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Renewable energy auctions vs the RET – likely effectiveness and efficiency

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2018 Symposium*: Energy Policies: Where is Australia Heading*
Griffith Business School

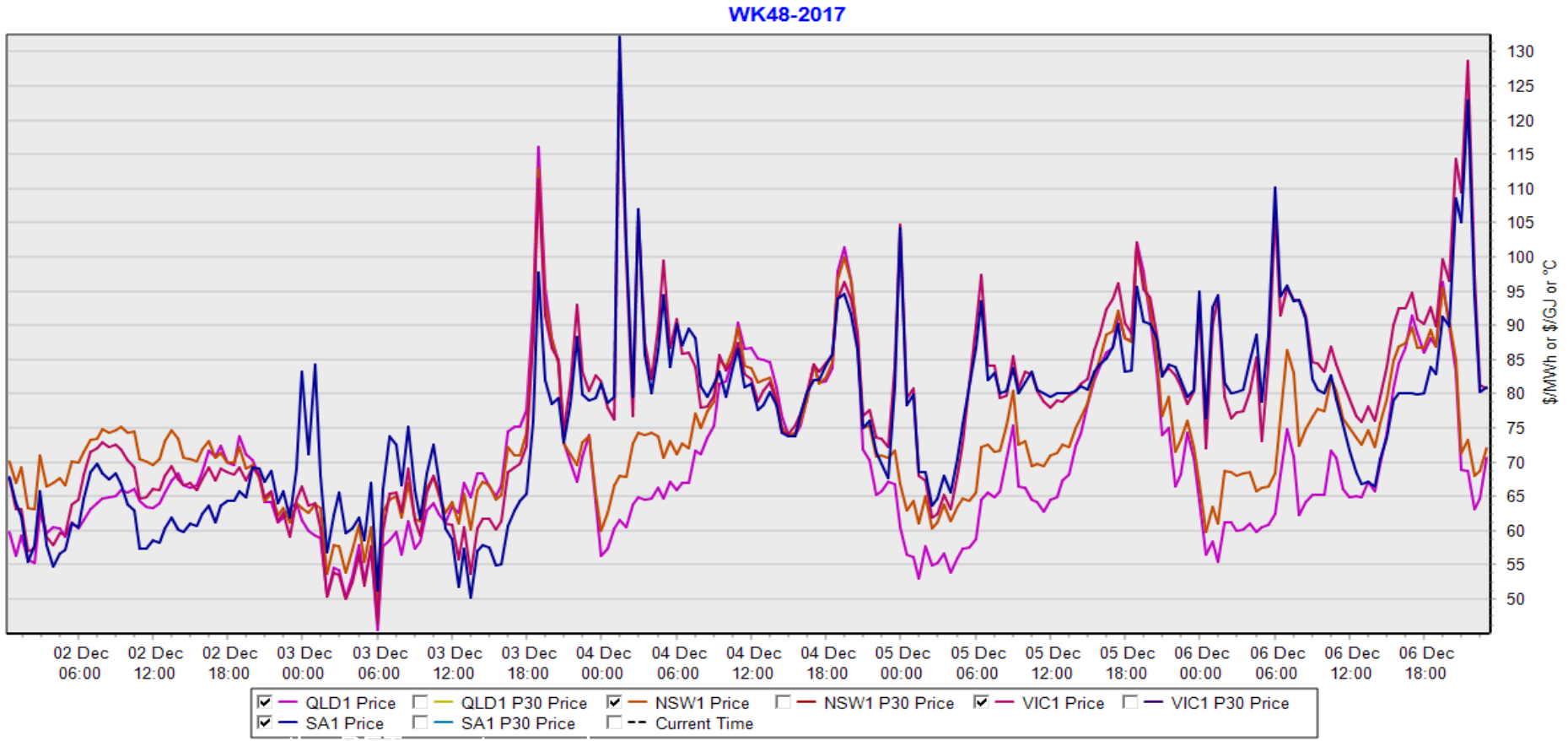
Brisbane, 16 October 2018

The findings up front

- Auctions / tenders have proven capabilities to reduce renewables costs but don't necessarily deliver the highest energy value renewables, unless you make them
- The Renewable Energy Target's 'Certificate' based approach exposes renewable project developers and operators to more NEM energy market signals…
- … but puts the power in the hands of large incumbents who can use tenders to get their own costs down, but appear able to pass on high wholesale market and REC 'rents' on to small energy users, with relatively low transparency
- … so Auctions seem best way forward, certainly until NEM is fixed, rather than 'fixed', but potentially increasingly problematic if and as renewables begin to dominate gen. mix

Our challenge – maximising the value of renewables; *lower costs, increase value*

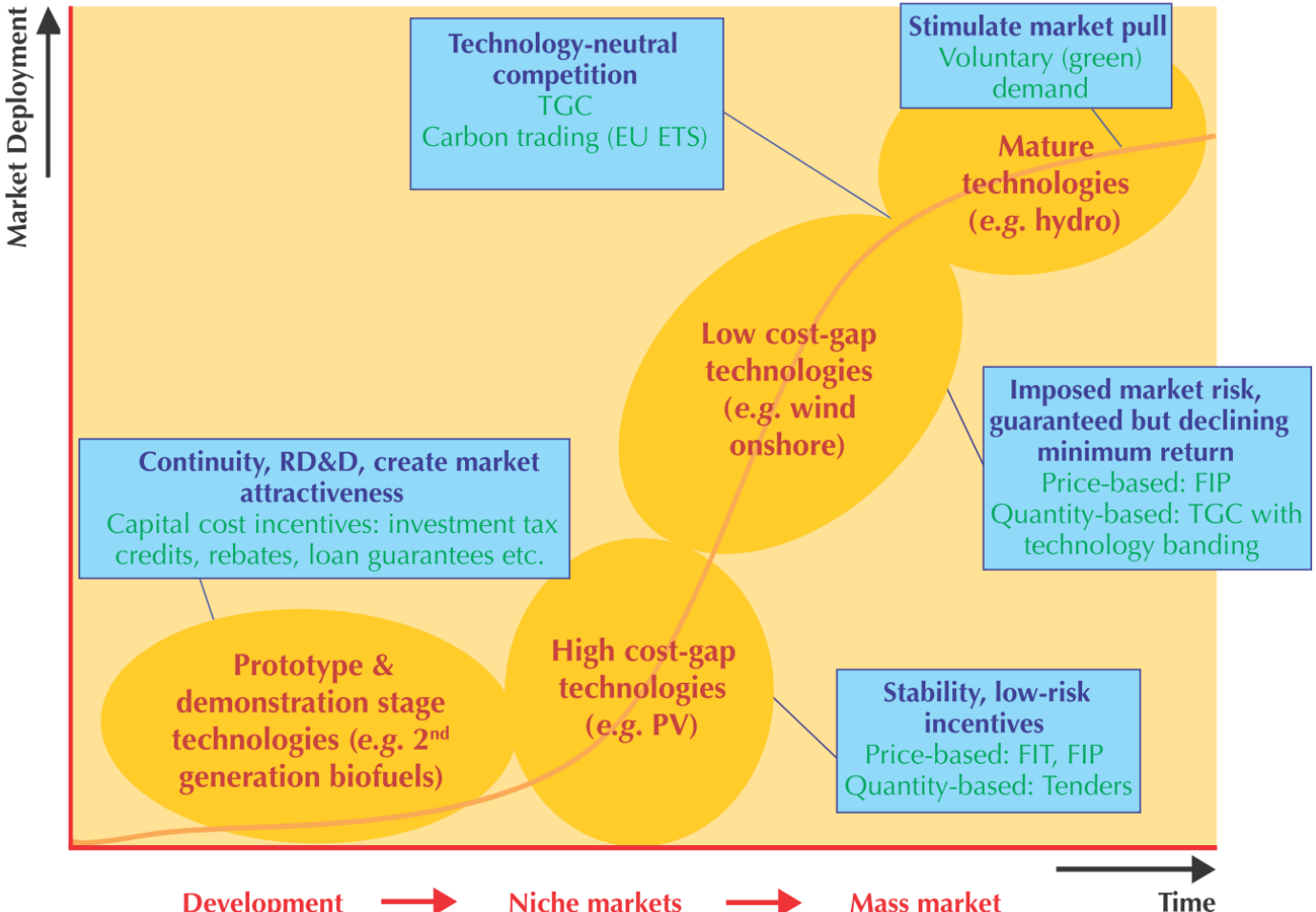
…value more important as costs, fall, harder (system outcome)



