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Cost reflective pricing:

panacea, pandora's box, predicament or phantasy?

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APVI Workshop: Cost Reflective Pricing – some difference perspectives

Sydney, 1 June 2016

Is Cost Reflective Pricing a:

- **Panacea** - A solution or remedy for all difficulties
- **Pandora's box** - A process that once begun generates many complicated problems
- **Predicament** – a problem that can't be solved, but can perhaps be better managed
- **Phantasy** – an *unconscious* fantasy; the faculty or activity of imagining impossible or improbable things

(based mainly on the Oxford on-line Dictionary)

- …towards agreed objective of maximising the long term interests of consumers

What other types of prices are there?

- "Since the Hilmer Review in 1994, it has generally been accepted that, wherever possible, the interests of consumers are maximised by having goods and services provided through competitive markets… As firms compete for customers, they lower their prices till they reflect their genuine production costs. Competitive tension also ensures that firms are rewarded when they invest in innovation that results in improved and valued good and services for consumers."

(Victorian Essential Services Commission,)

Many ‘prices’ aren’t actually market prices

- “In certain circumstances, markets may not effectively (or efficiently) maximise the interests of consumers… For example, in the case of natural monopoly, where there is no competitive market to curtail the market power of the monopolist, **economic regulation** can help ensure that the prices paid by consumers are reasonable and reflect the efficient costs of providing on-going and reliable services.”

- “A more modern explanation sees economic regulation being less about correcting for market failures and more about enabling markets to work more effectively. That is, where the disciplines of competition are weak or absent, an economic regulator acts as a ‘visible hand’ seeking to guide service providers towards outcomes (eg. in terms of price, quality or both) that would have occurred had the market been subject to those competitive disciplines.”

(Victorian Essential Services Commission,)

… they are tariffs.

*"A market is any place where sellers of particular good or service can meet with buyers of that good or service and there is a potential **price** that allows for a transaction to take place"*

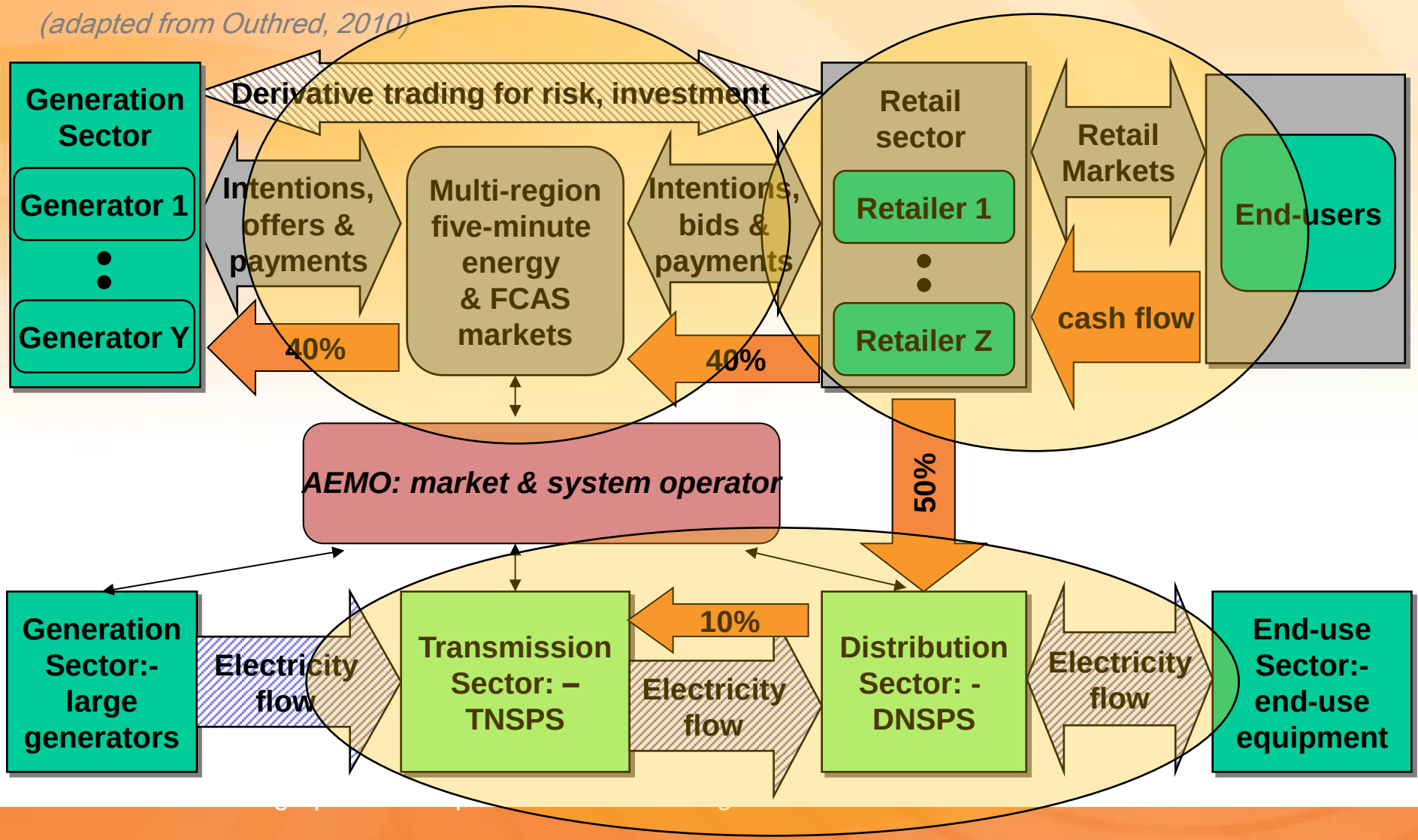
- Do consumers 'meet' with sellers?
  - *Electricity industry has traditionally had poor end-user engagement*
- Does the market sell the good or service desired?
  - *Buyers seeking energy 'services', not kWh 'goods'*
- Prices where supply meets demand?
- **Or are almost all buyers paying imposed 'prices' – tariffs**
  - Clearly the case for network tariffs
  - arguably the case for current retail 'market' arrangements

