

# Market transformation and the role of distributed energy resources

Lauren Vincent  
Business Development and Transactions



Australian Government  
Australian Renewable  
Energy Agency

**ARENA**

# Australian Renewable Energy Agency

Independent Board works to the ARENA Act 2012  
Investment & market orientated Board, CEO and CFO

## PURPOSE



Accelerate Australia's shift to a sustainable, affordable and reliable energy future

## PORTFOLIO

**\$1.18 billion** funding committed to support **over 377 projects**

**185 completed** projects  
**+160 active** projects  
(incl scholarships, fellowships)

## PIPELINE

**\$500m** funding available to support innovative energy technologies

148 active projects in our pipeline

Knowledge Sharing | Collect, analyse, interpret and disseminate



# INVESTMENT PRIORITIES



DELIVERING SECURE AND  
RELIABLE ELECTRICITY



ACCELERATING SOLAR  
PV INNOVATION



IMPROVING ENERGY  
PRODUCTIVITY



EXPORTING  
RENEWABLE ENERGY

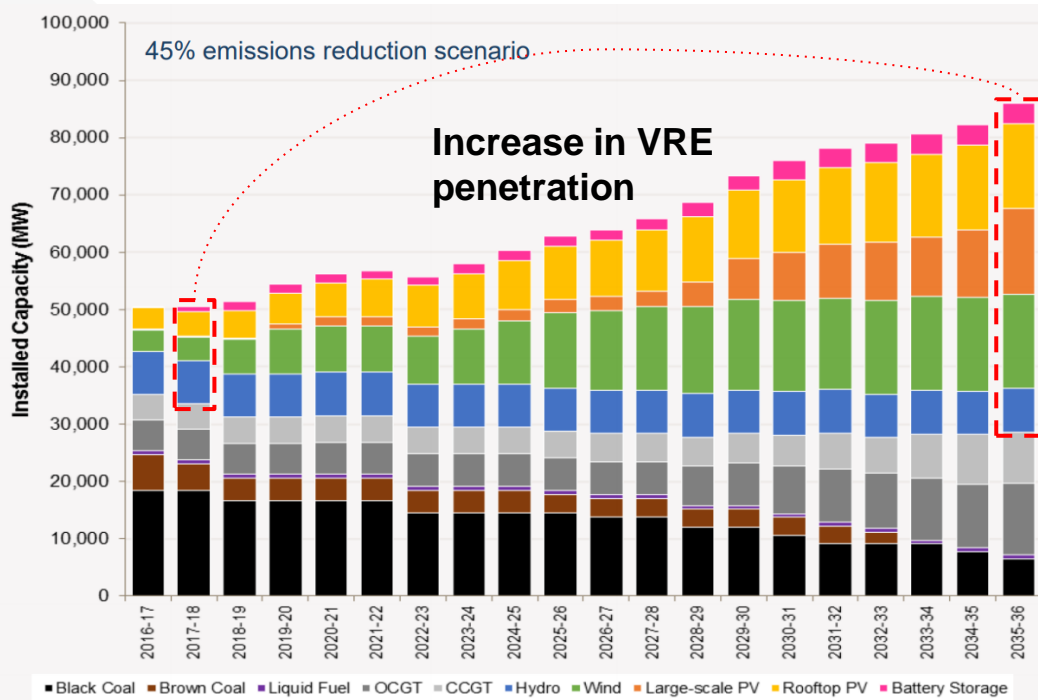
## Overview of Australia's Energy Market

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- Management and trading of Australia's electricity is split across three markets
  - National Electricity Market (NEM) - QLD, NSW, VIC, SA & TAS
  - Wholesale Energy Market (WEM) - WA
  - Interim Northern Territory Energy Market (I-NTEM) (since 2015)
- Created to manage centralised, large scale, power plants with synchronous generation
  - Coal, gas, hydro turbines
  - Passive consumption
  - One way power flows
  - Slow response times with minimal flexibility
  - Aging infrastructure



