A TASTE OF POLICY AND REGULATION FOR ROOFTOP SOLAR PV IN AUSTRALIA

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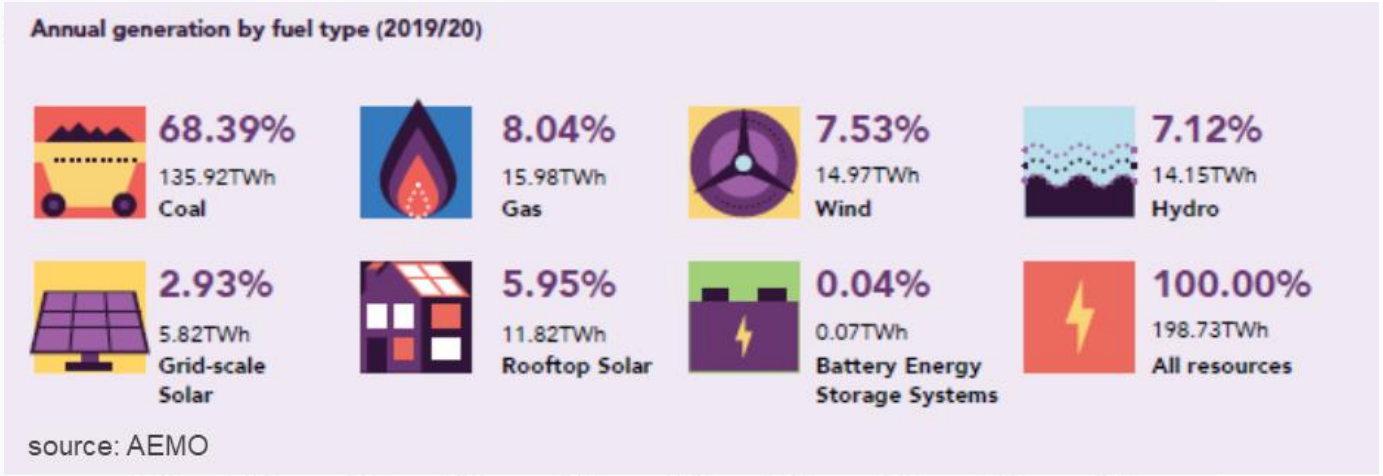
THE SCALE OF CONSUMER INVESTMENT IN ENERGY INFRASTRUCTURE AND SERVICES:

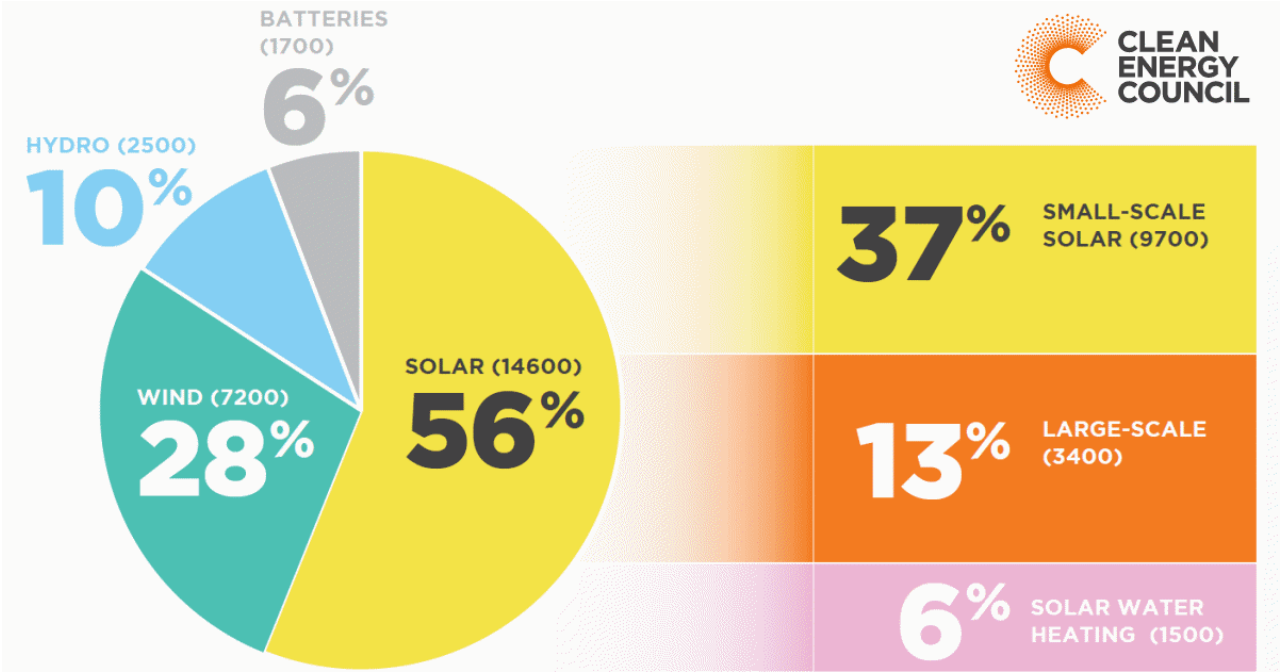
2020 – almost 2.5m household rooftop PV systems, total PV capacity: 18.5GW