Some insights from electricity pricing theory

- A single owner of an electricity industry:
  - Could maximise overall economic efficiency:
    - if *all* supply costs *& all demand side benefits* were known
    - Taking into account Network losses & flow constraints; Security: probability & consequence of outages
- Optimal pricing policy in a decentralised industry:
  - Location-specific & time-specific spot prices based on:
    - Local supply/demand balance
    - Network arbitrage subject to losses & flow constraints
  - Location- & time-specific future prices based on:
    - Plausible scenarios of future generation & demand
    - Plausible scenarios of future network losses & flow constraints
    - Plausible effects of future decisions
- *Feasible, sensible, likely?*

The NEM regulatory, commercial regimes

(adapted from Outhred, 2010)

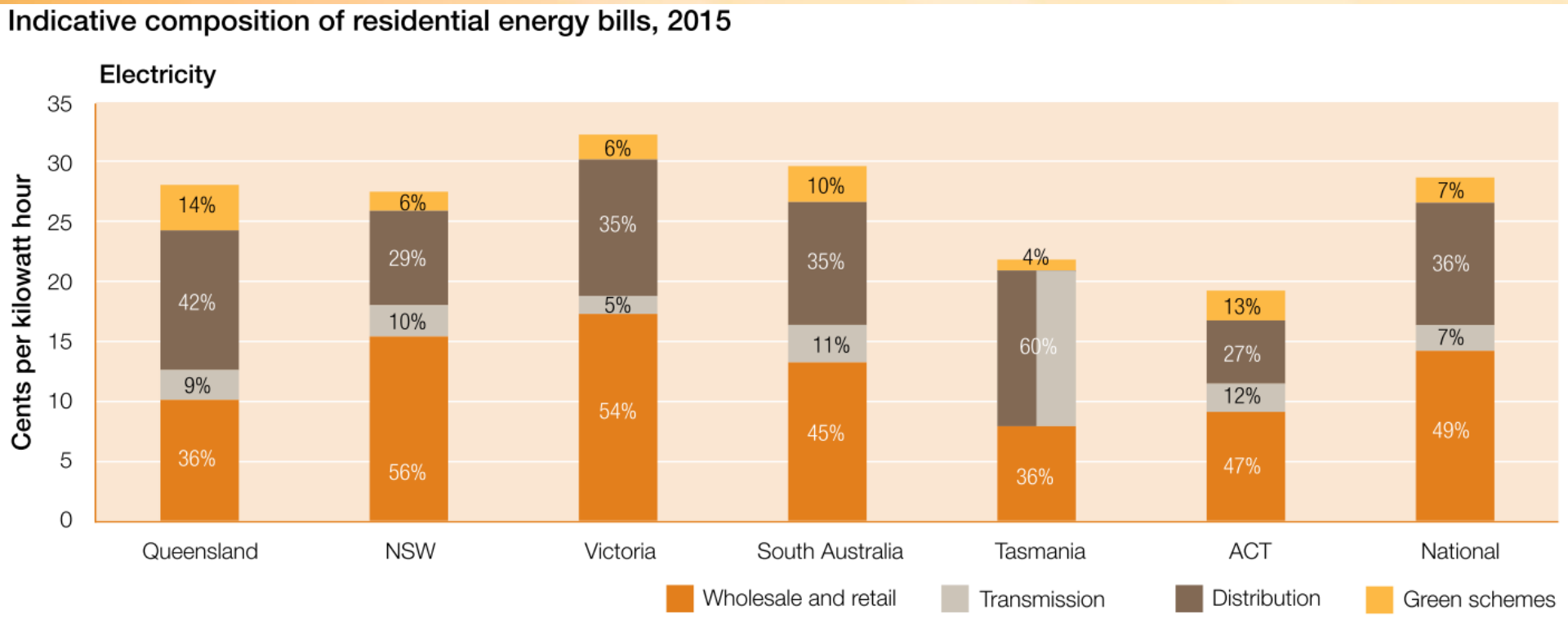


Energy users – a changing industry context

- From clients
  - Early tailored industrial or commercial (lighting) applications
- ..to citizens
  - Electricity as an essential public good – rural electrification
- ..to consumers
