

The role of the Australian States in accelerating Solar PV uptake

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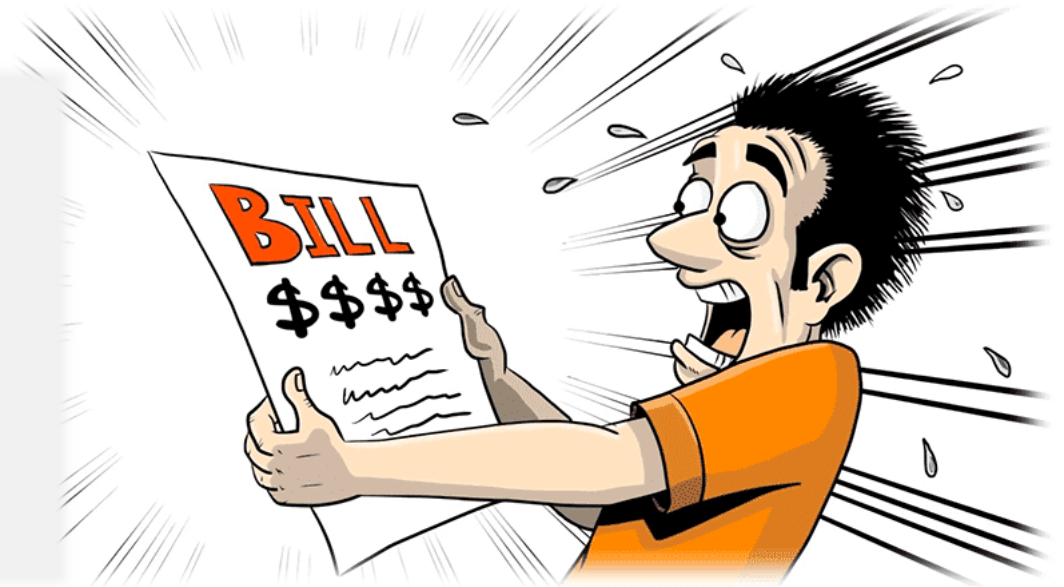
Drivers of Change

Commitments

Climate

Cost

Control



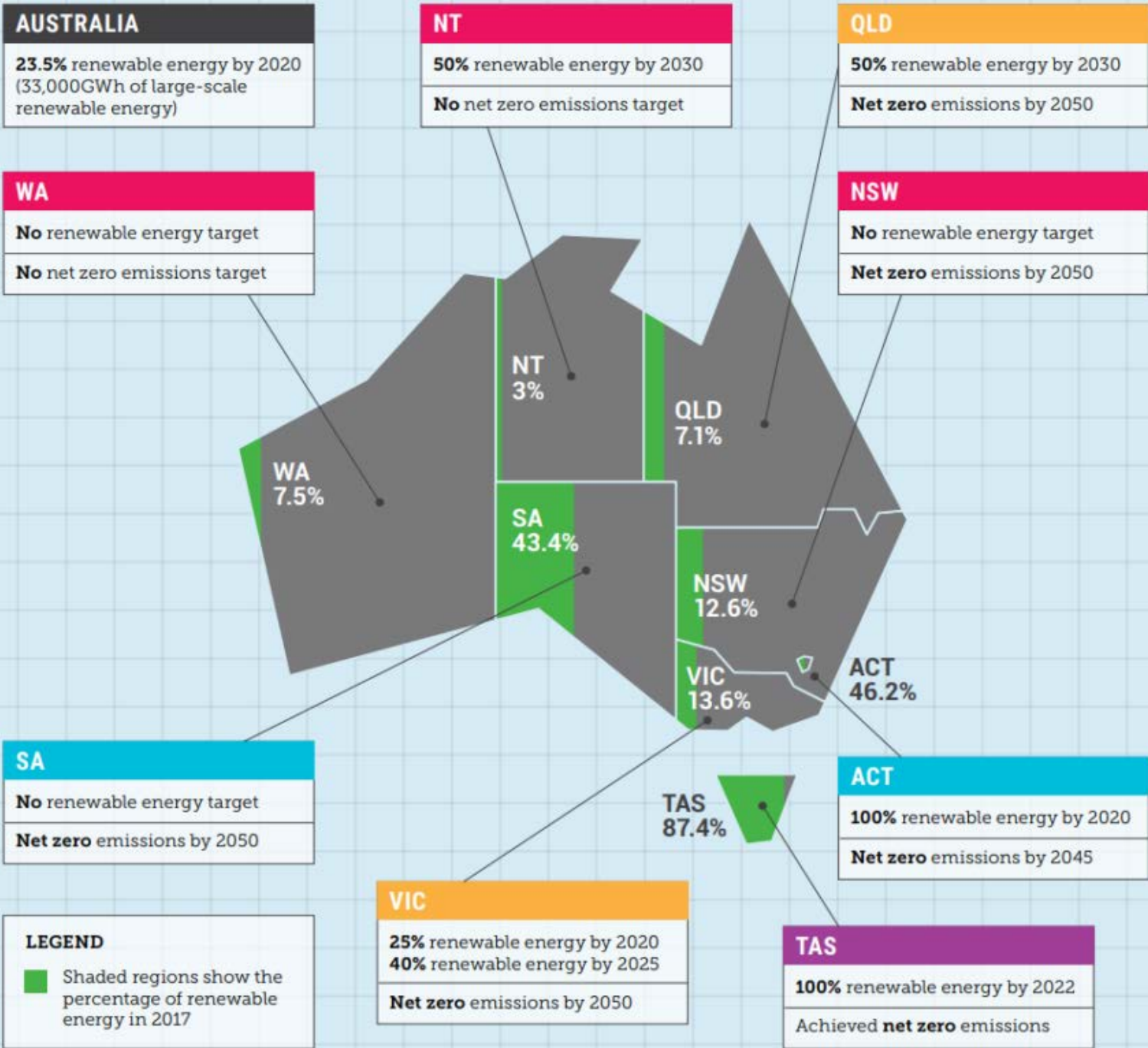


Australia's target -

Australia will reduce emissions to 26-28 per cent on 2005 levels by 2030.

50-52 per cent reduction in emissions per capita and 64-65 per cent reduction in the emissions intensity of the economy between 2005 and 2030.

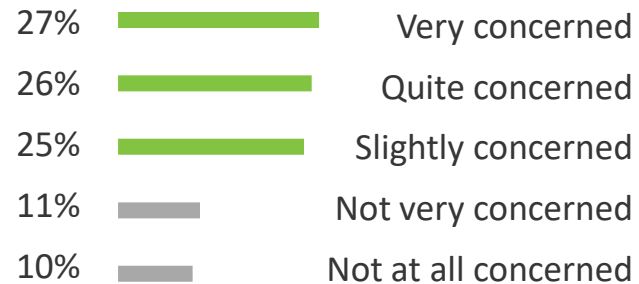
Commitments and Aspirations





4in5

**78% concerned
about climate change**



4in5 **Victorians**

say [unusual] weather events are
due to the influence of climate
change



**What are they
concerned about?**

- The impact upon future generations
- The state of the planet
- Potential impacts on quality of life
- Potential impacts on health