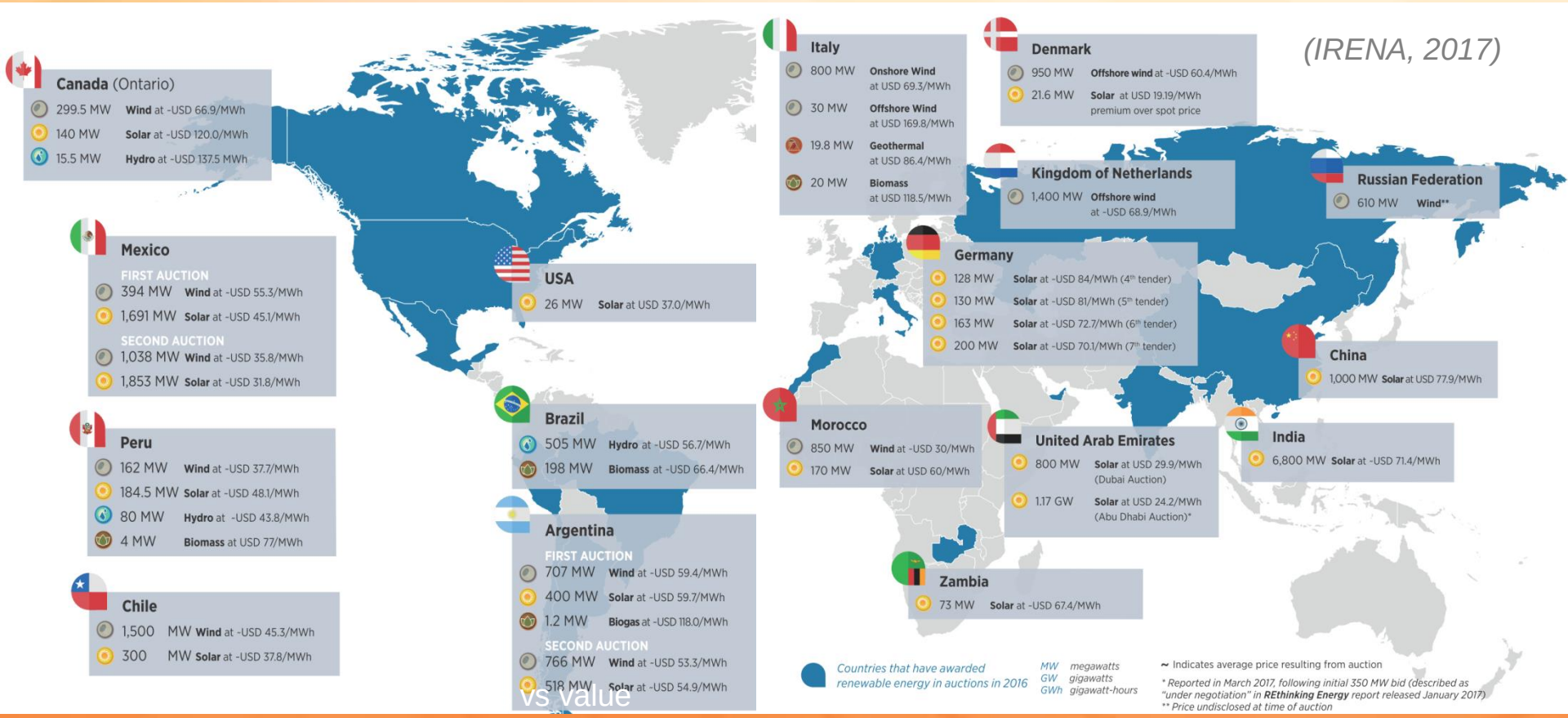
Energy markets don't capture key values – *policy required? If yes, which mechanisms?*

Conventional, OECD oriented, view on optimal policies, IEA 2008

Figure 1. **Combination framework of policy incentives in function of technology maturity**



Recent policy efforts increasingly auction / tender based



vs value

Recently

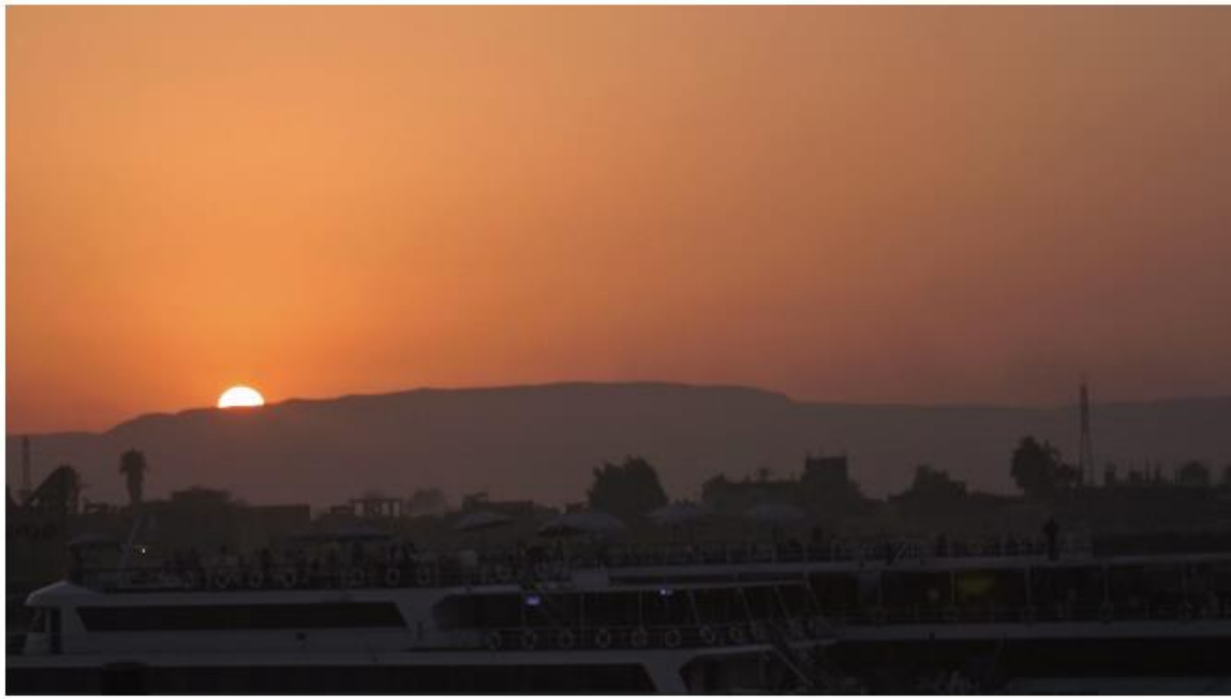
… however, note challenges in 'price' comparisons around financing, other costs, likelihood of progressing

Egypt receives two bids under $0.03/kWh in 200 MW solar tender

The lowest bid was submitted by Spanish developer Fotowatio, which offered US$0.02791 per kWh. Slightly higher, at $0.02799 per kWh, was the offer of Saudi power company, ACWA.

