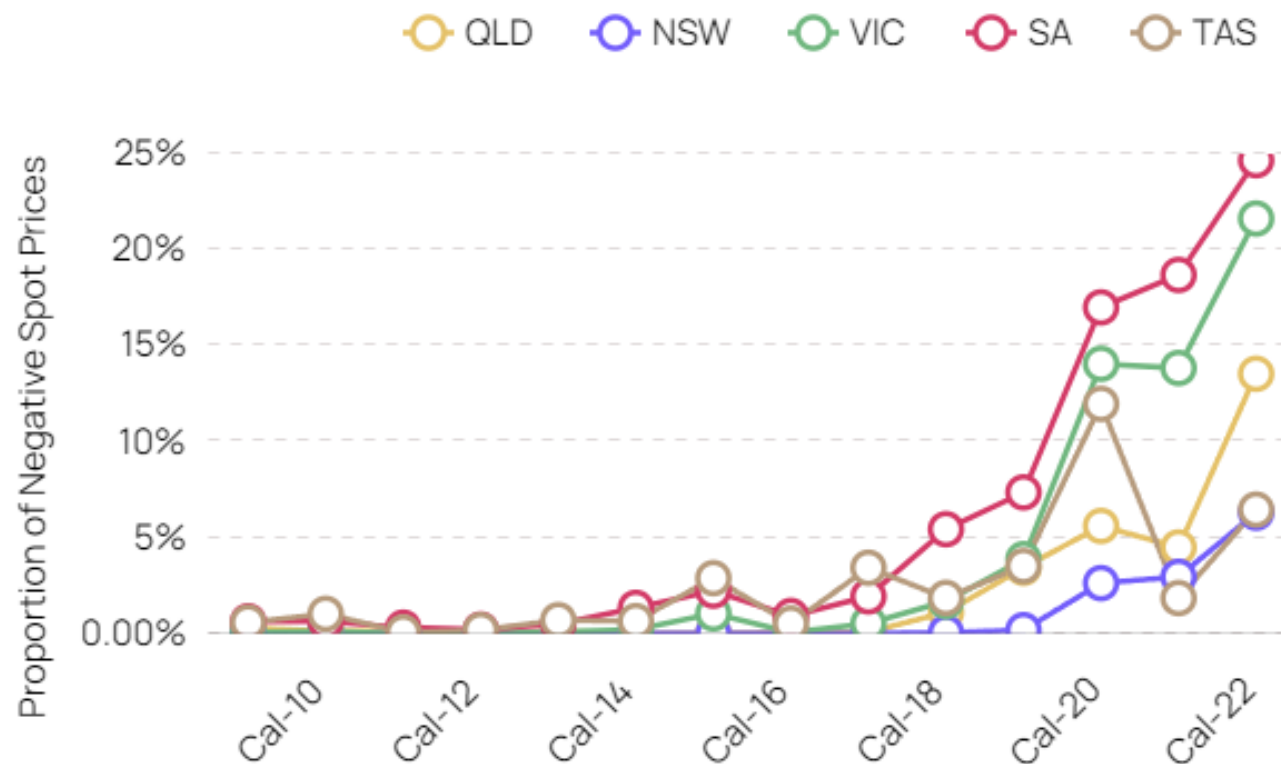


Negative Spot Prices

Proportion of Negative Prices by Calendar Year

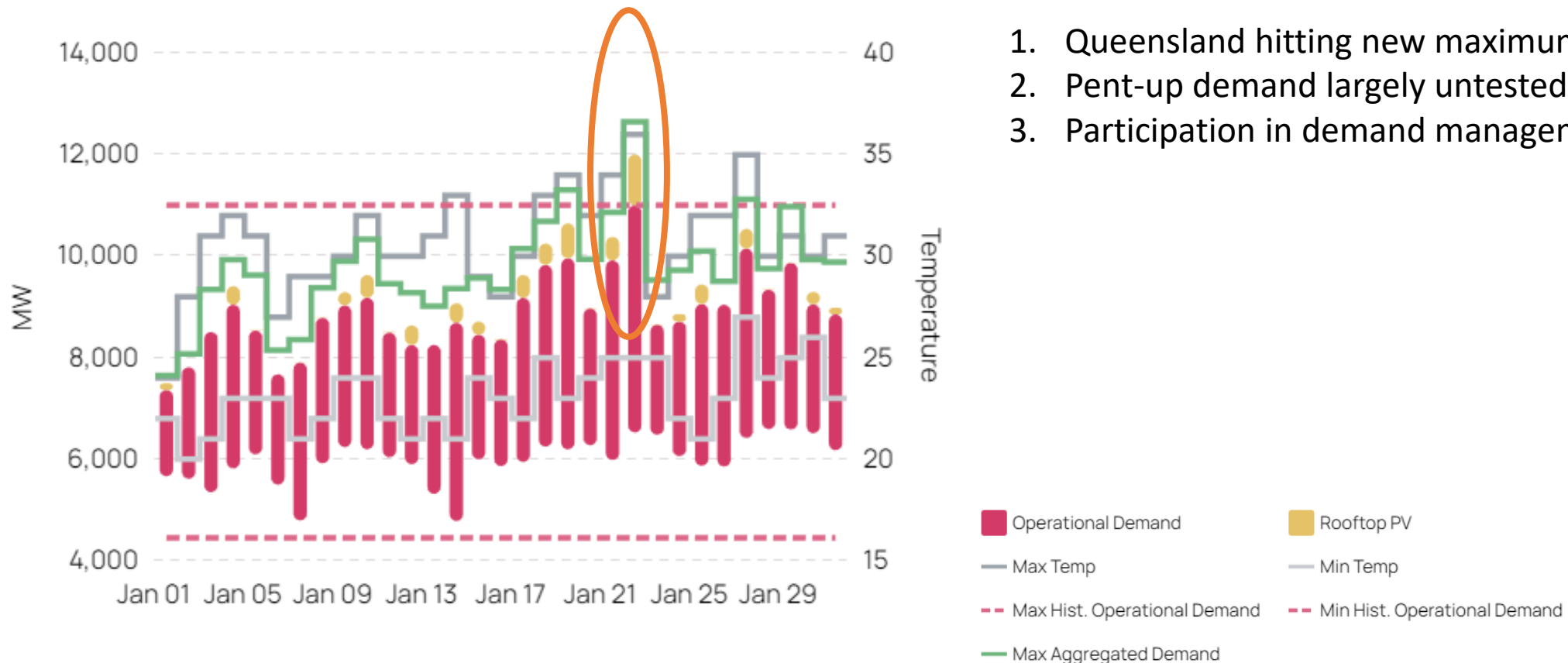
Negative spot prices occur when:

1. A coal-fired power station does not wish to go below minimum generation levels, otherwise unit may become unstable
2. Renewable generators can earn a green certificate (circa \$45/MWh)



Pent-up demand ...

Operational Demand Journey



1. Queensland hitting new maximum demand levels
2. Pent-up demand largely untested in NSW and VIC
3. Participation in demand management increasing

Spot
market
today ...