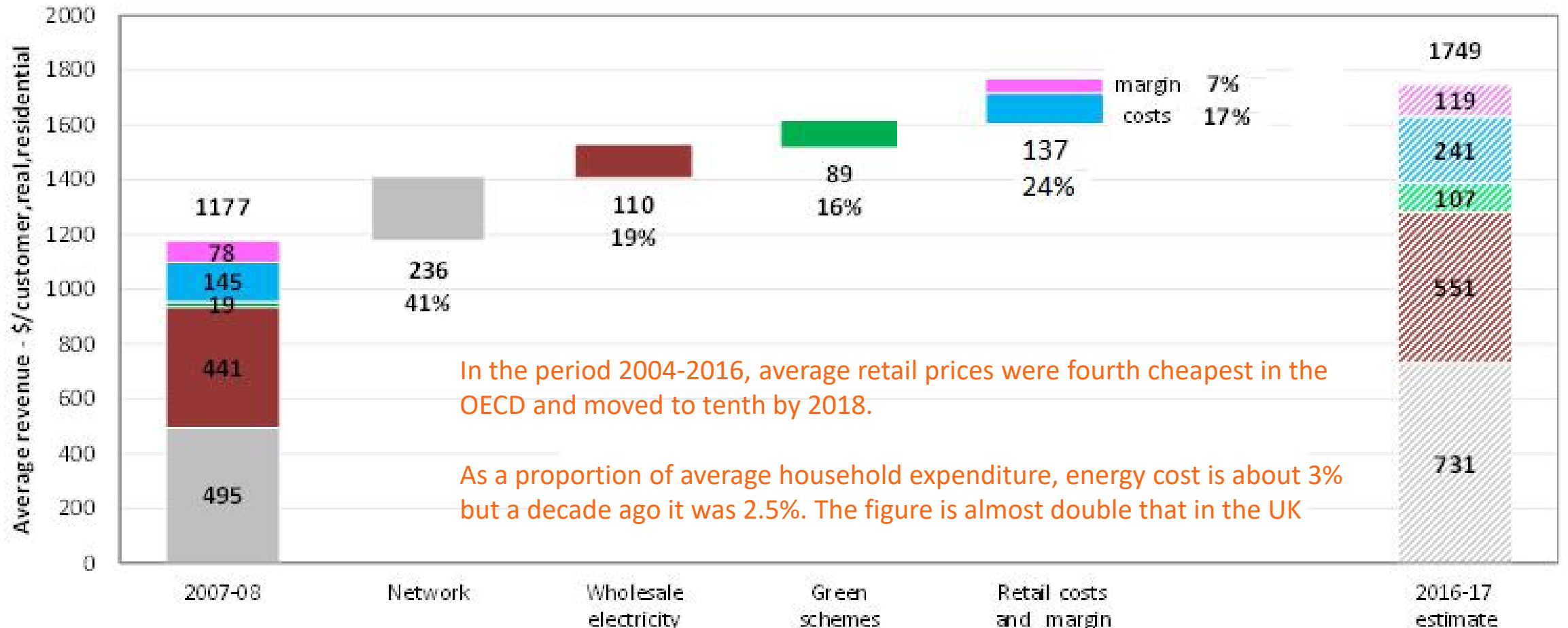


Misperceptions

- Only 48% think that others are concerned.
- Sceptics think their opinion is held by 50% of population

Components of a residential electricity bill

Change in cost stack between 2007-08 and 2016-17 (estimate) - \$/customer,NEM,real,residential



In the period 2004-2016, average retail prices were fourth cheapest in the OECD and moved to tenth by 2018.

As a proportion of average household expenditure, energy cost is about 3% but a decade ago it was 2.5%. The figure is almost double that in the UK