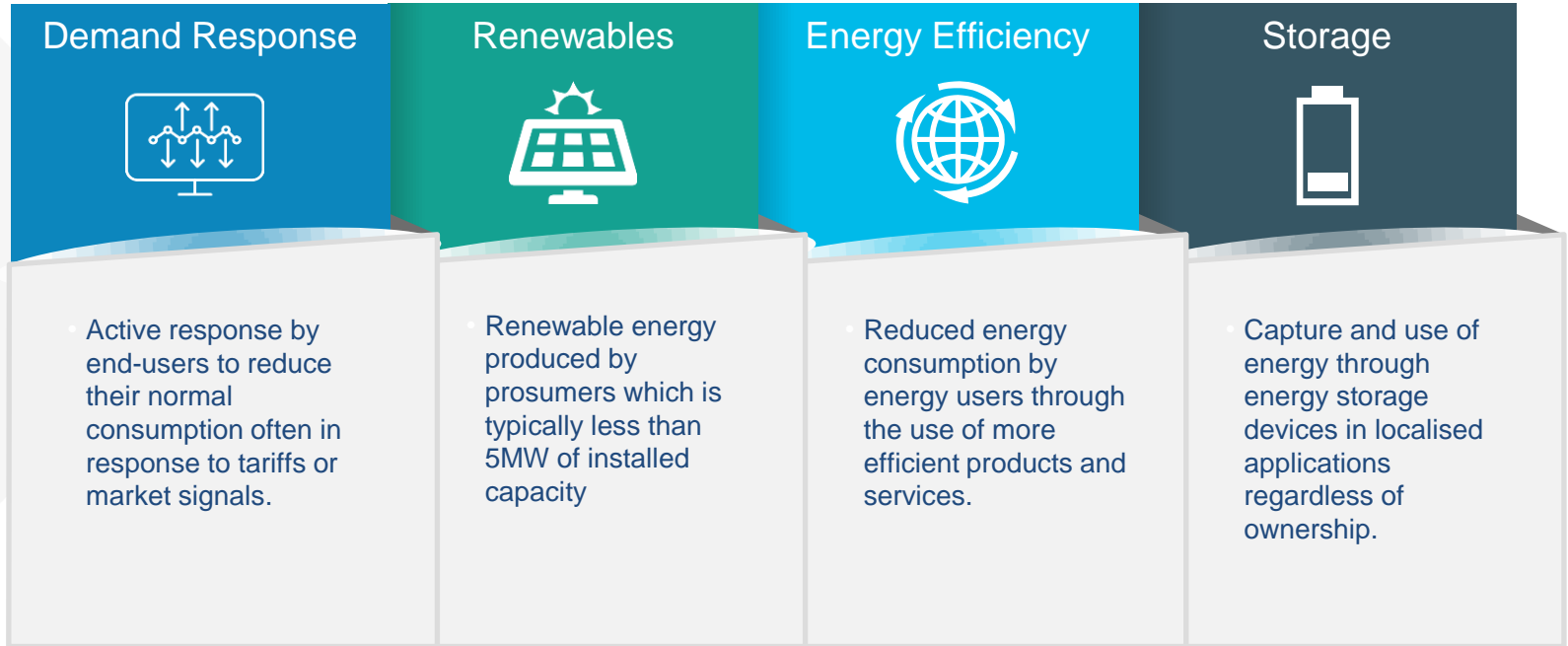
# Australia's energy mix is changing



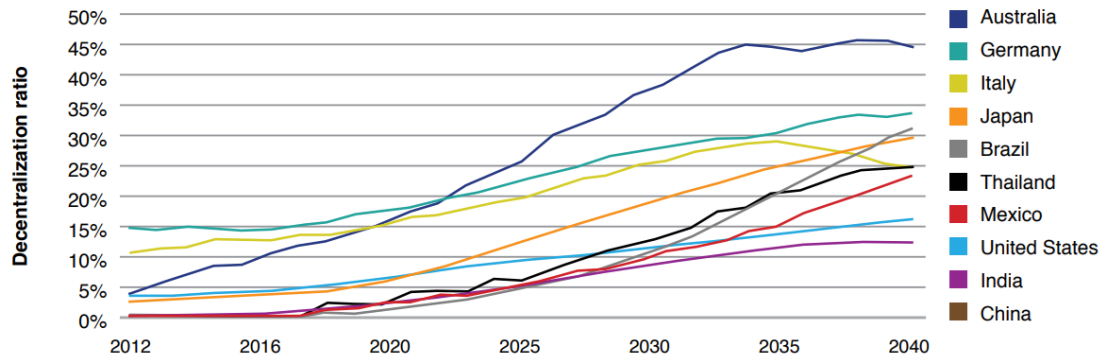
- Changing mix of generation
- Variable and non-synchronous generation expected to increase overtime
- Retirement of coal-fired power stations
- Distributed resources (mainly solar) to drive significant growth
- Storage will also be key in transition