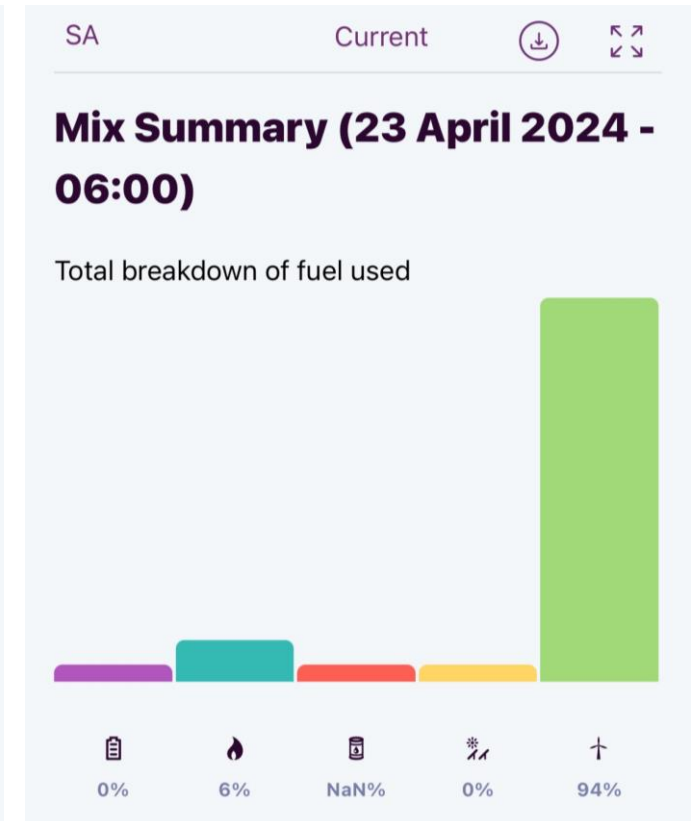
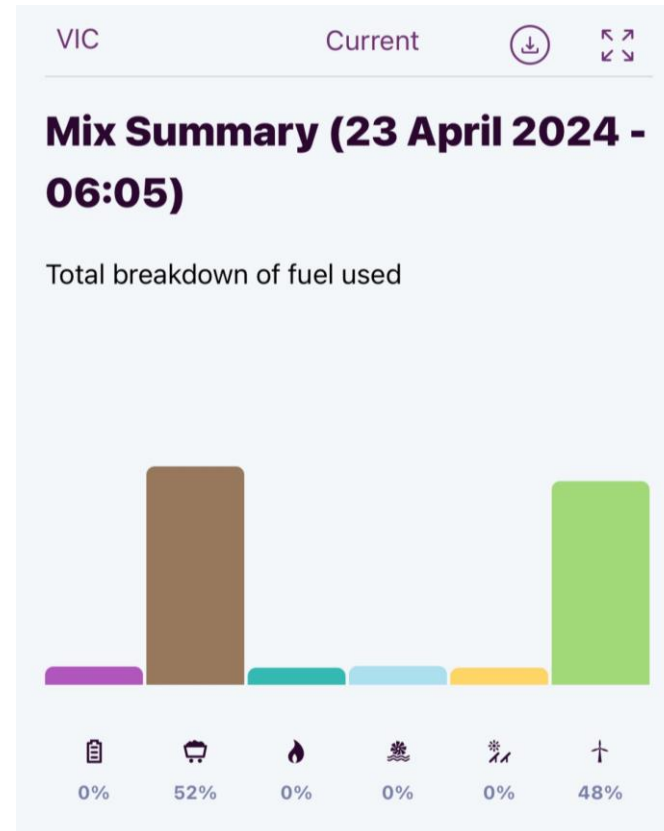
SA: -\$43.21

VIC: -\$48.00



QLD: \$11.77

NSW: \$13.00

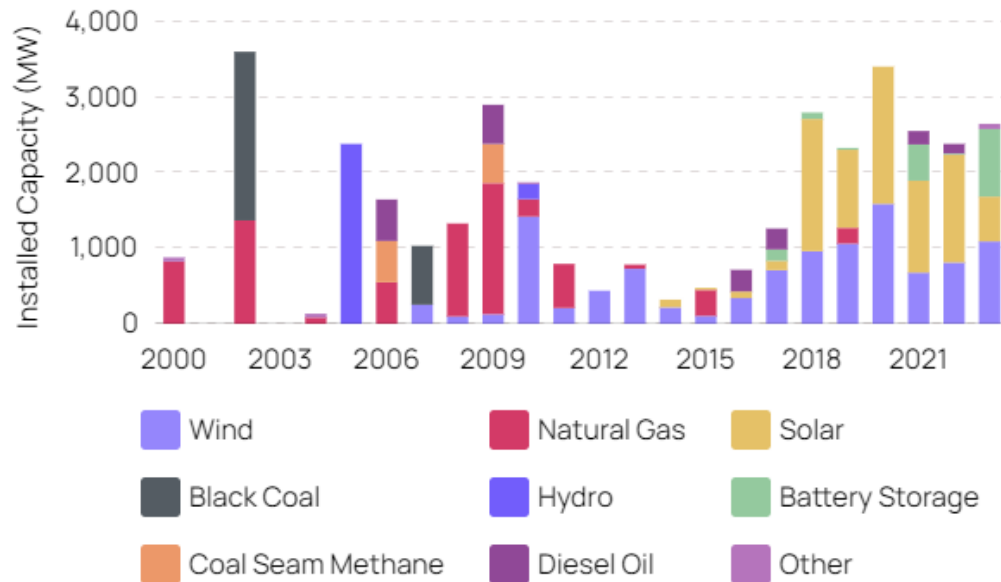


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Slow progress towards transition

New Generation



Require about 6,900 MW pa until 2030 to achieve 82% renewables

Source: Australian Energy Council

Coal needs to fall about 4 times faster than it did in FY-22/23; while wind and solar needs to double last year's rate

Source: University of NSW

The 10,000 km new transmission roll-out is extremely challenging and expensive

Renewable generation is facing lengthy approval process, supply issues, skilled labour shortages and financial closure challenges