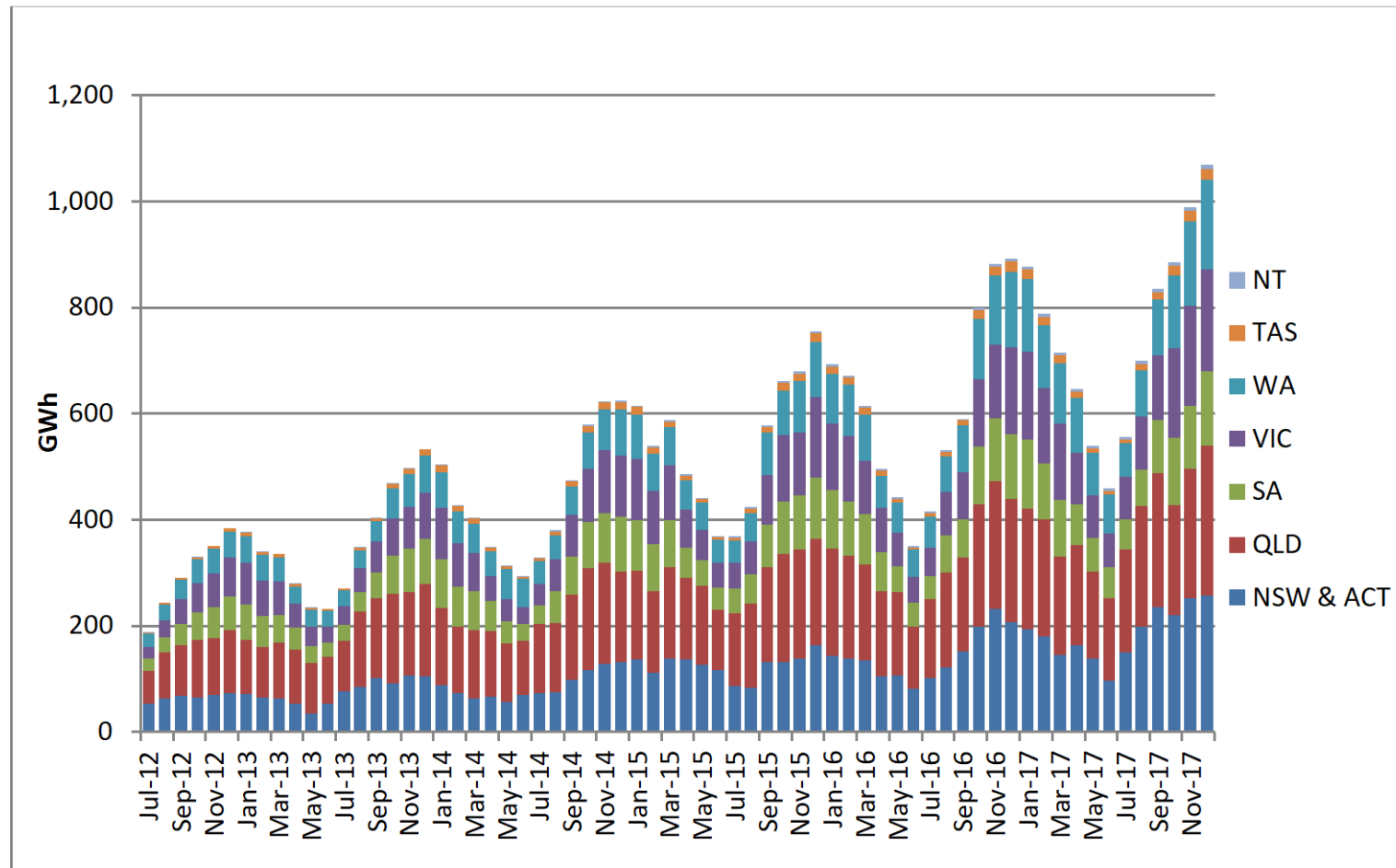
South Australia

Example of feed-in tariff arrangements and changes

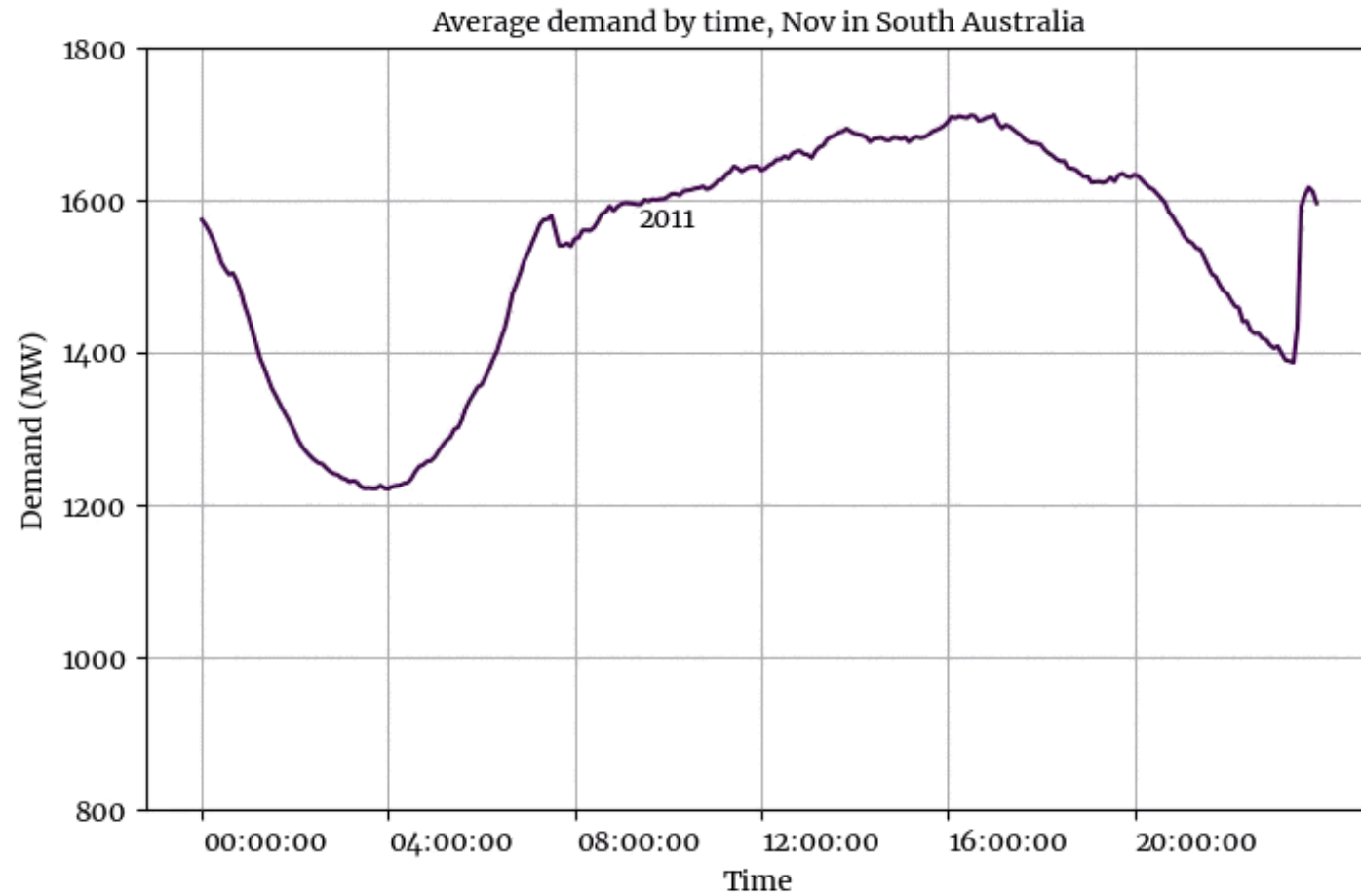


- 1 July 2008 to 30 June 2028. Net feed-in tariff set at \$0.44/kWh
- Reviewed in 2009-10 and amendments to the legislation took effect from 29 July 2011.
- Reduction of the feed-in tariff for customers receiving approval after 30 September 2011.
- Existing customers continue to receive 44 cents and in addition will receive a minimum retailer payment (6 cents) until 30 June 2028
- New customers approved between 1 October 2011 and 30 September 2013 receive 16 cents plus the minimum retailer payment until 30 September 2016
- New customers approved after 30 September 2013 will not receive any feed-in tariff, but will be eligible for the minimum retailer payment, that is a total payment of about 6 cents (“fair and reasonable” rate).
- Retailers are free to pay customers more than the legislated minimum rates.

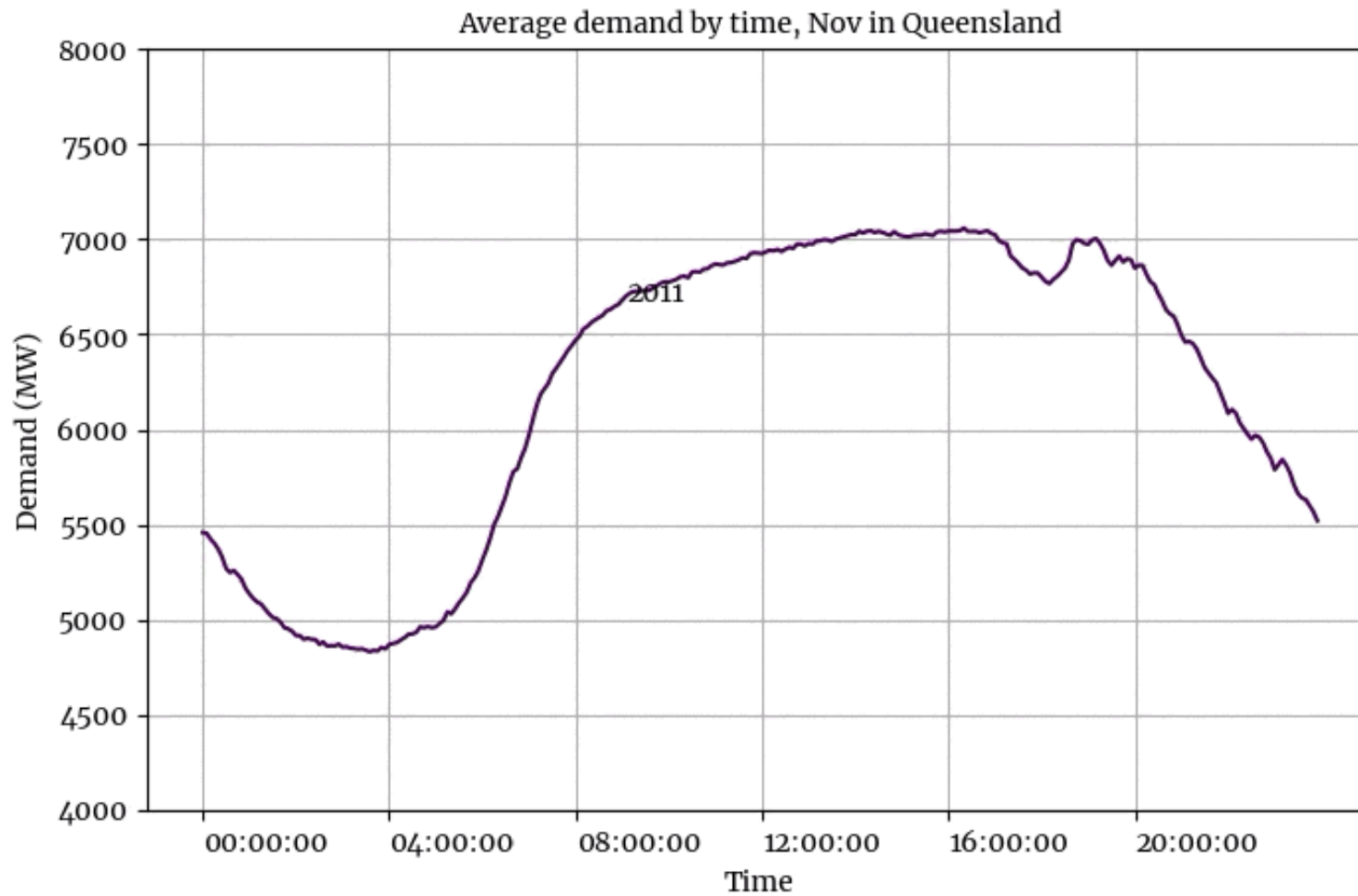
Figure 6: Estimated residential PV generation (GWh)