AUGUST 7, 2018 EMILIANO BELLINI

HIGHLIGHTS UTILITY-SCALE PV EGYPT



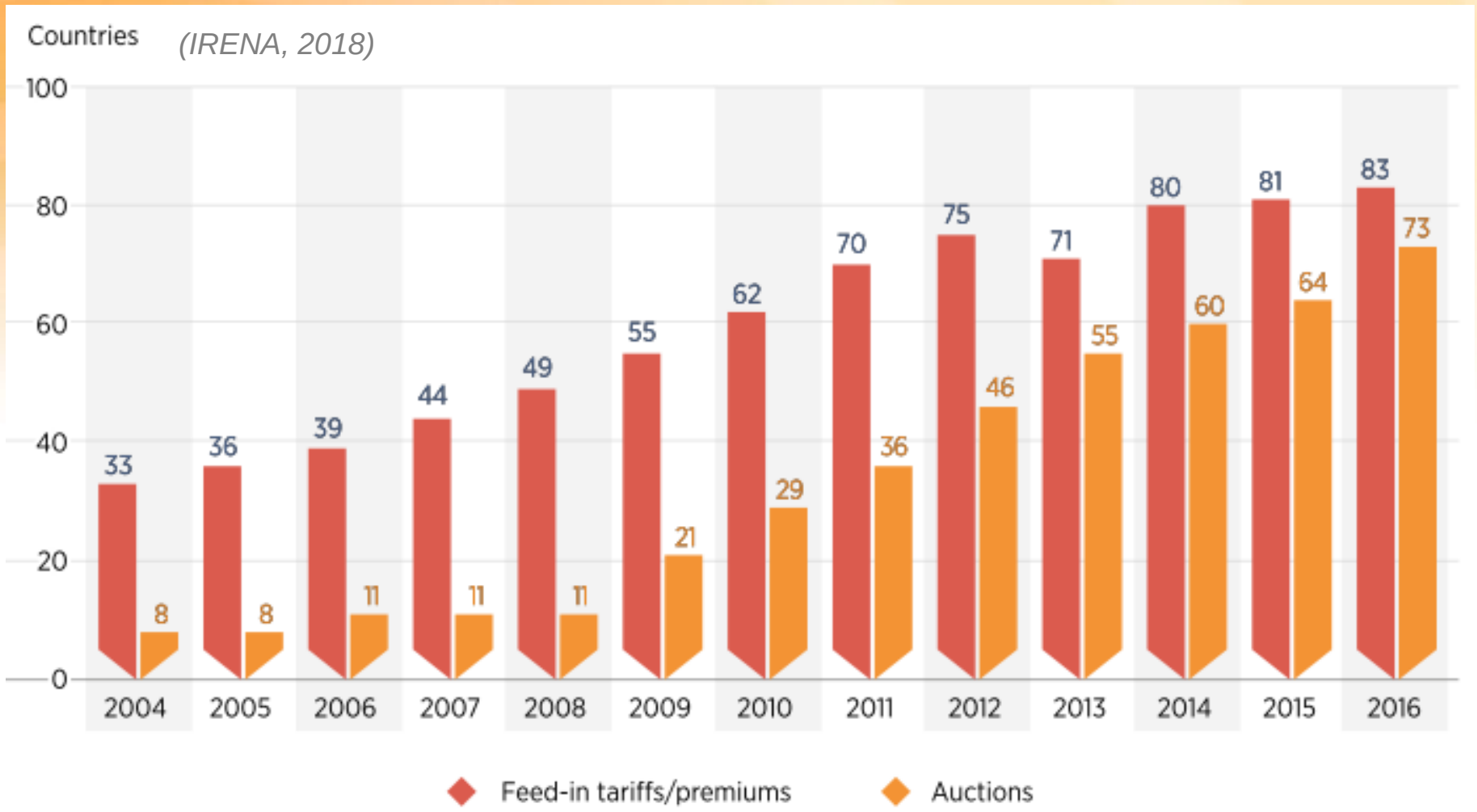
Potential advantages over RET approach

Box 2.1 **Strengths of renewable energy auctions** *(IRENA, 2017)*

The growing interest in auctions reflects their ability to achieve deployment of renewable electricity in a well-planned, cost-efficient and transparent manner while also meeting other development objectives, such as job creation and domestic value creation and ownership. Specific features include the following:

- **Flexibility of design**, which makes it possible to combine and tailor different elements to meet deployment and development objectives and cater to a country's economic situation, the structure of its energy sector, the maturity of its power market and its level of renewable energy deployment.
- **Certainty regarding prices and quantities**, which enables policy makers to control both the price (in the presence of a ceiling price) and quantity of renewable energy purchased by providing stable revenue guarantees for project developers (similar to the administratively set feed-in tariff) while also ensuring that the renewable generation target is met more precisely (as with quotas and tradable green certificates).
- **Degree of commitment and transparency**, reflecting the fact that auctions result in contracts that 1) clearly state the commitments and liabilities of each party, thus offering regulatory certainty to investors and minimising the likelihood that their remuneration will be challenged in the future if the market and policy landscapes change, and 2) specify clear penalties for underbuilding and delays, thus ensuring that projects are delivered as per the bid.
- **Potential for real price discovery**, reducing information asymmetry between project developers and the entity responsible for determining purchase prices and support levels (usually the regulator). This feature has been of particular relevance given recent market developments, such as the significant technology costs decreases, the development of local supply chains, and the maturity of the market.