The difference is the scale of consumer investment in generation

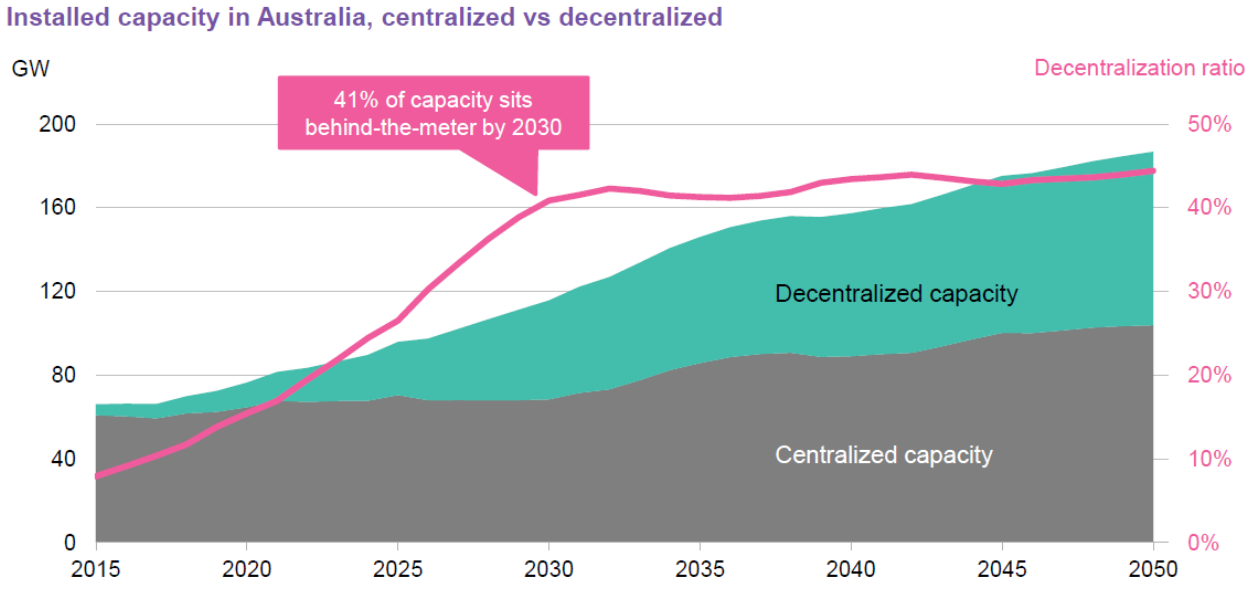
- and the technology that can enable real-time demand response