Source: Australian Energy Council analysis, January 2018

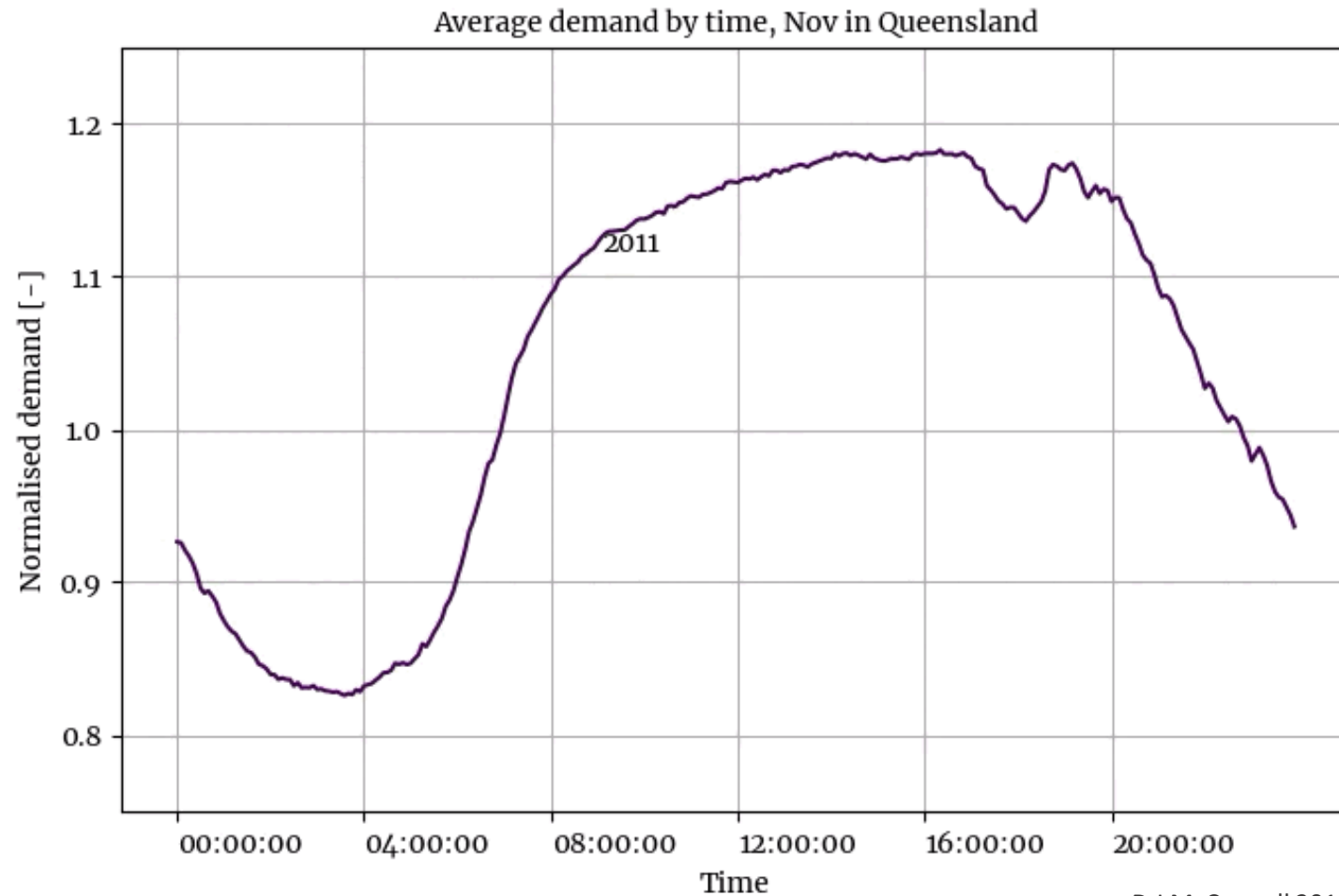


D J McConnell 2019



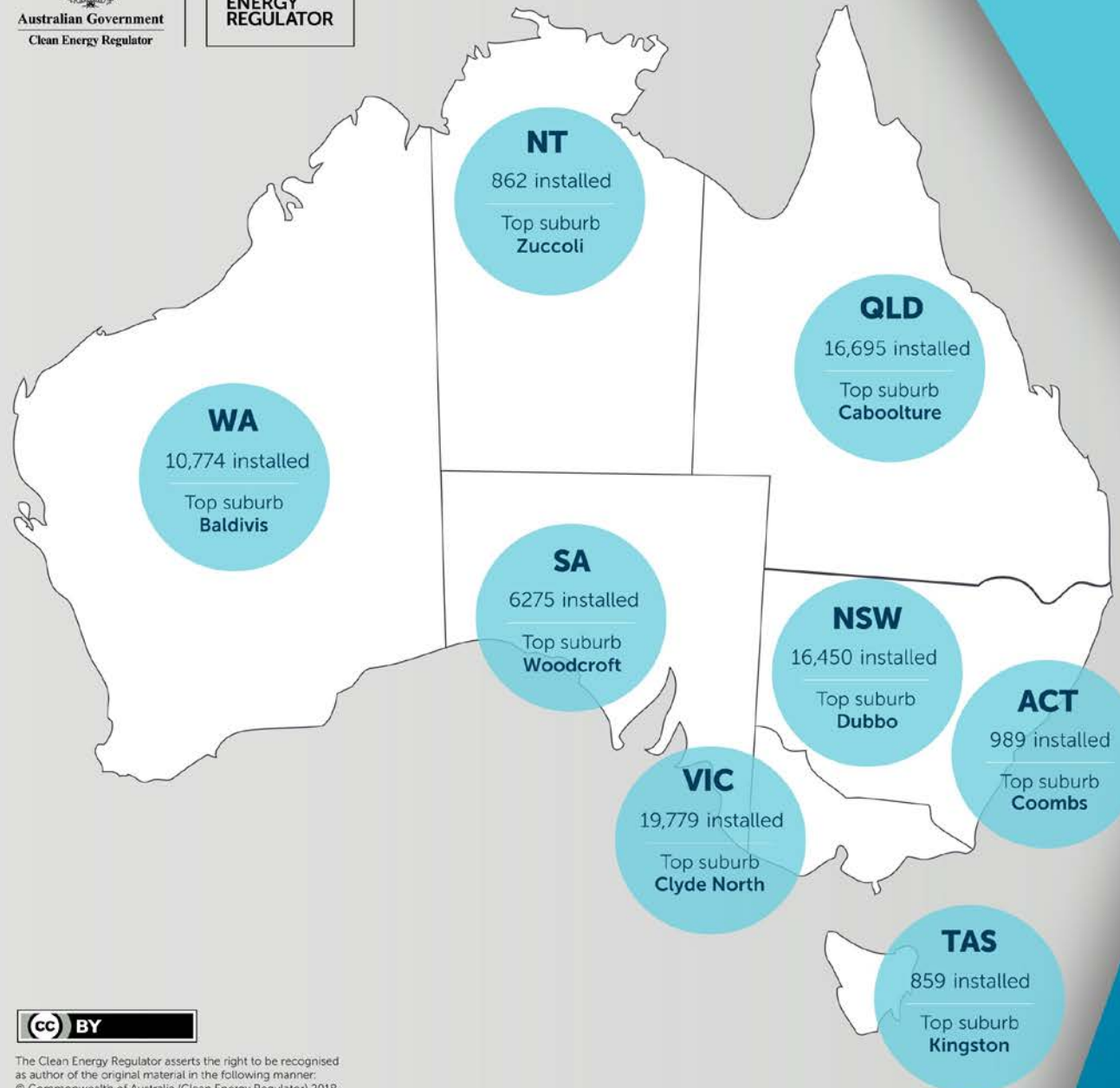
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Same impact of rooftop solar



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Installations by State



Quarterly small-scale installations

across Australia
October-December 2018

Quarterly installations

72,683

National cumulative installations since 2001

3,186,186



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Installations by Suburb – What does this indicate?



State	Top suburb	Solar water heater installations	Solar PV installations	Installed capacity (kW)
ACT	Coombs	81	13	99
NSW	Dubbo	6	164	1593
NT	Zuccoli	13	62	500
QLD	Caboolture	21	121	834
SA	Woodcroft	83	38	215
TAS	Kingston	16	11	68
VIC	Clyde North	193	253	1517
WA	Baldivis	14	150	891