Policy makers would seem to agree



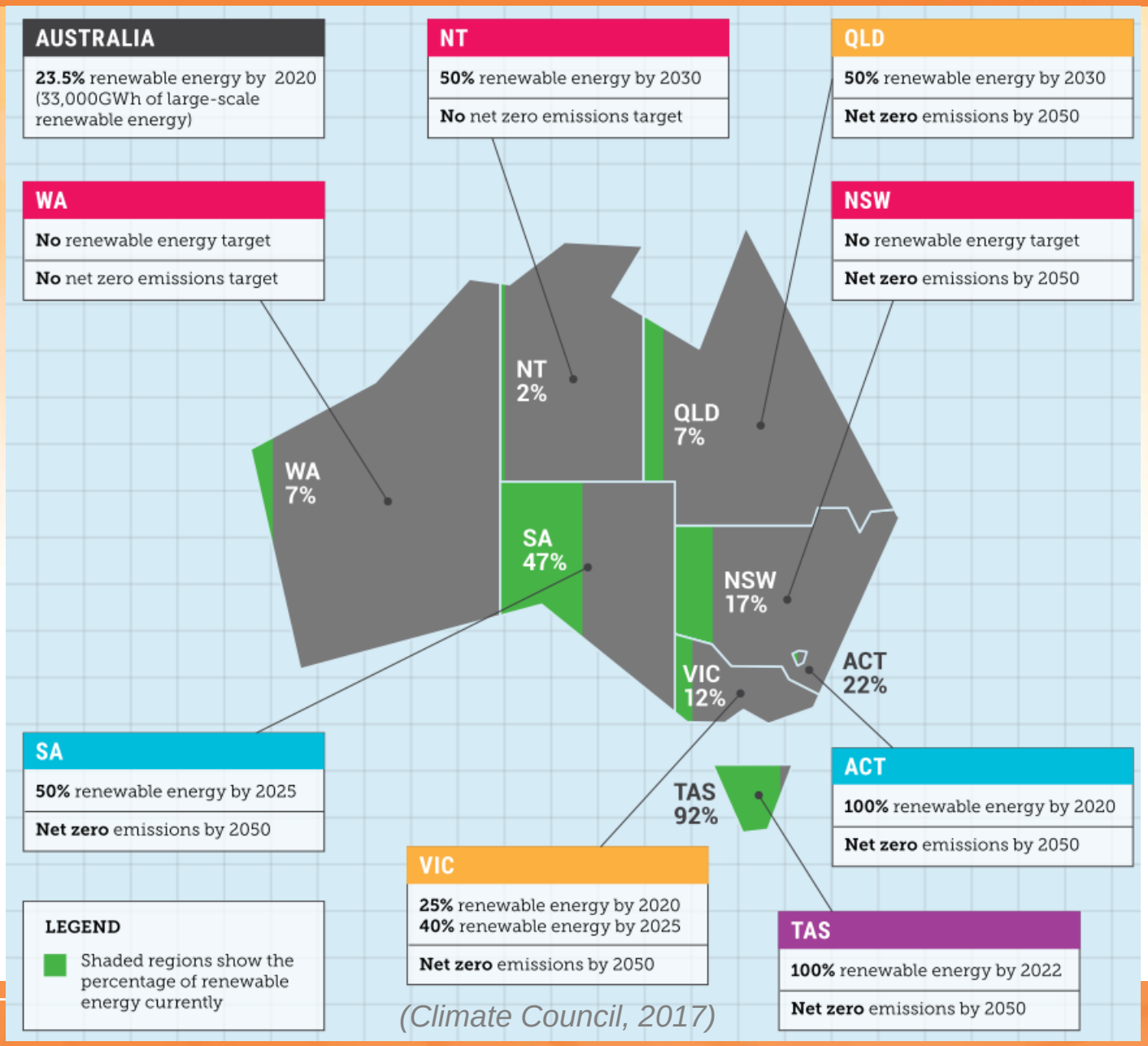
Renewables costs

- The cost of most renewables is mostly the cost of
  Capital
- ..and the cost of Capital is mostly the cost of
  Finance
- ..and the cost of finance is mostly the cost of
  Risk

Low cost renewables is low financial risk renewables

… but low risk to whom?
Are risks being reduced, or just transferred

State RE targets in the NEM



(Climate Council, 2017)

Corporate renewable PPAs also a driver

EXCLUSIVE BUSINESS THE ECONOMY ENERGY

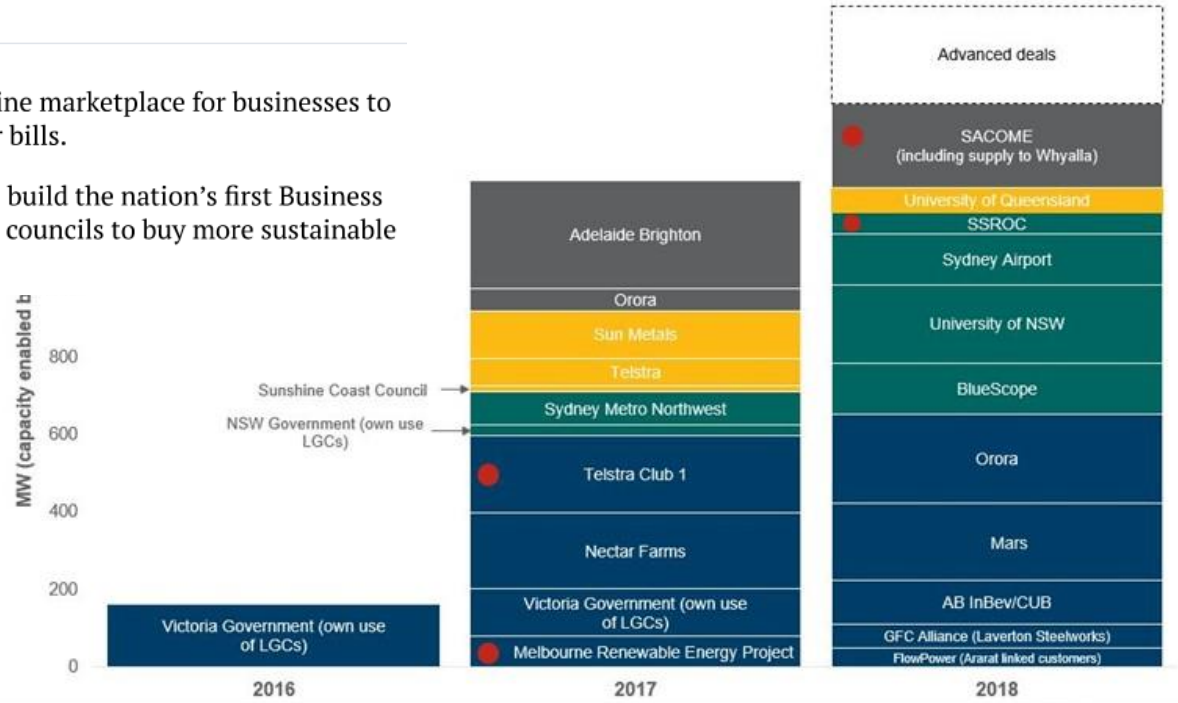
Online renewable marketplace aims to help business cut power bills

By Cole Latimer

16 October 2018 — 12:01am

Australia will look to replicate US success by creating an online marketplace for businesses to buy renewable energy, helping to them to reduce high power bills.

The Australian Renewable Energy Agency (ARENA) will help build the nation's first Business Renewables Centre, designed to encourage corporations and councils to buy more sustainable energy.



Initial associated tenders

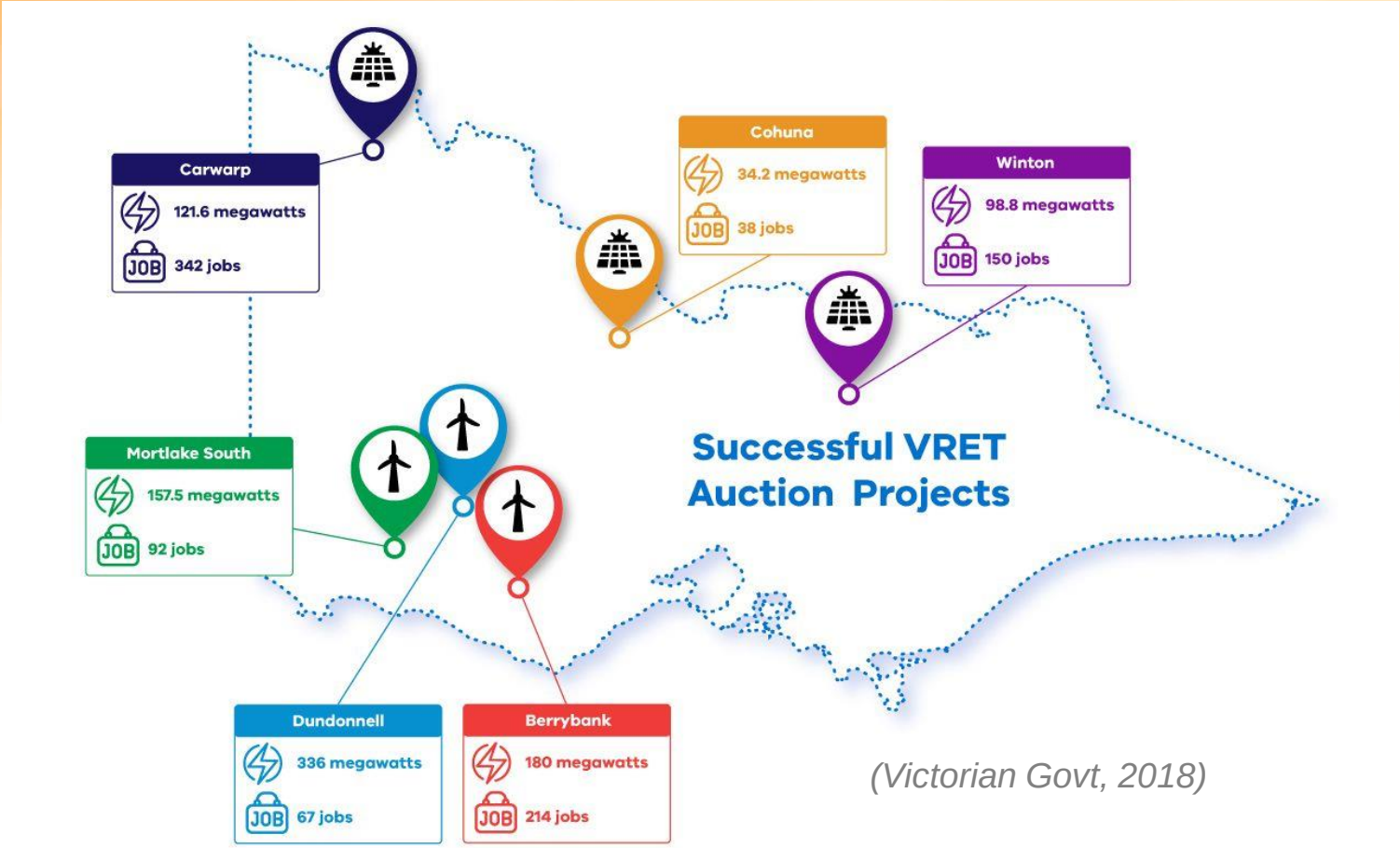
- *Falling costs, and these are bundled energy 'black' and REC 'green*
- *Reasonably high transparency*