  - The vertically integrated utility of growing size and scope
- ..to customers
  - Electricity industy ‘reform’, liberalisation, deregulation, restructuring

- *..to perhaps now partners, competitors?*
- *Clearly opportunities to improve the interface between energy users and industry*

Significant proportion of household costs go to 'currently' non-competitive network sector



(AER, State of the Energy Market Report, 2015)

Current network tariffs for small energy users

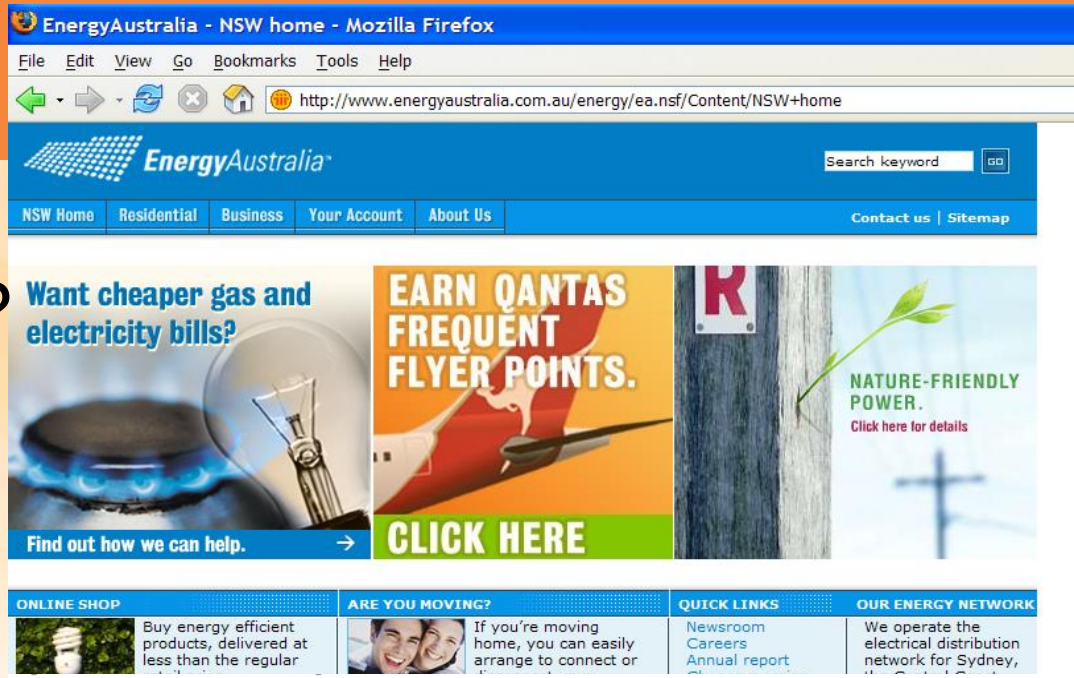
- Largely remain a legacy of former technical capabilities and socialist 'energy an essential public good' tendencies
- Send a primarily 'volumetric' consumption signal that incentivises lower consumption – *a good thing!?*
- Have generally 'worked' more or less so far
- *…unless you consider a near doubling in network expenditure over less than a decade a 'failure'*
- *driven at least in part by end-user investments,behaviours*
- ***Clear opportunities to improve this interface …particularly if we are serious about our climate change challenges which will require fundamental transformation of energy-use and production***