## Forms of DER



## Australia is set to be a world leader in DER

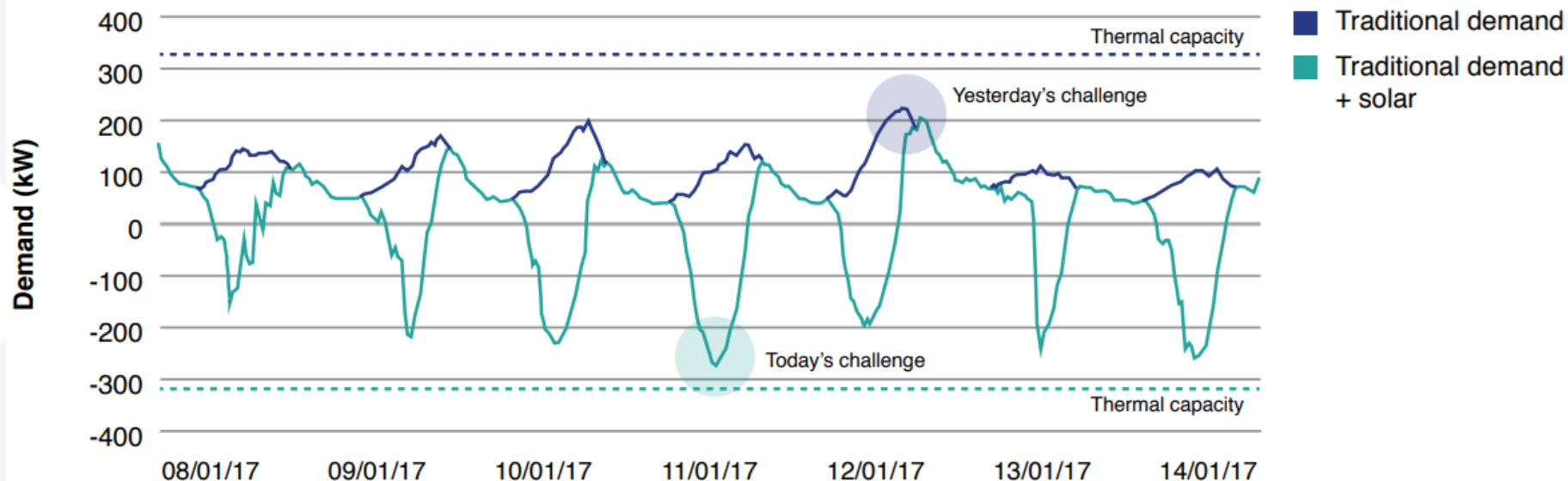


Source: Bloomberg New Energy Finance 2017

- Australia has the highest rooftop solar PV installed per capita in the world
- Poses significant operational challenges
- Transitioning to a customer driven system
- Reverse power flows
- Innovative approaches to DER coordination and orchestration needed