Project name	Size (MW)	Fixed feed-in tariff price for renewable electricity over 20 years
20MW Solar Auction 2012		
Royalla Solar Farm (Figure 8)	20	$186/MWh
20MW Solar Auction 2013		
Mugga Lane Solar Farm	13	$178/MWh
Williamsdale Solar Farm	10	$186/MWh
200MW Wind Auction 2014		
Coonooer Bridge Wind Farm	19.4	$82/MWh
Hornsdale Wind Farm (Stage 1)	100	$92/MWh
Ararat Wind Farm	80.5	$87/MWh
200MW Wind Auction 2015		
Hornsdale Wind Farm (Stage 2)	100	$77/MWh
Sapphire Wind Farm	100	$89/MWh
Next generation solar and wind (plus storage) 2016		
Hornsdale Wind Farm (Stage 3)	109	$73/MWh
Crookwell 2 Wind Farm	91	$87/MWh

(Climate Council, 2017)

And now Victoria

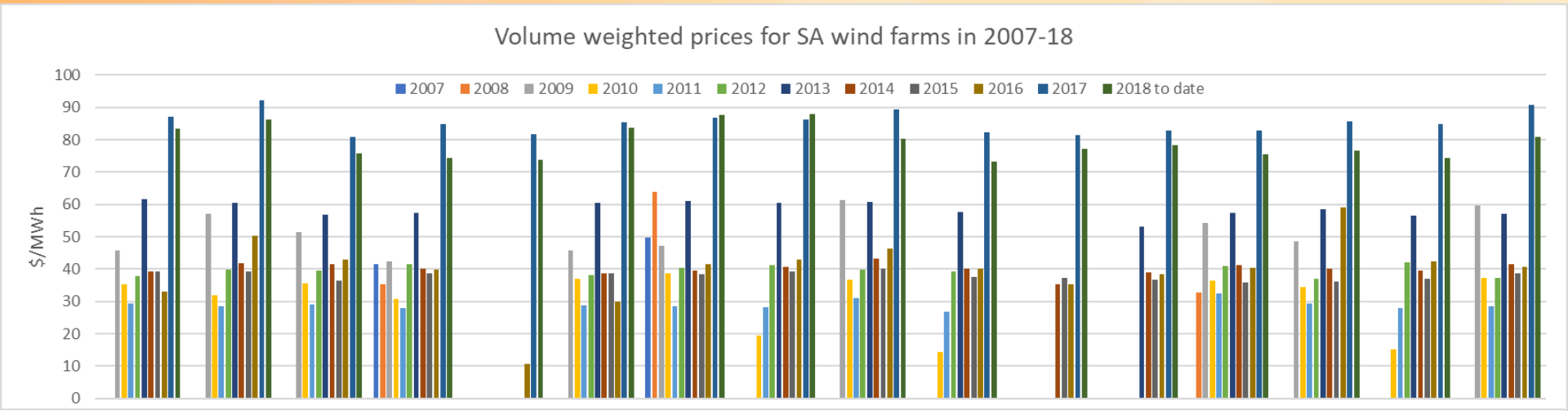
- Apparently far better ($50s), but less transparent, prices

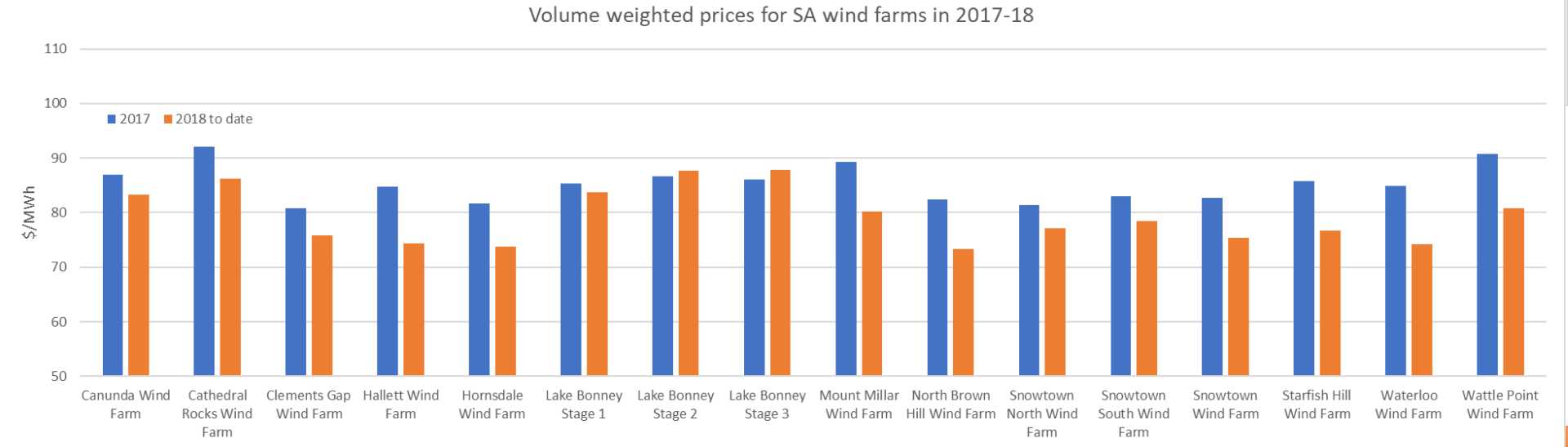


(Victorian Govt, 2018)

But in value, renewables "ain't" renewables

(data from OSDAN: Open-Source Data Access for the NEM, Nicholas Gorman)