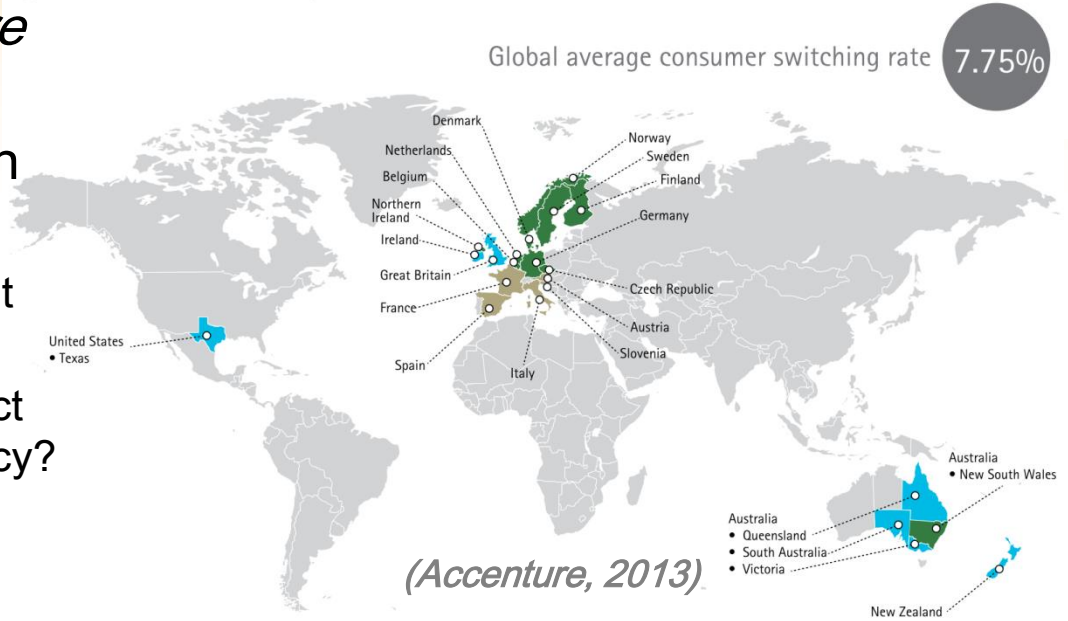
Will current cost-reflective tariffs efforts help?

- Which costs – past, present or future?
  - *Future costs and benefits are key for transformation, past costs the key incumbent consideration – hence treatment of residuals*
  - *And what of location specific costs?*
- For future costs, is Long Run Marginal Cost (LRMC) a truly meaningful and actionable concept for networks?
- What of transition?
  - Metering capabilities
  - Social expectations, hence political realities
- What of integration into broader end-user industry interface?
  - Does it matter if N/W tariffs aren't mirrored in retail tariffs?
    - Theory says no as 'someone is paying them'; but in practice?
  - Does it relieve DNSPS of obligations to engage with energy users?