Federal Government Capacity Investment Scheme

32GW

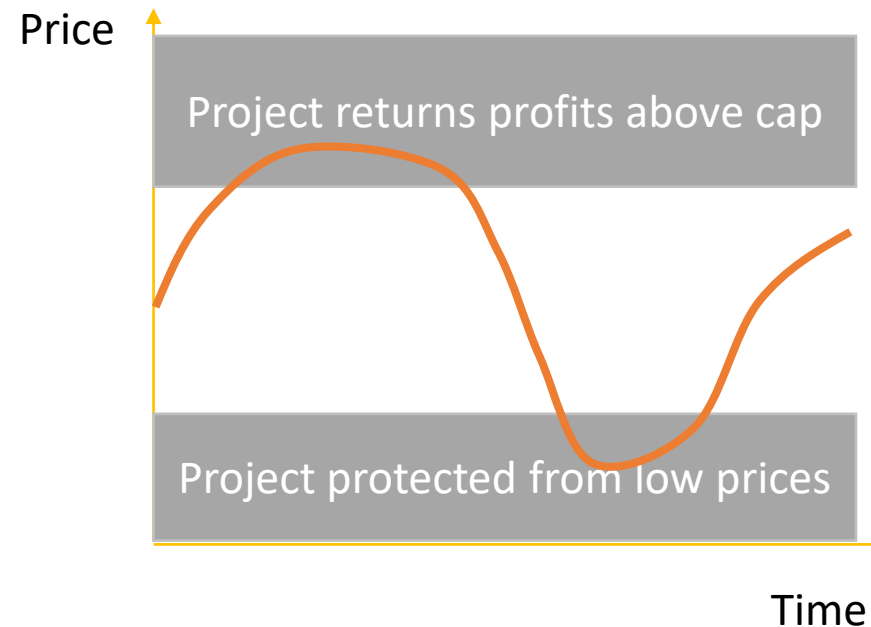
of capacity to be contracted

23GW

9GW

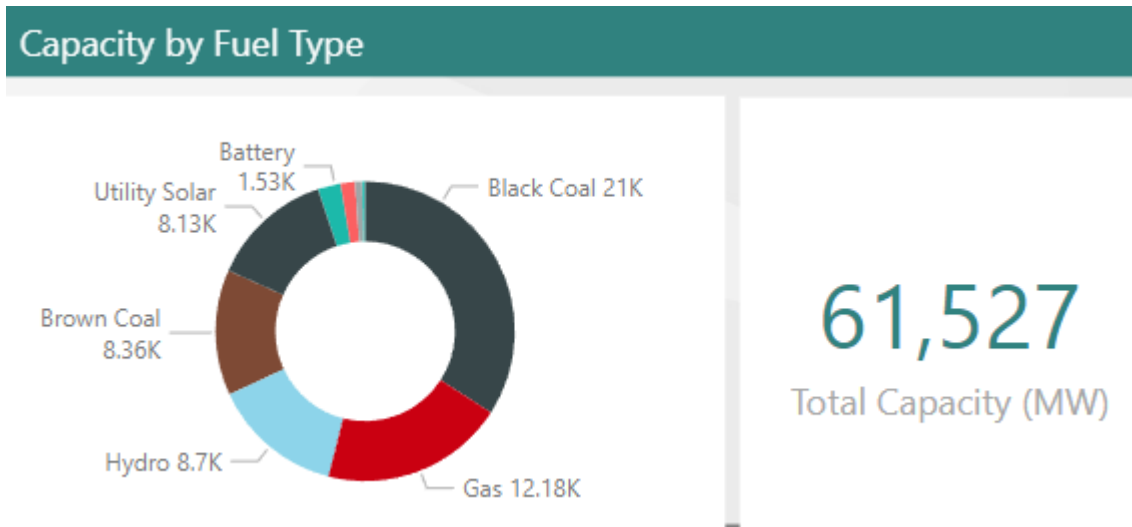


A cap and floor mechanism proposed.
Tendered twice a year



How much is 32GW?