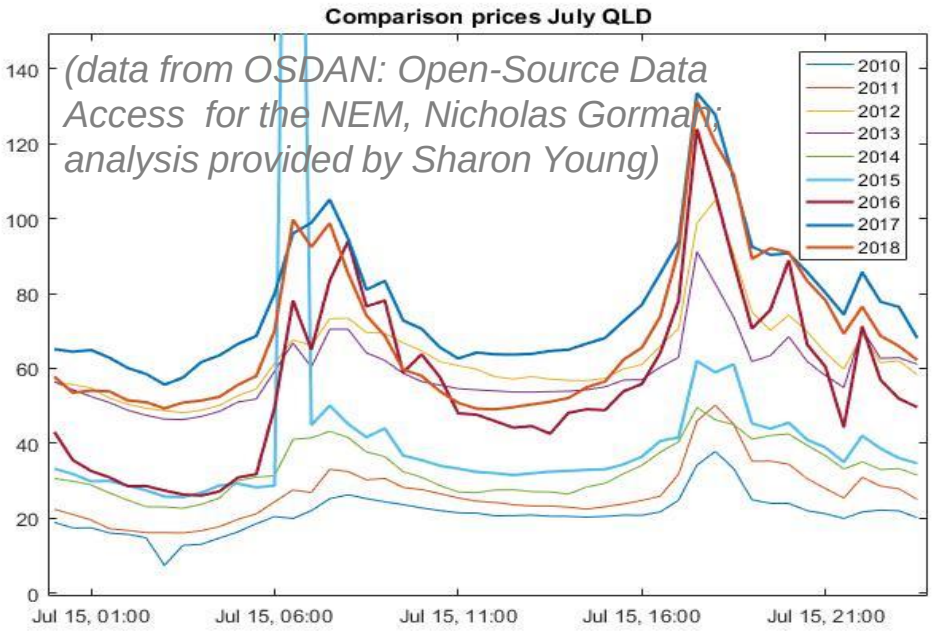


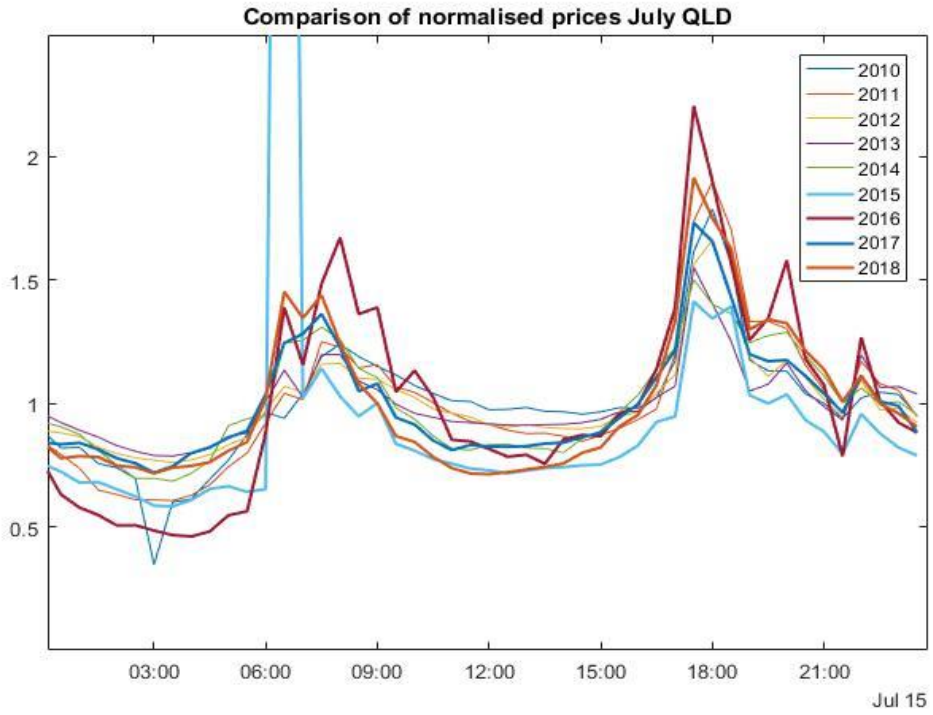
..with future price surprises likely

- including summer daytime hours with growing PV penetration

Auction projects chasing MWh

RET projects chasing MWh (RECs) but also energy value





Might this be growing problem, particularly if and as RE penetrations grow?

- AEMO certainly seems to think so

4.1. AEMO's preferred design *(AEMO, Submission to Vic. Govt Auction design, 2017)*

As a general principle, AEMO encourages retention of spot market incentives upon generators, and therefore prefers certificate based schemes over CFD mechanisms. At the stakeholder forums, the government presented alternatives where a fixed "top-up" payment was made to the generator, either on a MW or MWh basis, meaning the generator retained exposure to the spot price. AEMO would similarly prefer this approach, which would be more compatible with the NEM and vest government and customers with a predictable cashflow.

The apparent attraction of the CFD scheme over these alternatives is that by immunising the generator from NEM signals it lowers risk to them enabling them to bid a lower price at auction. AEMO submits that this is a false economy: these risks will instead be borne by customers through CFD payments, and the risks that are transferred downstream from those generators are risks that are best left upstream with the generators.

And risks don't just disappear

- Can contract some to project developers
  - Eg. negative prices
  - FCAS

Pool Price means the greater of the spot price (in $ per MWh) at the Reference Node set for a Trading Interval by AEMO and $0/MWh.

- But others?

(Vic. Govt, VRET support agreement, 2018)

Market Disruption Event means:

(a) a change in the location of the Reference Node; or

(b) the introduction of an alternative basis for the calculation of the Pool Price other than a change in the market price cap or the market floor price.

12.2 Market Disruption Event

If at any time there is a Market Disruption Event, the parties will consider and, in accordance with clause 12.4, negotiate in good faith the adjustment to the Contract Price and other amendments to this Agreement which will preserve:

(a) the intended operation and effect of this Agreement; and

(b) the relative position of the parties at the date of this Agreement.

12.3 Change in Law

(a) If at any time there is a Change in Law which increases or reduces the costs incurred or to be incurred by the Supplier in connection with the generation of electricity by the Facility [or the creation, supply, registration, approval or transfer of Green Products], then, subject to paragraph (c), the Supplier: *[Note to Proponents: Words in square*

(i) will be entitled to pass through 50% of that proportion of the additional cost as determined in accordance with this clause 12.3; and

(ii) will be required to pass through 50% of that proportion of the reduced cost as determined in accordance with this clause 12.3,

, by adjustment of the Contract Price or Base Amount by such amount
pass through the additional or reduced cost over the balance of the
Supply Period, as determined in accordance with clause 12.4.

12.4 Good faith negotiations

The parties will conduct good faith negotiations in respect of arrangements which are to apply following a Market Disruption Event or a Change in Law. If the parties cannot agree within 20 Business Days after one party notifies the other in writing that they wish to negotiate the relevant adjustment to the Contract Price or Base Amount, either party may refer the matter to an Expert for determination in accordance with Schedule 5.

12.5 NEM Design Change

after the Effective Date, the National Electricity Market design changes in a
rially affects the operation of this Agreement (***NEM Design Change***) the

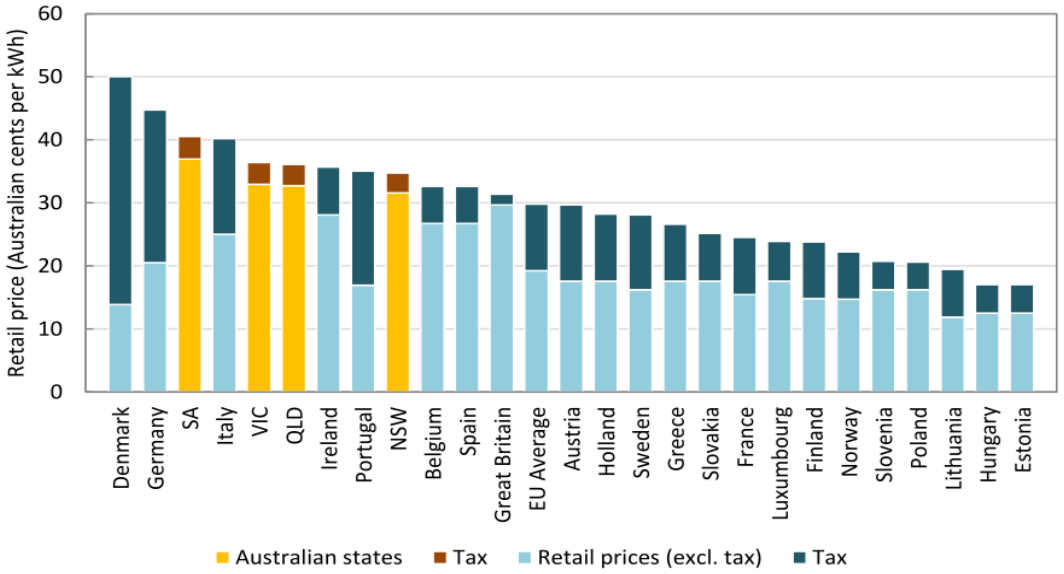
nduct good faith negotiations in accordance with clause 12.4 in respect of
ents which are to apply following the NEM Design Change.