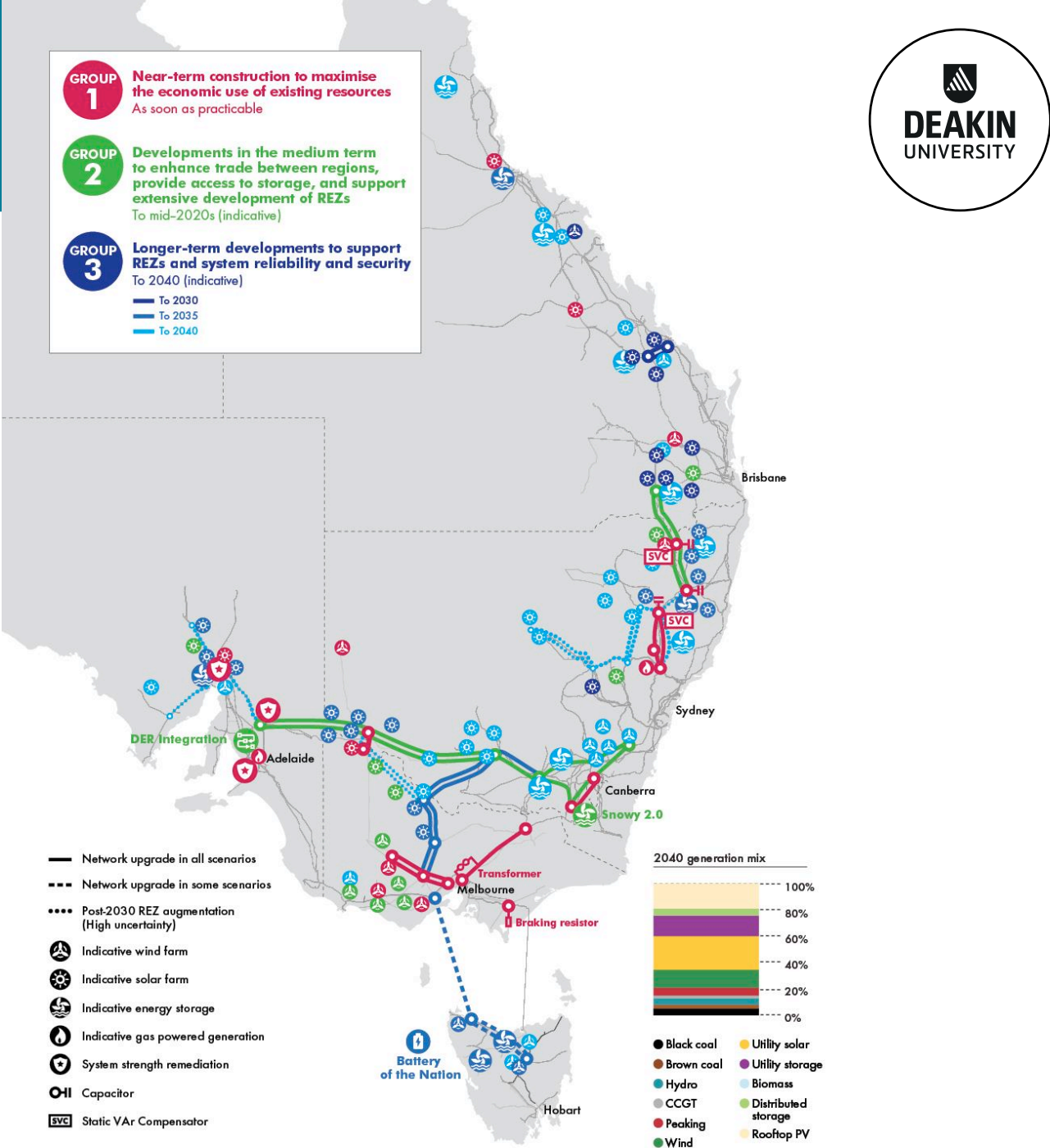
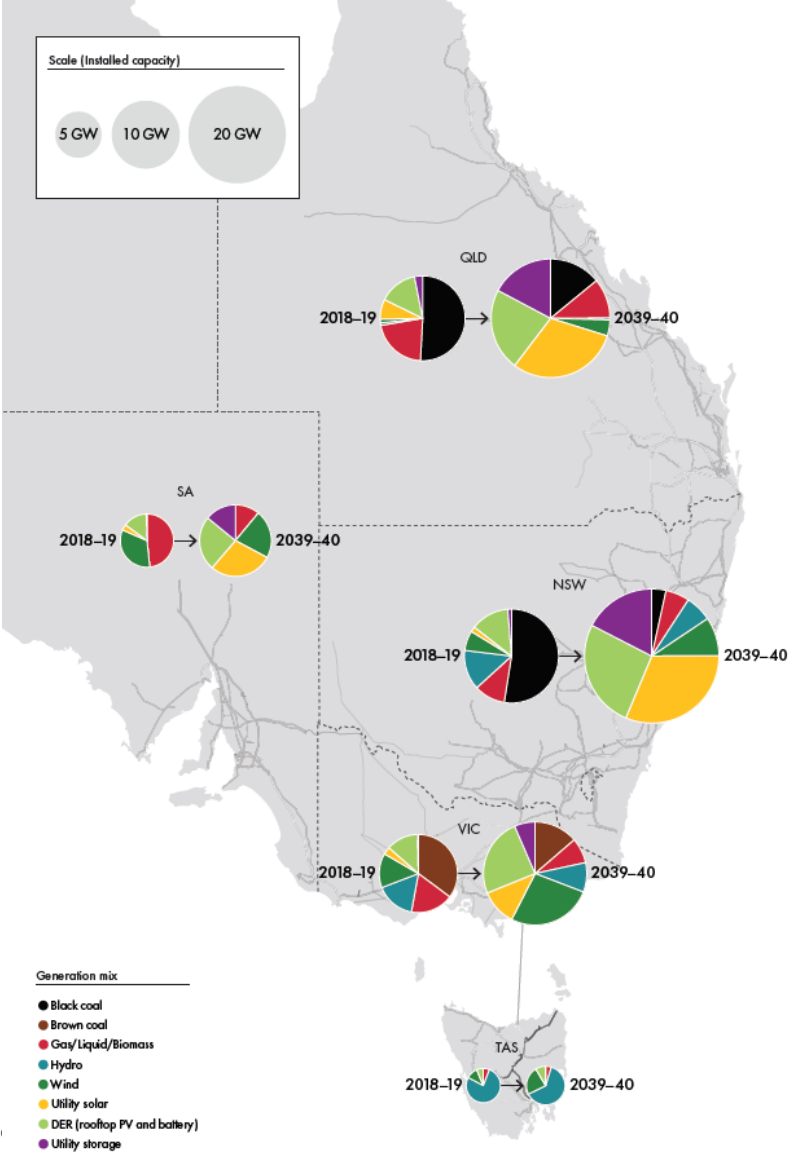
- Housing construction
- Urban renewal
- Cost of living pressures
- Targeted marketing
- Community energy

- Policy?

Clean Energy Regulator Oct – Dec 2018

AEMO Integrated System Plan

Coping with a State-based history



Victorian Government Solar Programs

“Reduce customer bills”



Solar Homes Package

“The Solar Homes package is about giving Victorian households greater control over their household bills.”

50 percent rebate on the cost of an average 4kW solar PV system, (currently a \$2,225 rebate for a system costing \$4,450), or a \$1,000 rebate on the cost of a solar hot water system.

Claimed benefits

PV – “Households will be able to save on average \$890 per year...”

Solar Hot Water – “between \$160-\$400 a year...”

Solar for Renters

“\$82 million over 10 years to provide an additional 50,000 rebates on solar panels for Victorian renters.”