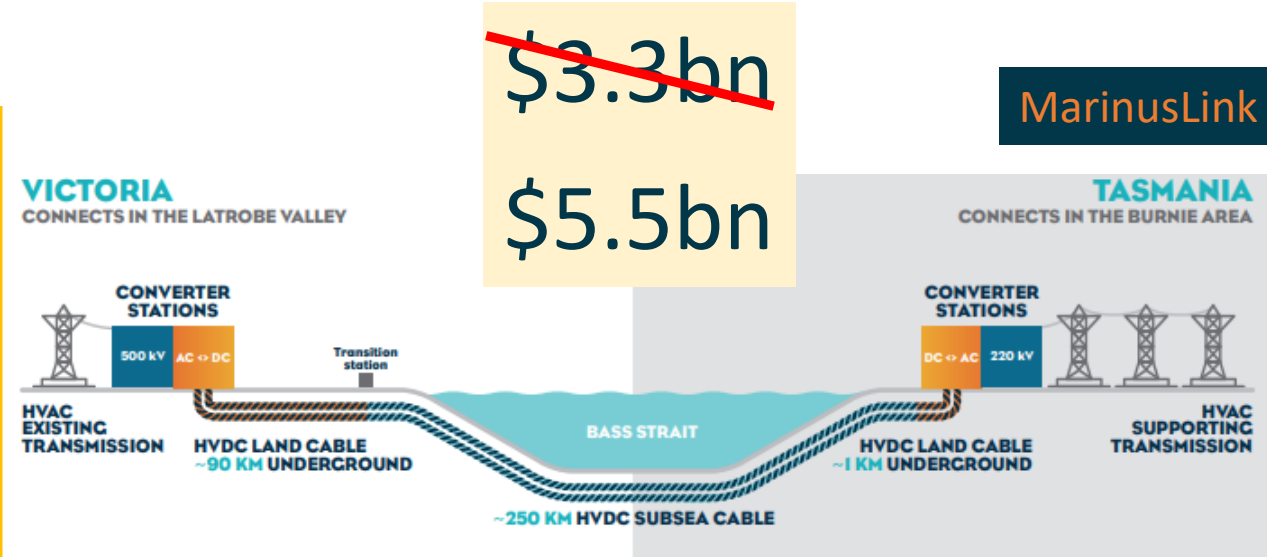
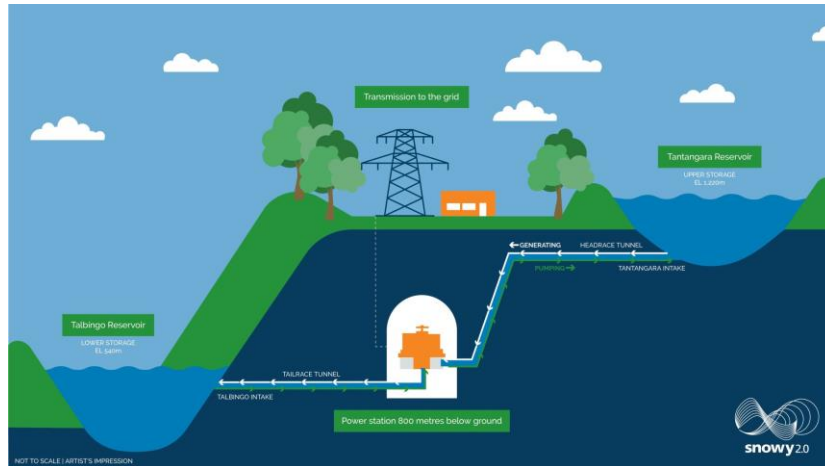
32GW = 32,000MW



Our ability to deliver on-time and in budget ...

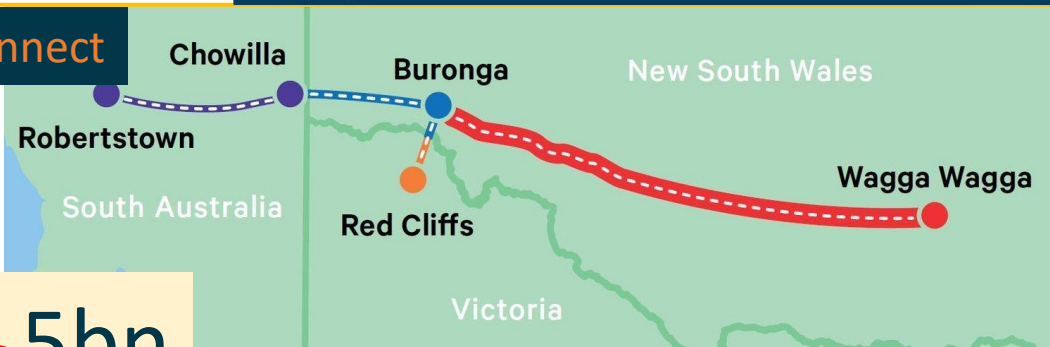
Snowy 2.0

~~\$2bn~~
\$10bn



Energy Connect

~~\$1.5bn~~
\$2.3bn



~~\$1.6bn~~
\$3.3bn

Victoria is not alone ...