(b) Without limiting paragraph (a), if the NEM Design change involves the National Electricity Market changing from an energy only design to include an energy capacity payment, the value of such capacity payments will be offset against any amounts payable by the State and invoiced pursuant to clause 9.

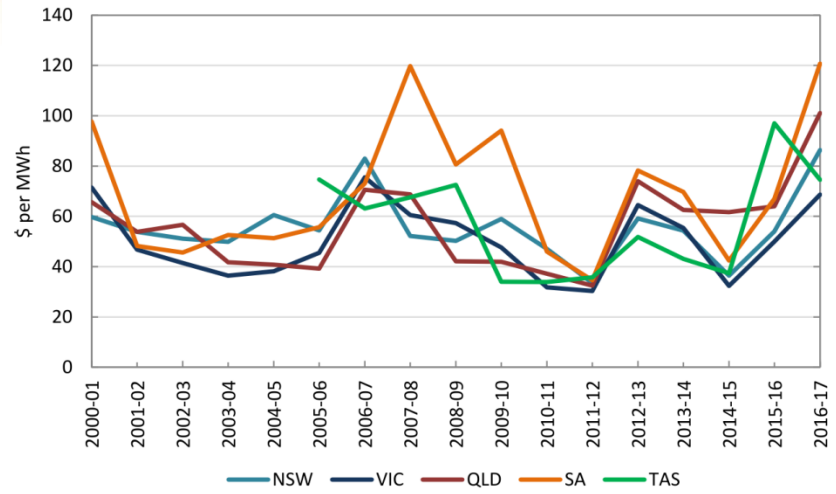
.. However, what precisely has the NEM delivered?

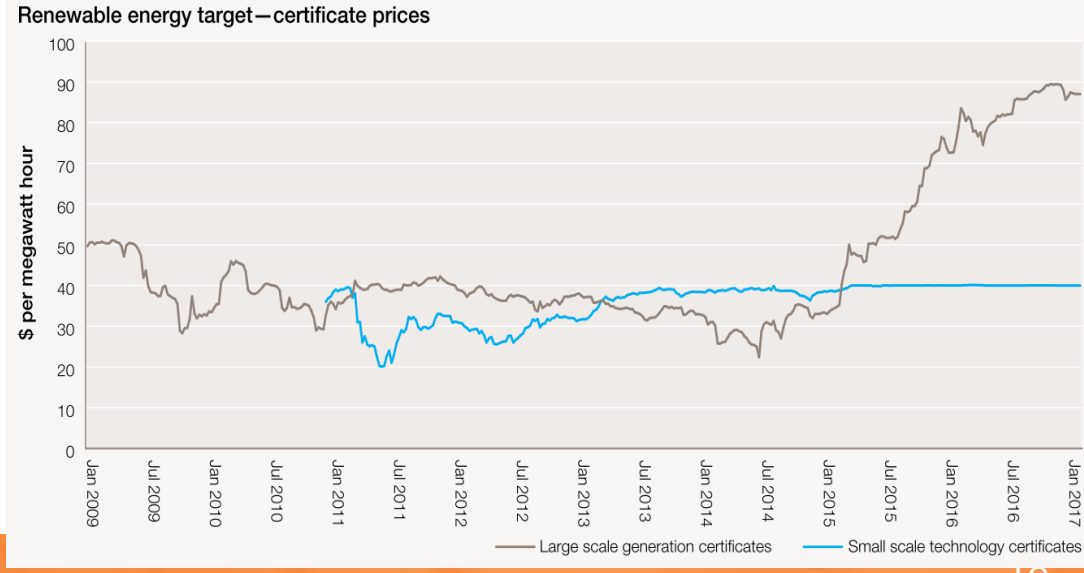
Amongst the world's most expensive, wholesale, retail and RE electricity, reliable but amongst the dirtiest as well

Figure 1.9: Comparison of residential electricity prices (before and after tax) (Australian cents per kWh) (May 2017 prices in Australia, 2015 prices in European countries)[62]



(ACCC, 2017)





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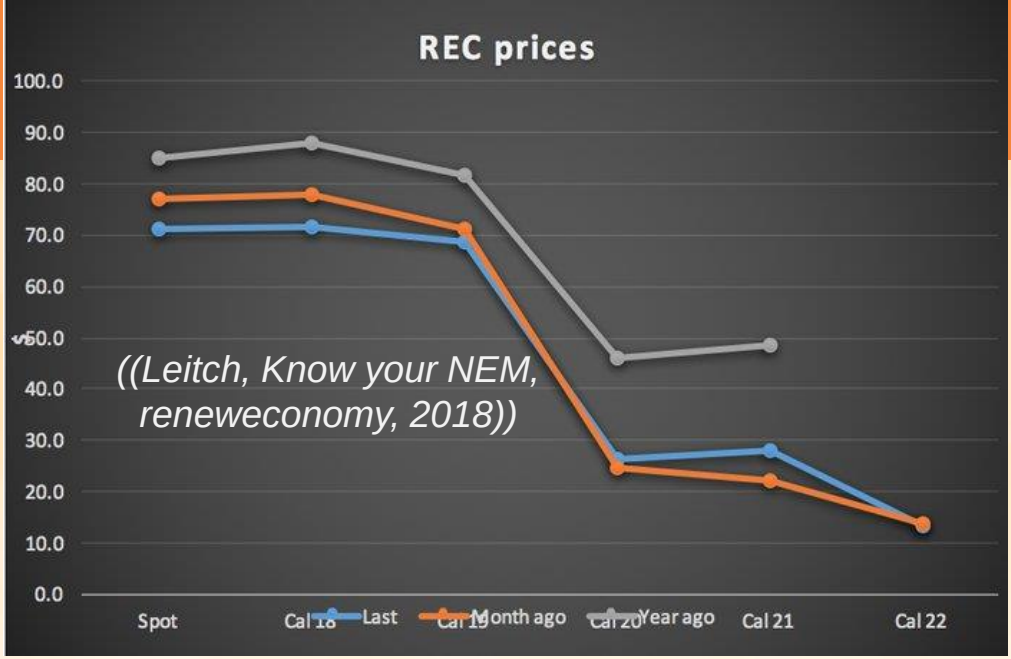
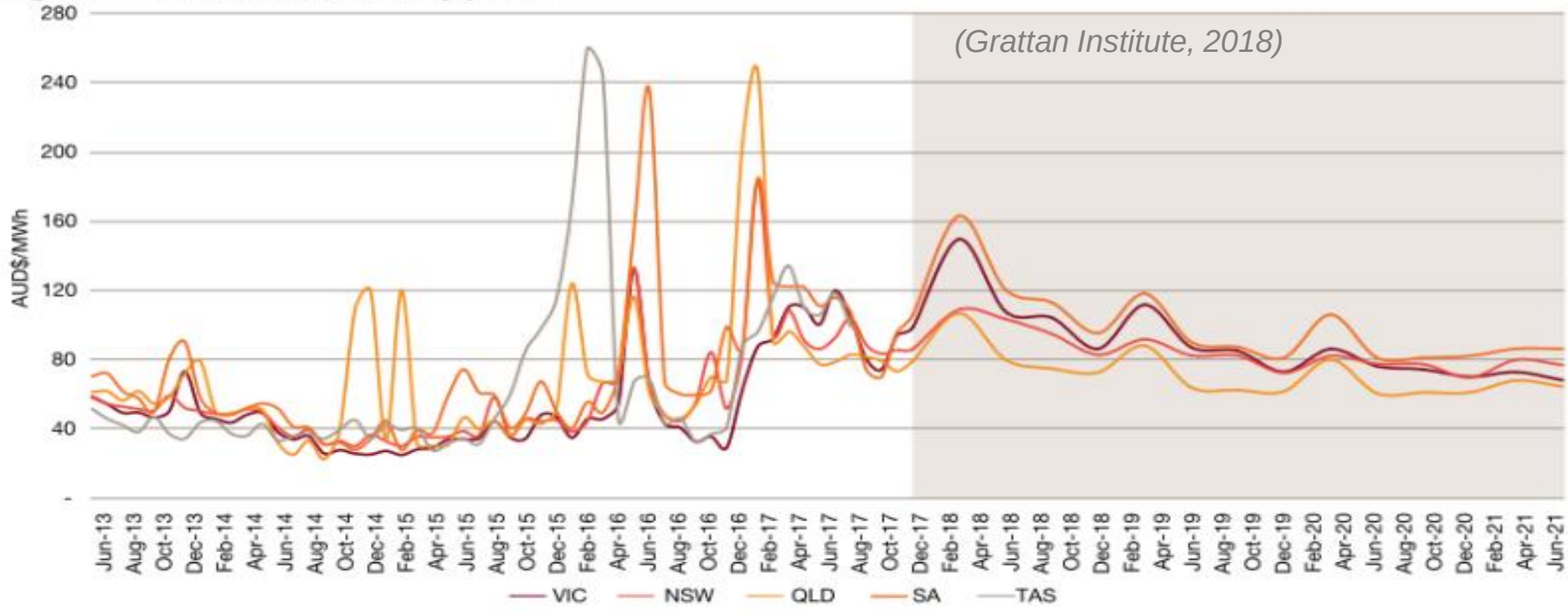
…although perhaps now improving