## Changing customer demand profiles

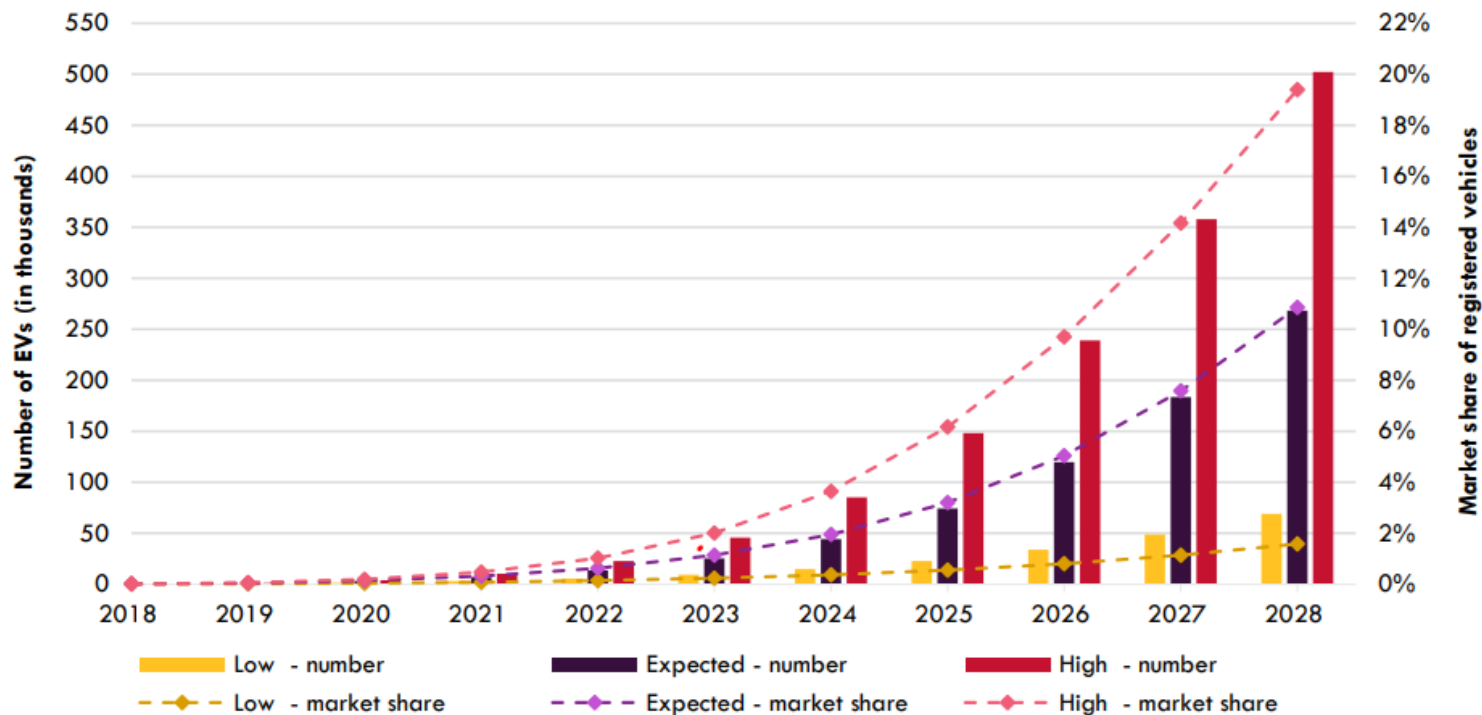


Source: AEMO and Energy Networks Australia 2018; Open Energy Networks Consultation paper