New South Wales

\$9bn

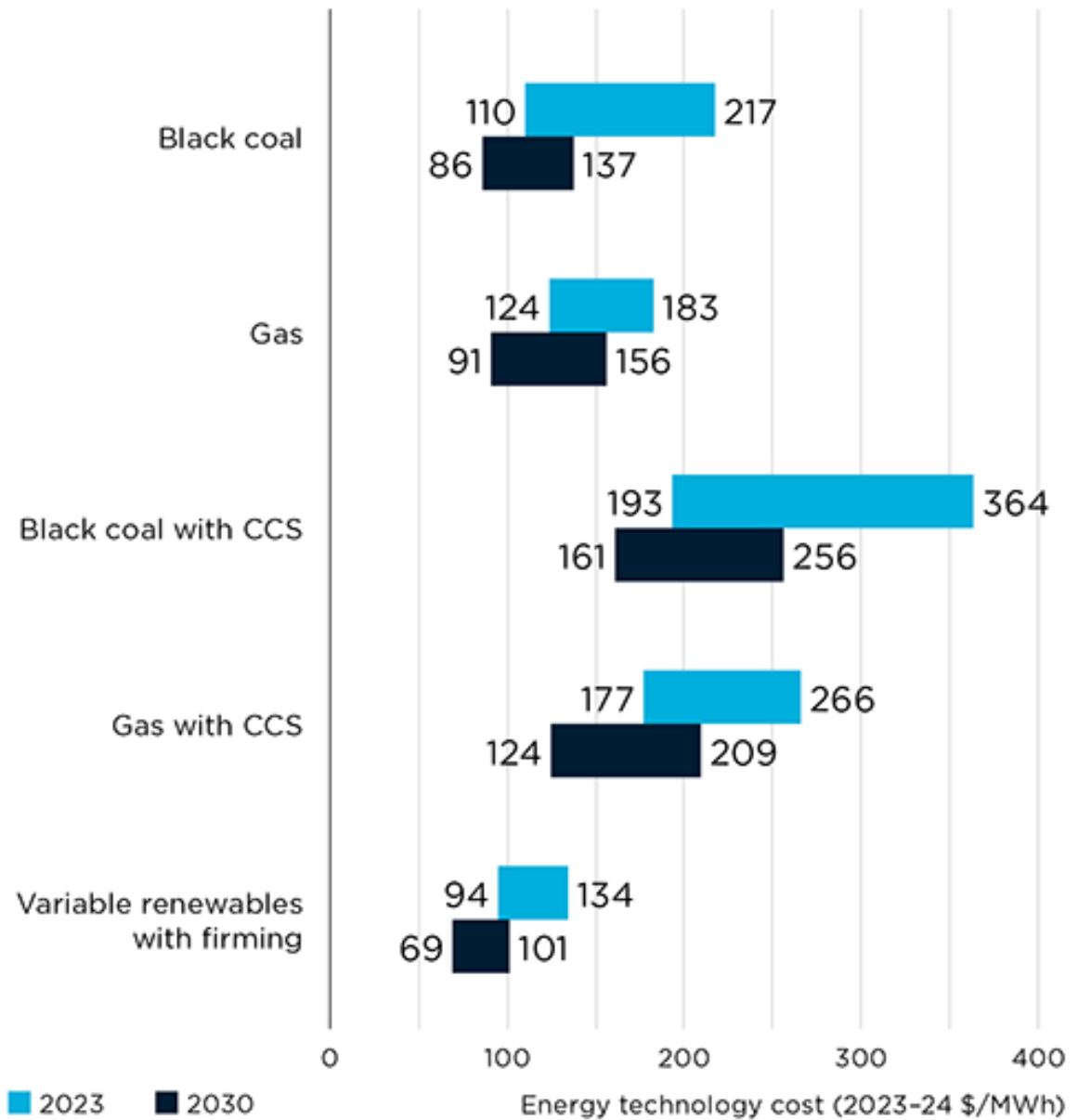
- Central West Orana (2025)
- Humelink (2026)
- New England (2027)
- Sydney Ring (2027)