RENEWABLE ENERGY JOBS BY TECHNOLOGY, 2020 – 25,000 TOTAL



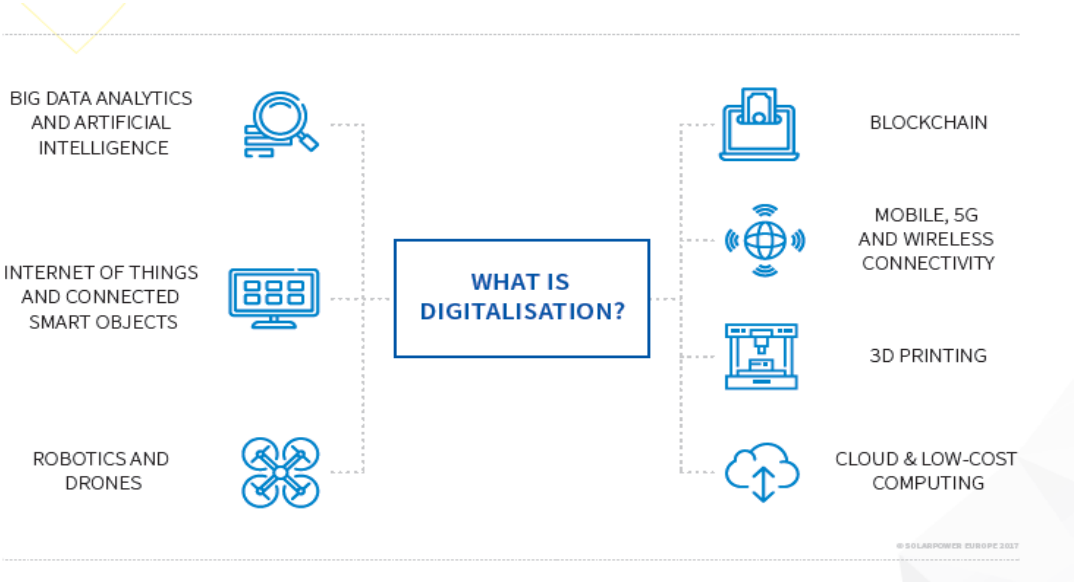
DER IS FUNDAMENTALLY CHANGING THE ELECTRICITY SYSTEM



Source: BloombergNEF. Note: For more details see: ***Australia behind-the-meter PV and storage forecast (Web | Terminal).***

DER: DISRUPTION, DIGITALISATION AND ‘DEMOCRATISATION’

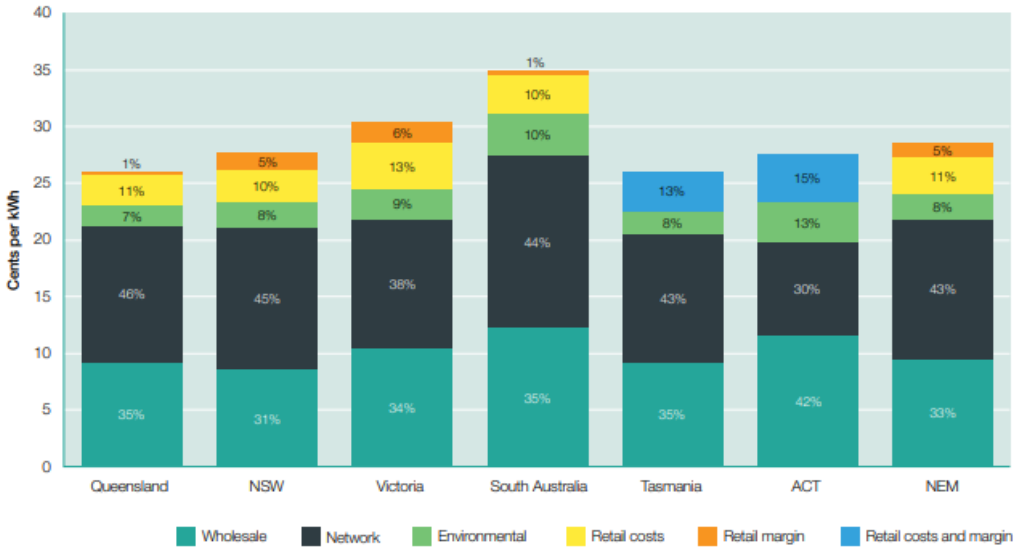
Opportunities include: lower cost supply (in some cases), more flexible supply (when combined with stationary or mobile storage), use of DER for non-network alternatives, microgrids for resilience and remote communities



FEED-IN TARIFFS IN AUSTRALIA

- Retail tariffs include a wholesale, network (distribution and transmission), retail and other (usually energy efficiency state government programs) components
- State government subsidies have varied dramatically over time – from 40-66c/kWh
- Now generally retailer set – roughly 6-12c/kWh BUT vary greatly (and sometimes zero)
- Setting of FiTs depends on portfolio: customer base, risk appetite and generation ownership: The 3 largest retailers also own large-scale generation (coal, gas, wind, solar)

Composition of a residential electricity bill



kWh, kilowatt hour.