… but for small consumers?



((Leitch, Know your NEM, reneweconomy, 2018))

Figure 1 – Wholesale electricity prices

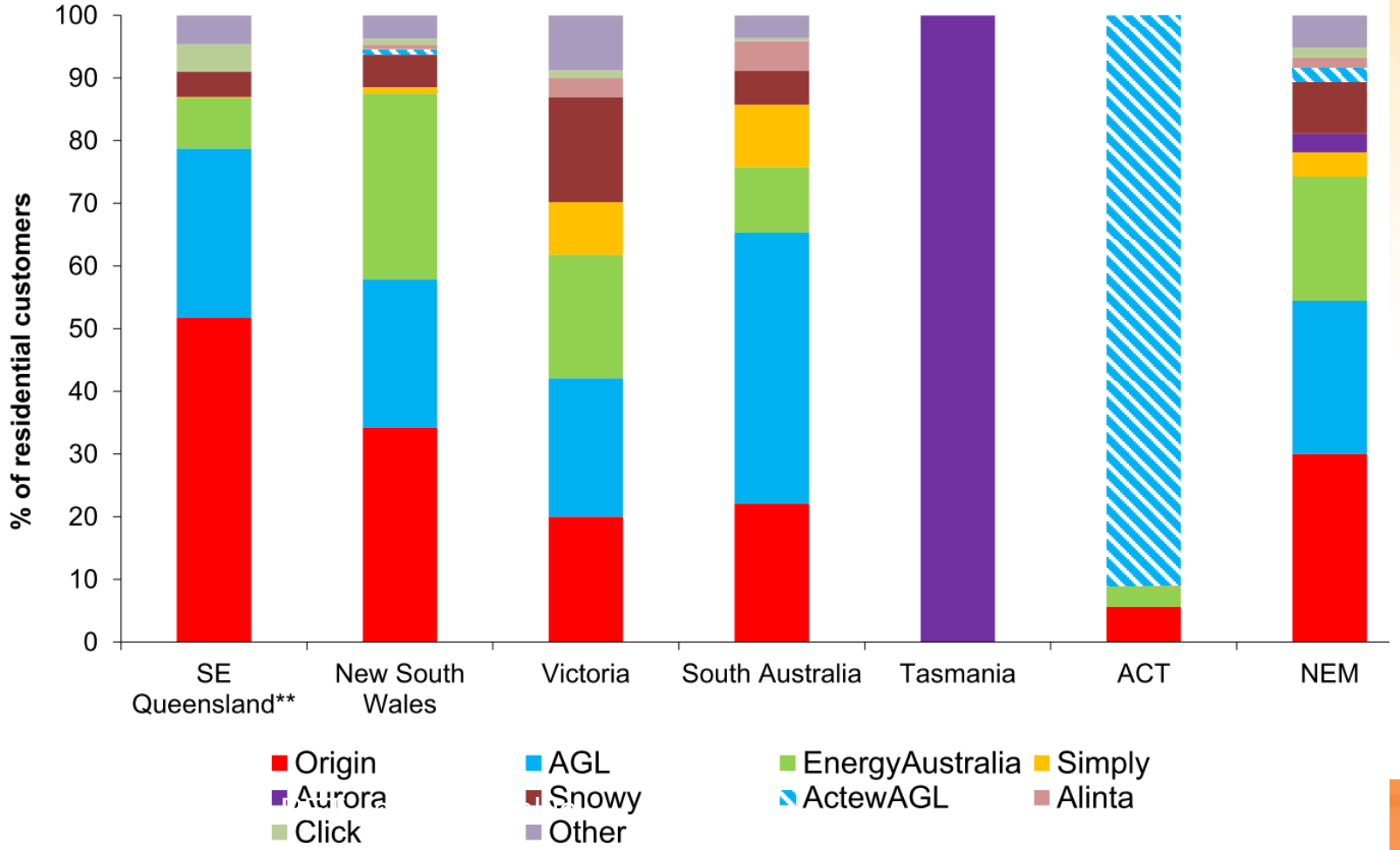


(Grattan Institute, 2018)

… and who owns it? – energy & RET

Figure 3.9: Retail Electricity Market Share (residential customers), March 2017*

(ACCC, 2017)



RET still involves tenders … just private ones

- Question is not just what they pay, but what they charge consumers for both ‘black’ and ‘green’

(reneweconomy, 2017)

Origin stuns industry with record low price for 530MW wind farm

28

By Sophie Vorrath & Giles Parkinson on 8 May 2017

Print

Origin Energy has set a stunning new benchmark for renewable energy off-take deals in Australia – and sounded the alarm for energy incumbents – after committing to a long-term power purchase agreement of below $60/MWh for the 530MW Stockyard Hill Wind Farm in

Suggesting

- Auctions / tenders have proven capabilities to reduce renewables costs but don't necessarily deliver the highest energy value renewables, unless you make them
- The Renewable Energy Target's 'Certificate' based approach exposes renewable project developers and operators to NEM energy market signals…
- … but puts the power in the hands of large incumbents who can use tenders to get their own costs down, but appear able to pass on high wholesale market and REC 'rents' on to small energy users, with relatively low transparency
- … so Auctions seem best way forward, certainly until NEM is fixed, rather than 'fixed', but potentially increasingly problematic if and as renewables begin to dominate gen. mix

Where next?

"The best way to predict your future is to create it!"

Abraham Lincoln

"It depends…"