Queensland

\$62bn

- Queensland Energy and Jobs Plan
- Mt Isa (Copper Spring 2.0) from \$1.5bn to \$5.0bn

Cost of Energy

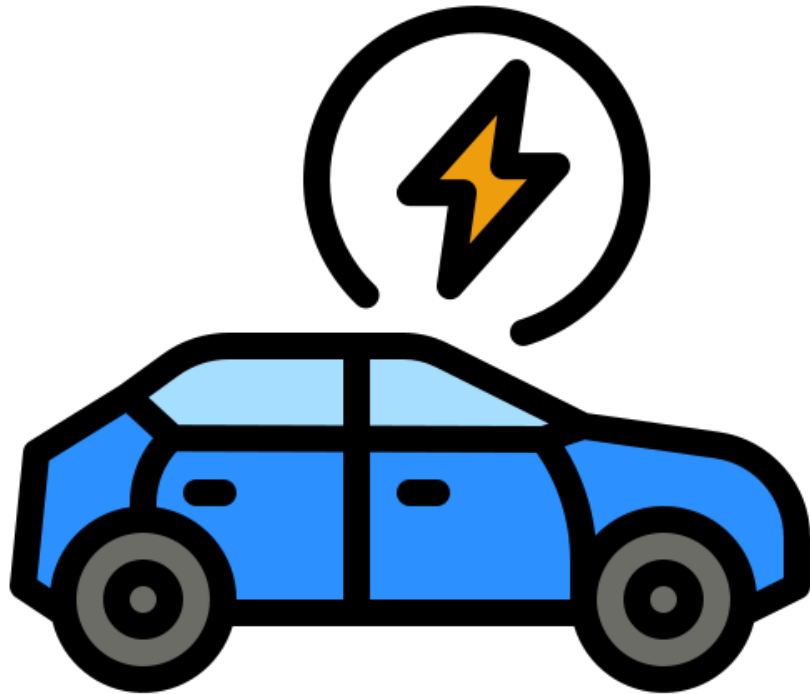


Source: CSIRO GenCost 2023-24

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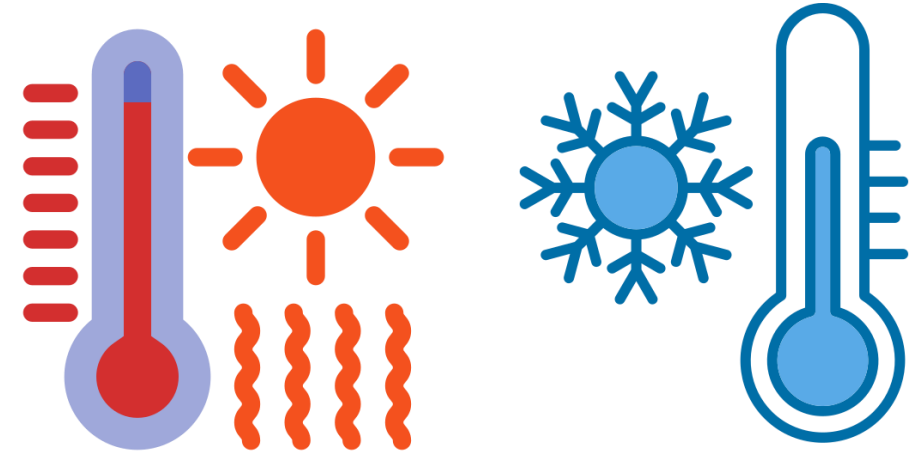
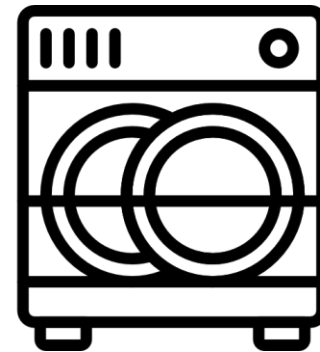
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The Orchestration Challenge