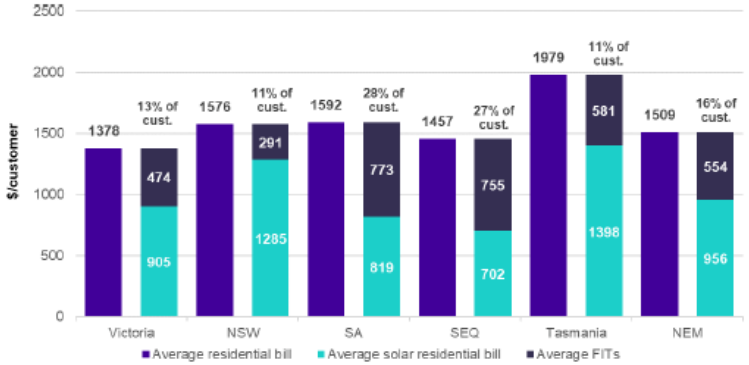
Note: Data are estimates for 2018–19. Average residential customer prices excluding GST (real $2018–19). Retail costs and margin are combined for the ACT and Tasmania due to data availability. NEM average is based on data for Queensland, NSW, Victoria and South Australia. Percentages may not add to 100 per cent due to rounding.

Source: ACCC, *Inquiry into the National Electricity Market, November 2019 report*, December 2019, p. 40; ACT and Tasmanian data from AEMC, *2019 residential electricity price trends, Final report*, December 2019, p. 9.

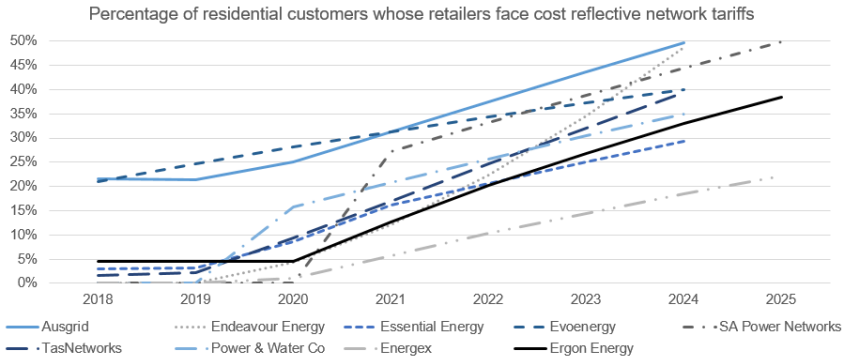
SETTING NETWORK REVENUE IN AUSTRALIA

- CPI-X (based on original UK RPI-X regulation): capex, opex and rate of return
- Revenue-capped (previously price-capped) – supports energy efficiency
- Set every five years using a propose-respond model
- For a mix of private and publicly-owned distribution network businesses
- Network tariffs are set annually through ‘Tariff structure statements’
- See https://www.aer.gov.au/networks-pipelines/network-tariff-reform for more detail

Figure 4: Average solar residential customer bill and FiT by NEM region, 2018–19, real $2018–19



Source: ACCC analysis based on retailers' data.



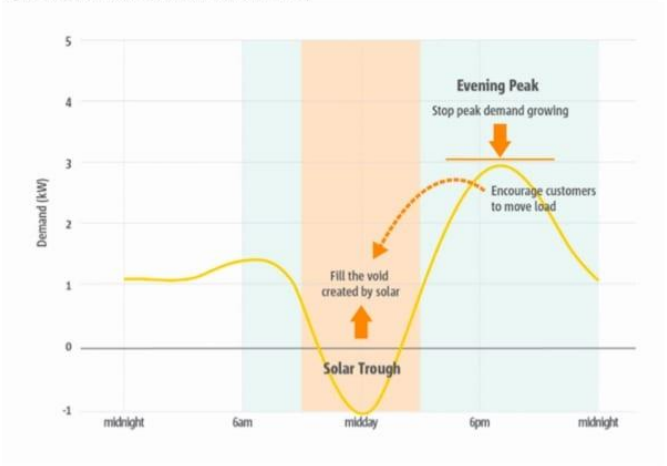
Source: AER – Australian Energy Regulator