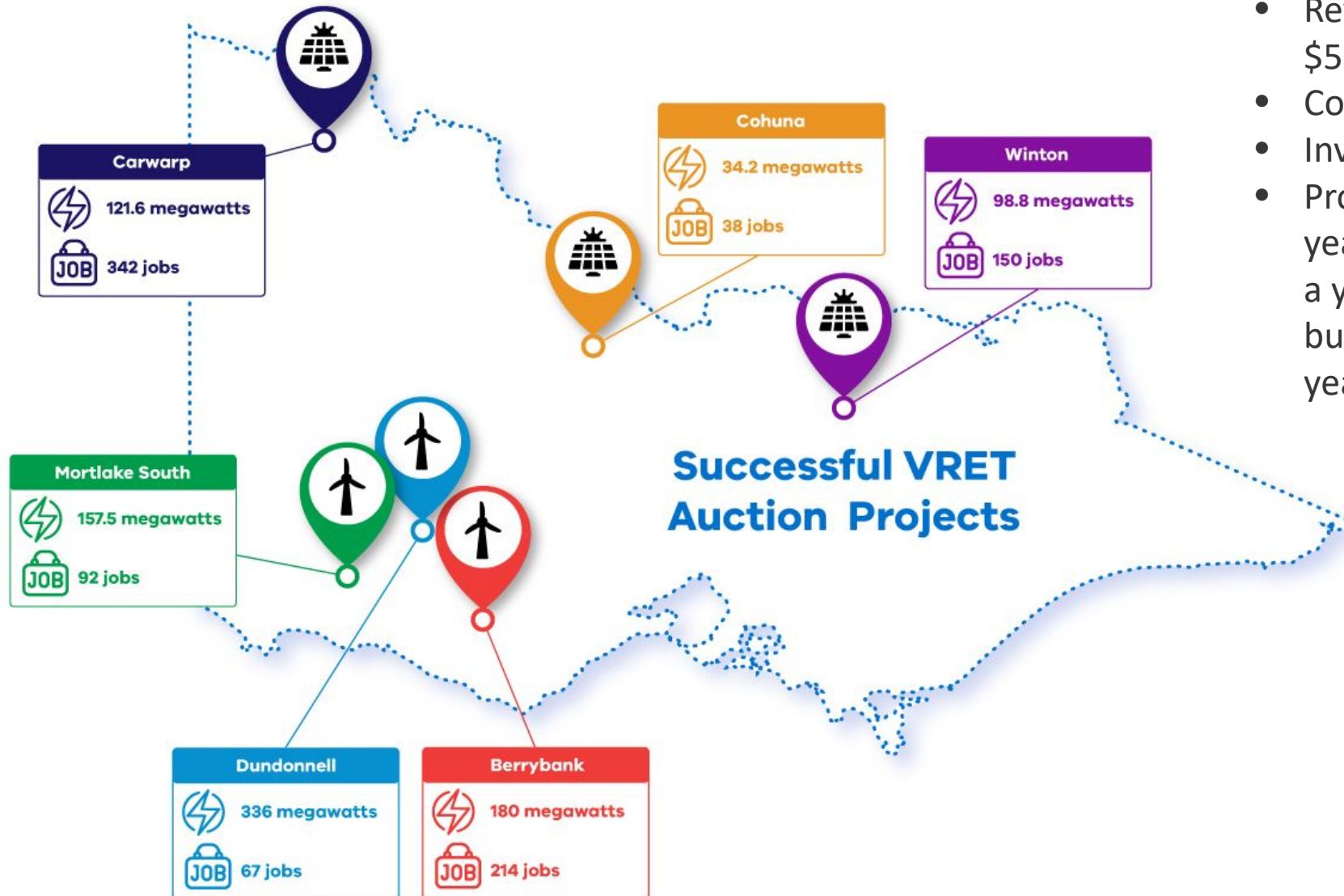
Renters will make a 25 percent contribution toward the cost of installation through a small levy on rent spread over four years, Government and the landlord cover the balance.

Example - \$4,000 PV system – Government \$2,000, landlord \$1,000 (interest-free loan), renters a monthly levy totalling \$250 per year for four years (interest-free loan).

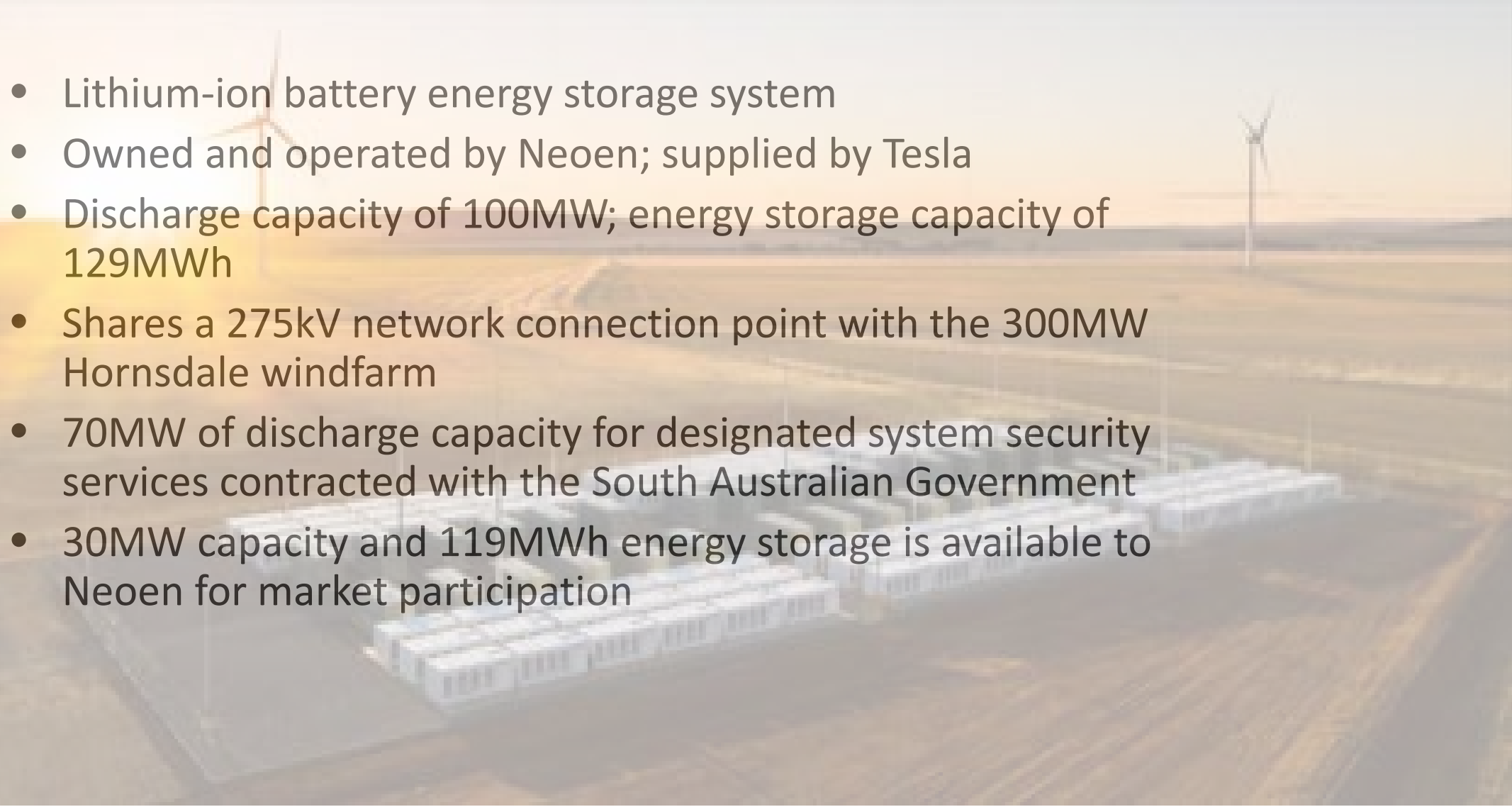
Claimed benefits - save renters up to \$890 per year; landlords see increased property value.

Victorian Renewable Energy Auction Scheme

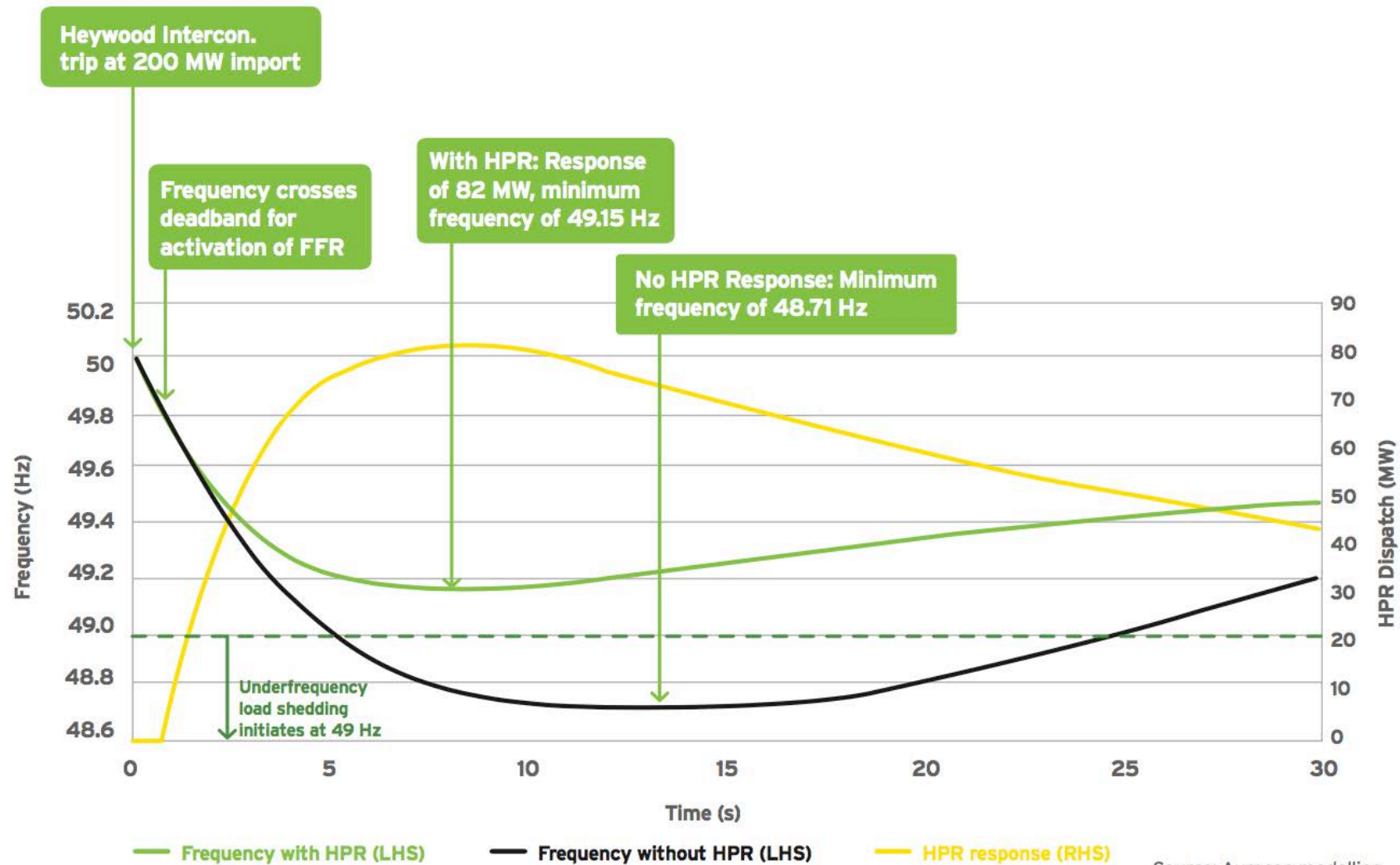
“Jobs, energy security/reliability, climate”