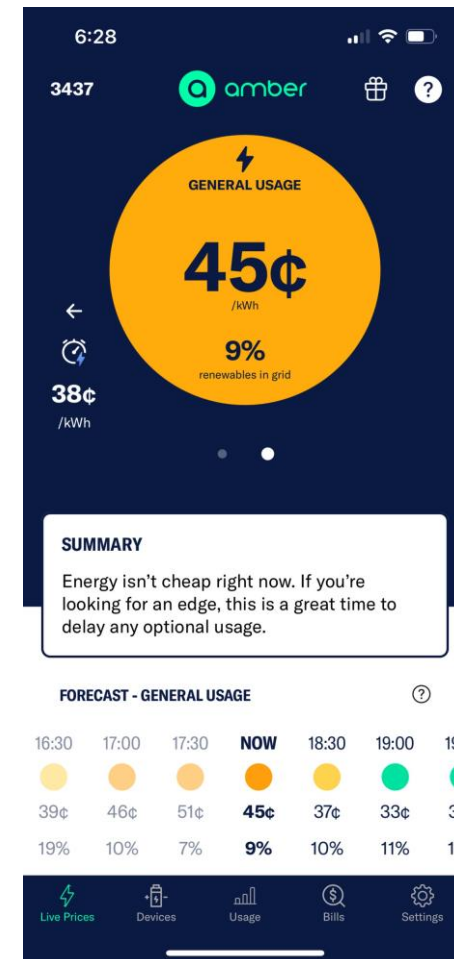
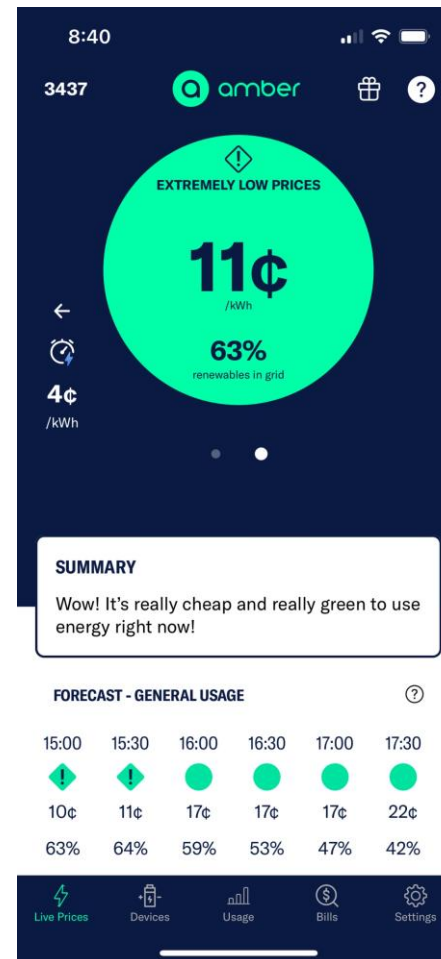
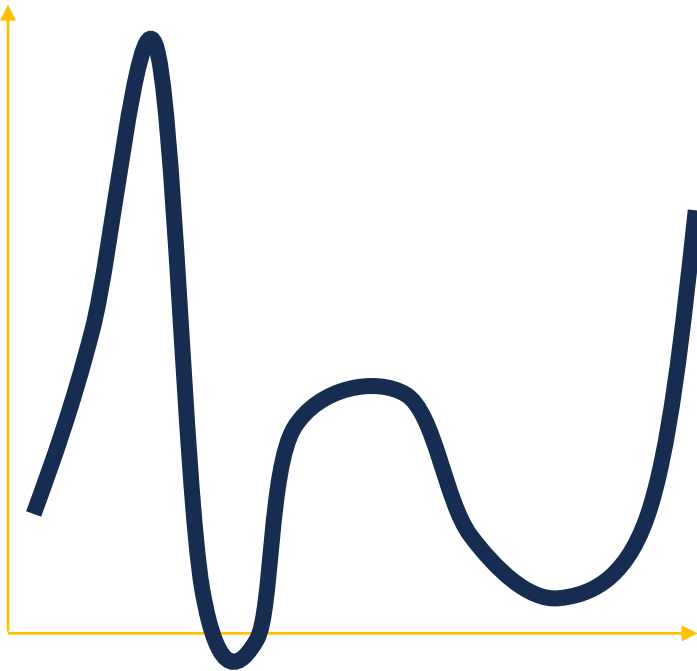
Vehicle-to-home

Vehicle-to-grid



What can I do to reduce my costs?

Purchase from the Spot Market



13 Feb-24

\$16.00

What can I do to reduce my costs?

Roof-top Solar



1. Don't rely upon any value for grid export
2. If a supplier gives you an estimated pay-back, ... double it!

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The prize ...

Renewable energy



Climate impact



Low daytime costs



Higher fixed costs



Agenda

To conclude,
in this market ...



Agenda

To conclude,
in this market ...





Thank you

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