FEED-IN TARIFFS IN AUSTRALIA

- New solar sponge **network** tariff in South Australia: 10:00am to 3:00pm 25% of normal rate (3.6c/kWh cf 18c/kWh peak)
- VADER (Value of DER) method being developed for network revenue regulation purposes (similar process used in Victoria for setting minimum tariffs):

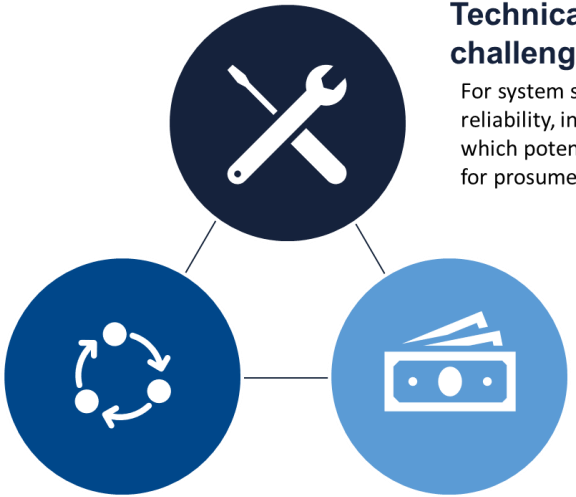
Supply Chain Segment	Value Stream/Benefit	Able to be considered by AER
Wholesale Generation	Avoided generator short run marginal costs	Yes
	Avoided generation capacity investment	Yes
	Essential system services (e.g. reserve power)	Yes
Network	Avoided / deferred augmentation (T&D)	Yes
	Avoided asset replacement / derating (D)	Yes
	Network losses (T&D)	Yes
	Improved reliability	Yes
Environmental	Avoided carbon emissions	Yes, where there is a requirement for market participant to pay associated tax, levy etc or there is a jurisdictional requirement to consider the externality
	Avoided health impacts of poor air quality	
Customer	Intangible benefits (e.g. energy independence, sense of control)	No, considered an externality
	Change in DER investment costs	Yes, where the network investment changes DER adoption (and the benefits of the changed adoption are included)
	Electricity bill management	No

Figure 17.15: Network peak load curve for a day



Source: SA Power Networks

THREE DIMENSIONS OF DER INTEGRATION:



Technical and operational challenges

For system security and distribution network reliability, including DER visibility and standards – which potentially limit or reduce the value of DER for prosumers and consumers