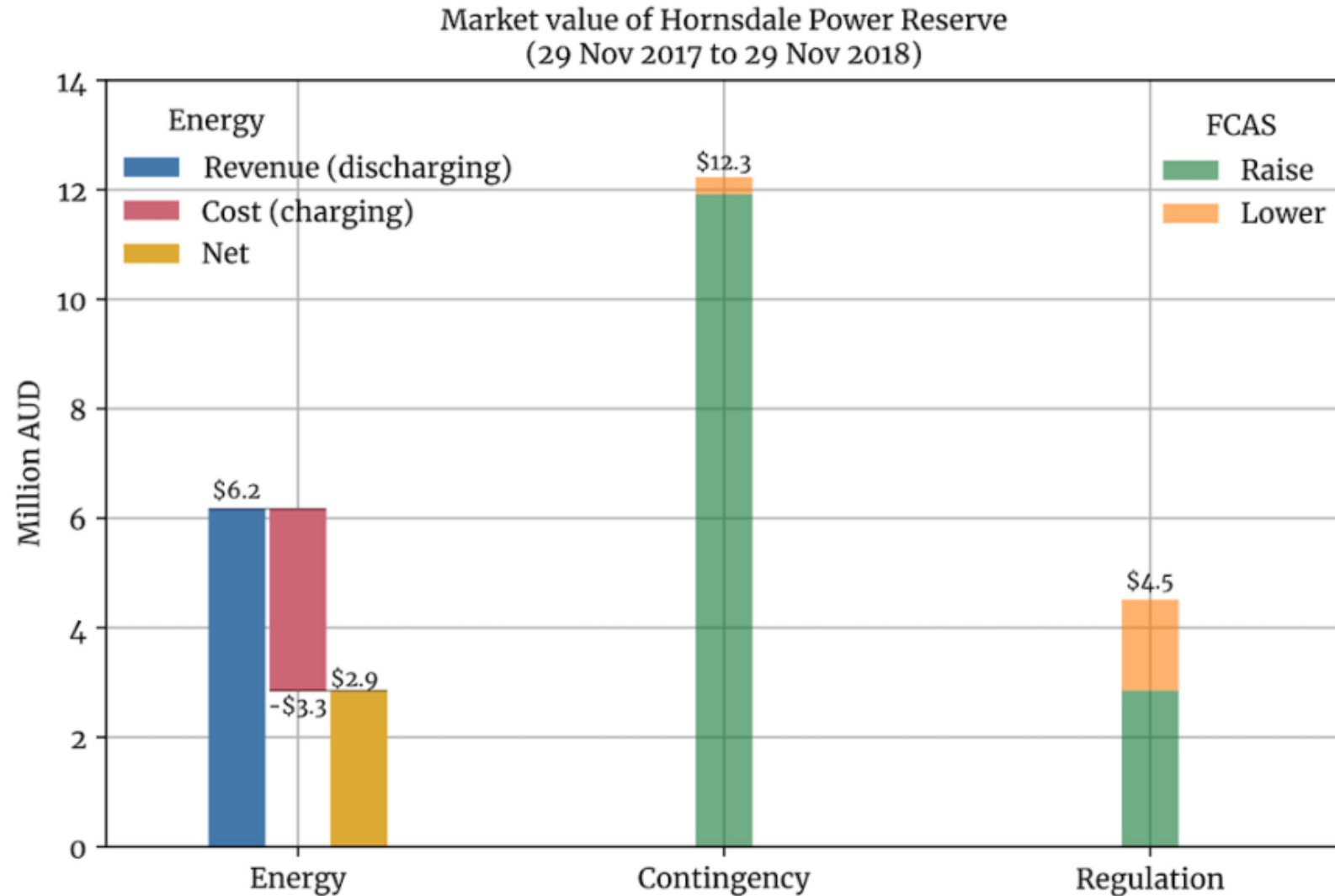
- Reverse auction (\$54-\$58/MWh unsubsidised?)
- Contract for difference
- Investor certainty
- Projected benefits - \$30 a year for households, \$2,500 a year for medium businesses and \$140,000 a year for large companies

- 
- Lithium-ion battery energy storage system
 - Owned and operated by Neoen; supplied by Tesla
 - Discharge capacity of 100MW; energy storage capacity of 129MWh
 - Shares a 275kV network connection point with the 300MW Hornsdale windfarm
 - 70MW of discharge capacity for designated system security services contracted with the South Australian Government
 - 30MW capacity and 119MWh energy storage is available to Neoen for market participation

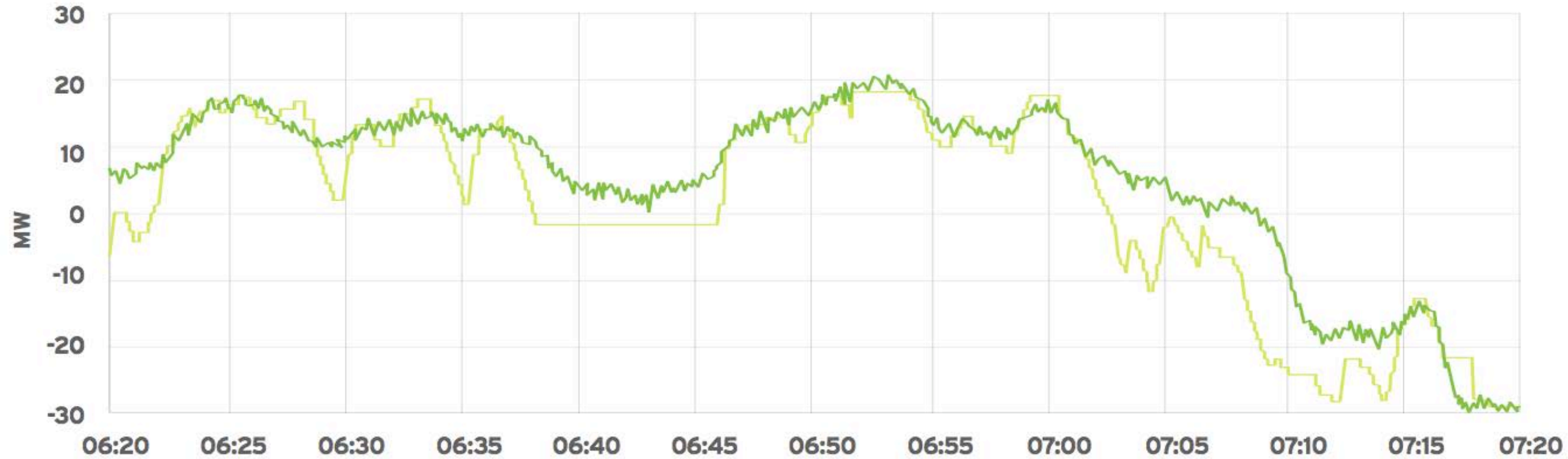
Sufficient to support security and reliability