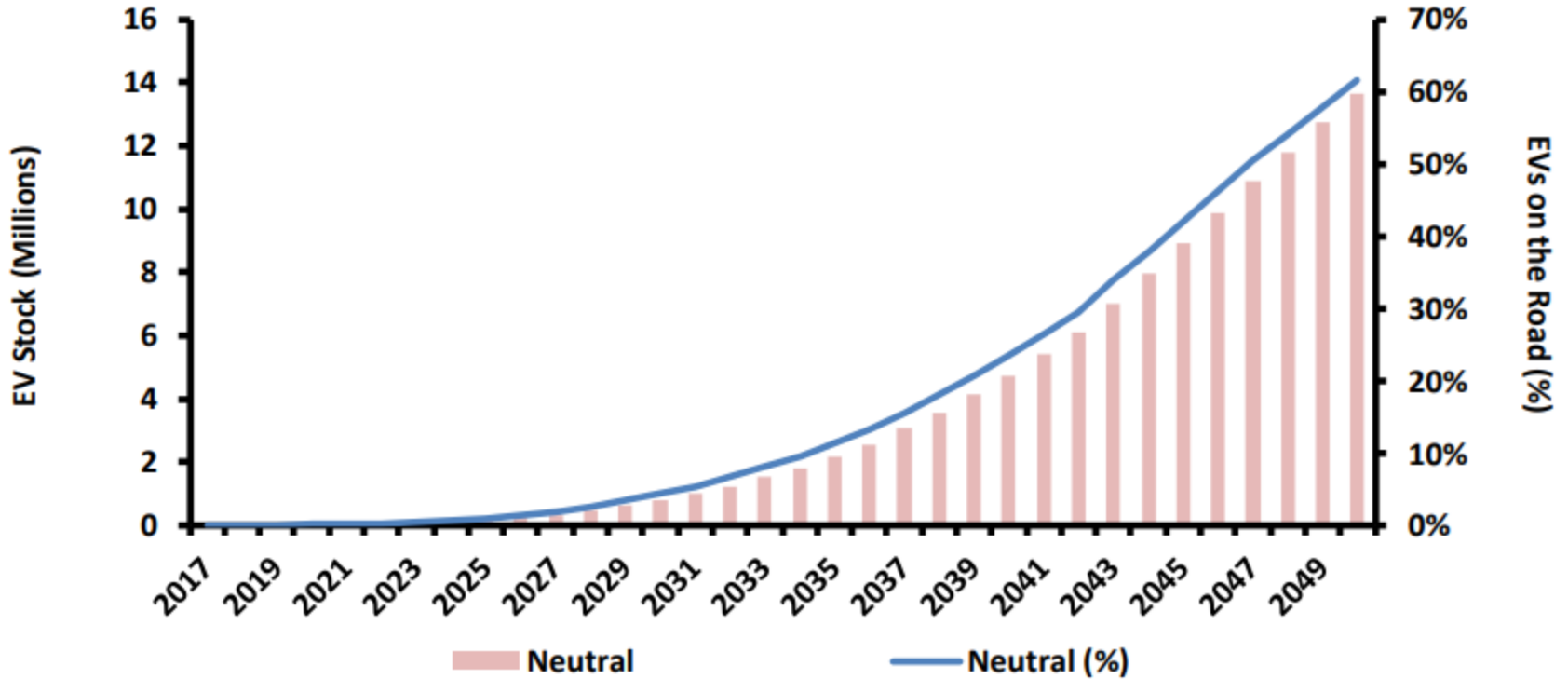




## The Rise of Electric Vehicles

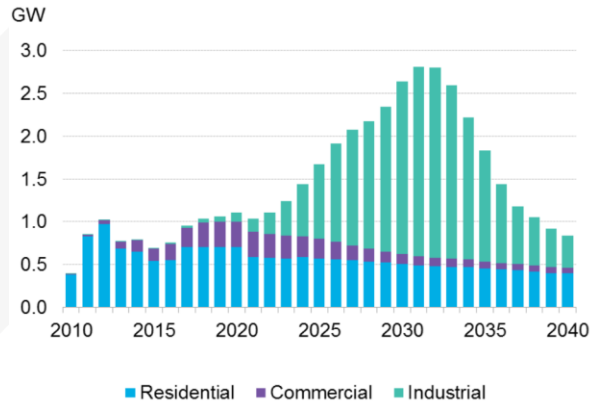


## The Rise of Electric Vehicles



## Market Opportunities

- Industry forecasts that by 2027 DER could have a cumulative market value of \$158b
- DER could contribute up to 50% of the NEM's value in 2050
- In the future expect DER to be “active” as well as “passive”
- Industrial users will take over residential as leading PV owners





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Thank you

[www.arena.gov.au](http://www.arena.gov.au)



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