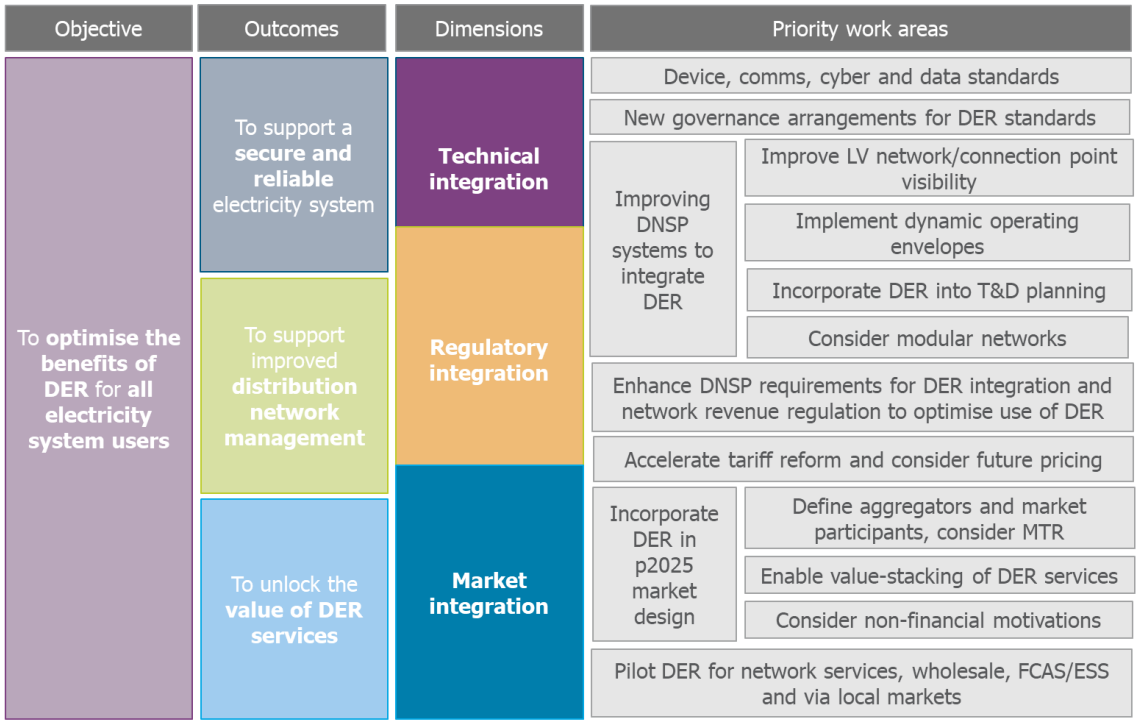
Regulatory and planning challenges

Include ringfencing regulation and integrated planning to optimise the benefits of DER integration

Market and business model challenges

Electricity markets and DNSP business models need to be updated to support the benefits and minimise the costs of DER integration for all consumers

THE WHOLE PICTURE OF DER INTEGRATION:



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FOR DETAILS SEE:

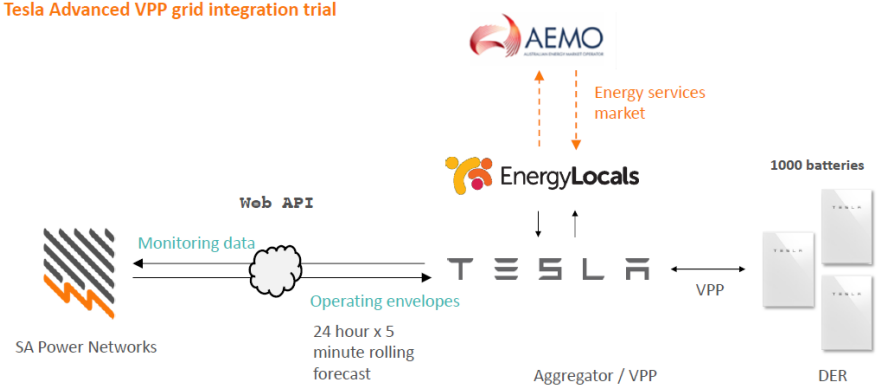
HTTP://COAGENERGYCOUNCIL.GOV.AU/ENERGY-SECURITY-BOARD/DISTRIBUTED-ENERGY-RESOURCES

OPERATING ENVELOPES: VITAL ENABLING TECHNOLOGY

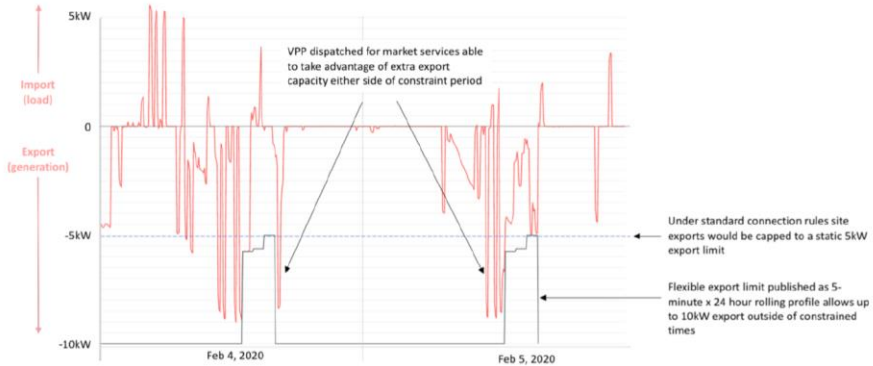
- How to maximise the use of DER within network constraints
- Dynamic – on 5-minute intervals, 24 hours in advance
- Needs regulatory support, including through consistency in APIs for information sharing
- Needs revenue allowances (but relatively small cf capex)

Architecture

Tesla Advanced VPP grid integration trial



Enabling greater market access – raising the limit



Source: SA Power Networks