Source: Aurecon modelling



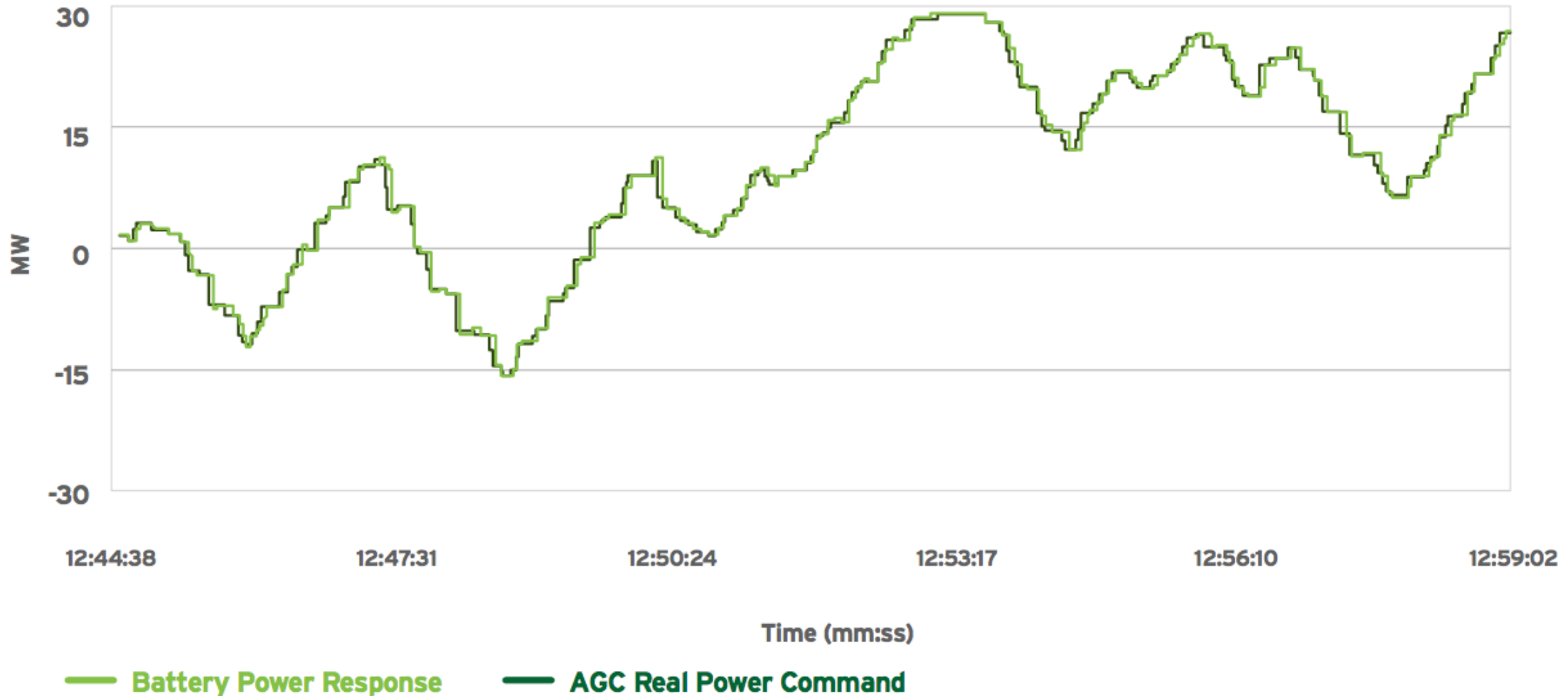
Accuracy and speed of regulation FCAS response - large conventional steam turbine



HPR FCAS Response

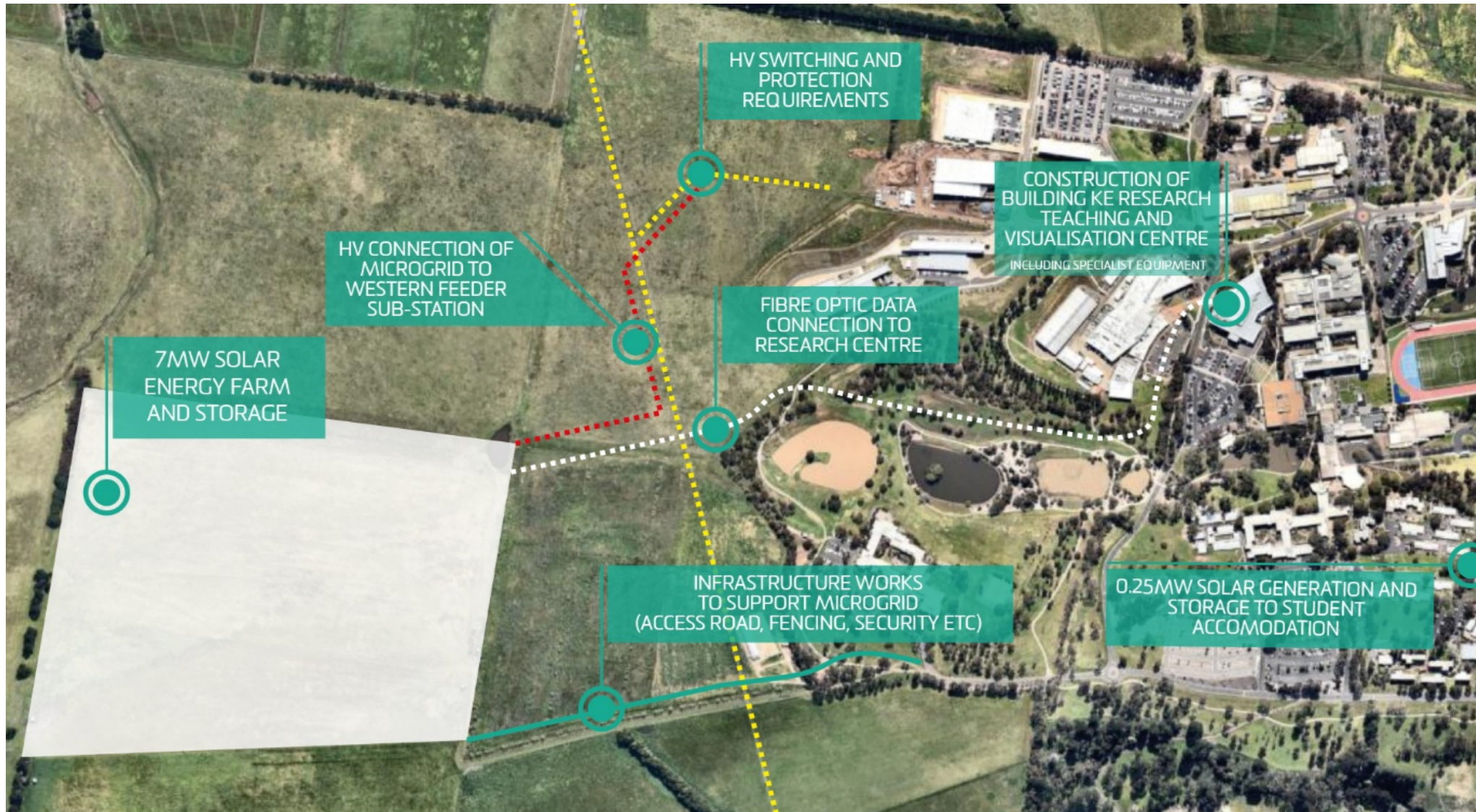


Accuracy and speed of regulation FCAS response - HPR



Source: Aurecon analysis of HPR logged data

Waurn Ponds Microgrid – Infrastructure Reality



7MW solar farm

1MW/1MWh storage

250kW + batteries distributed

Research, teaching and visualisation centre

AUD20m capital in the initial phase

AUD10m research projected

Potential growth in generation, storage and transport

Many drivers for progress

- *Consumer costs*
- *Jobs*
- *Climate commitments*

Much to learn.....