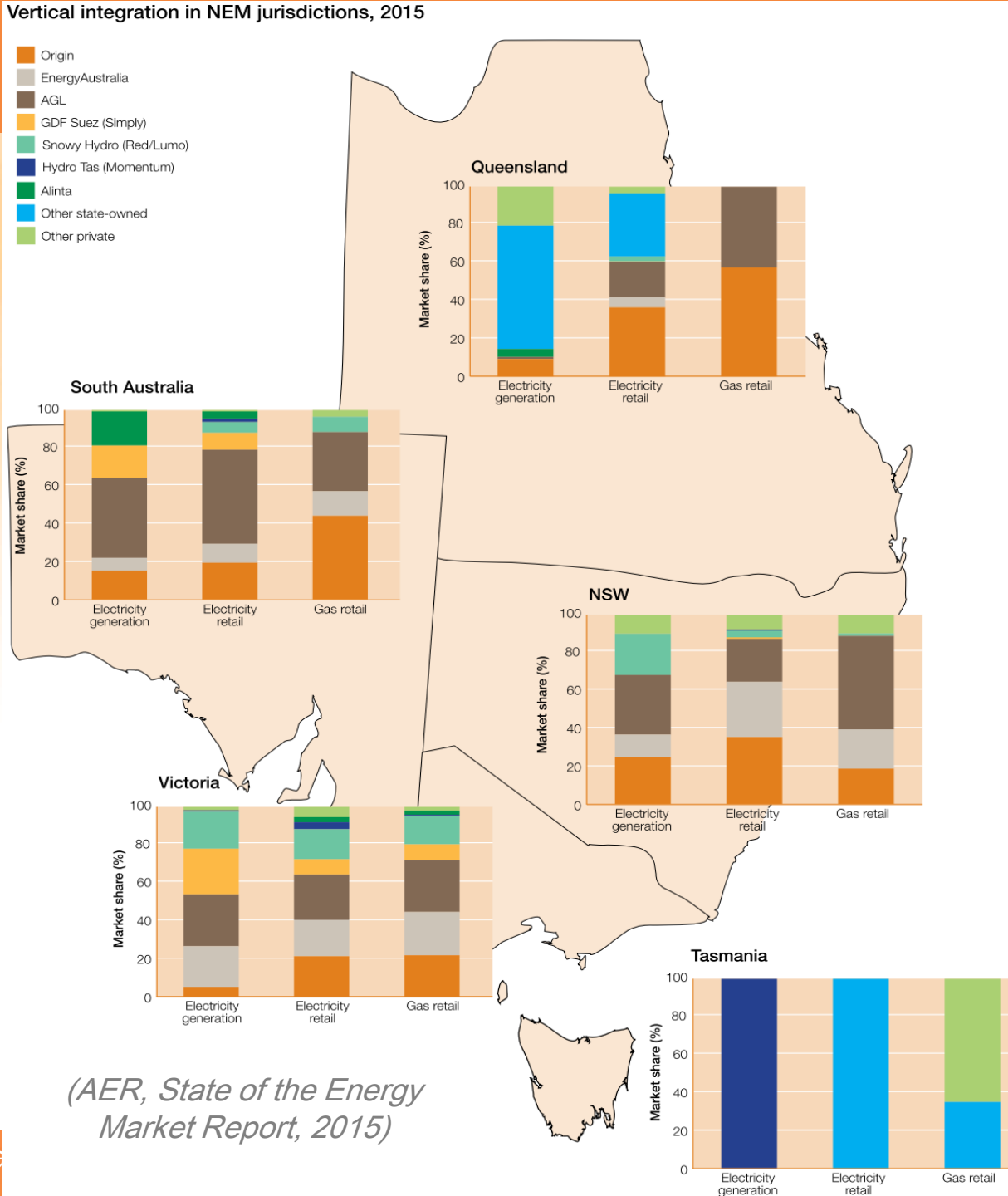
Do we have a 'real' retail electricity market?

- Little focus on energy services
  - "… an important reason there is effective competition in Victoria is .. because the provision of energy is viewed as a homogenous, low engagement service" *(AEMC, 2008)*
- *Although now seeing some more innovative offerings*
- Current measures of competition miss key issues
  - Yes, NEM high switching rates – but real customer choice or just churn?
  - Yes, NEM price spreads – but reflect competition, stickiness, or govt policy?
- *Although welcome new focus on customer engagement and demand side participation*



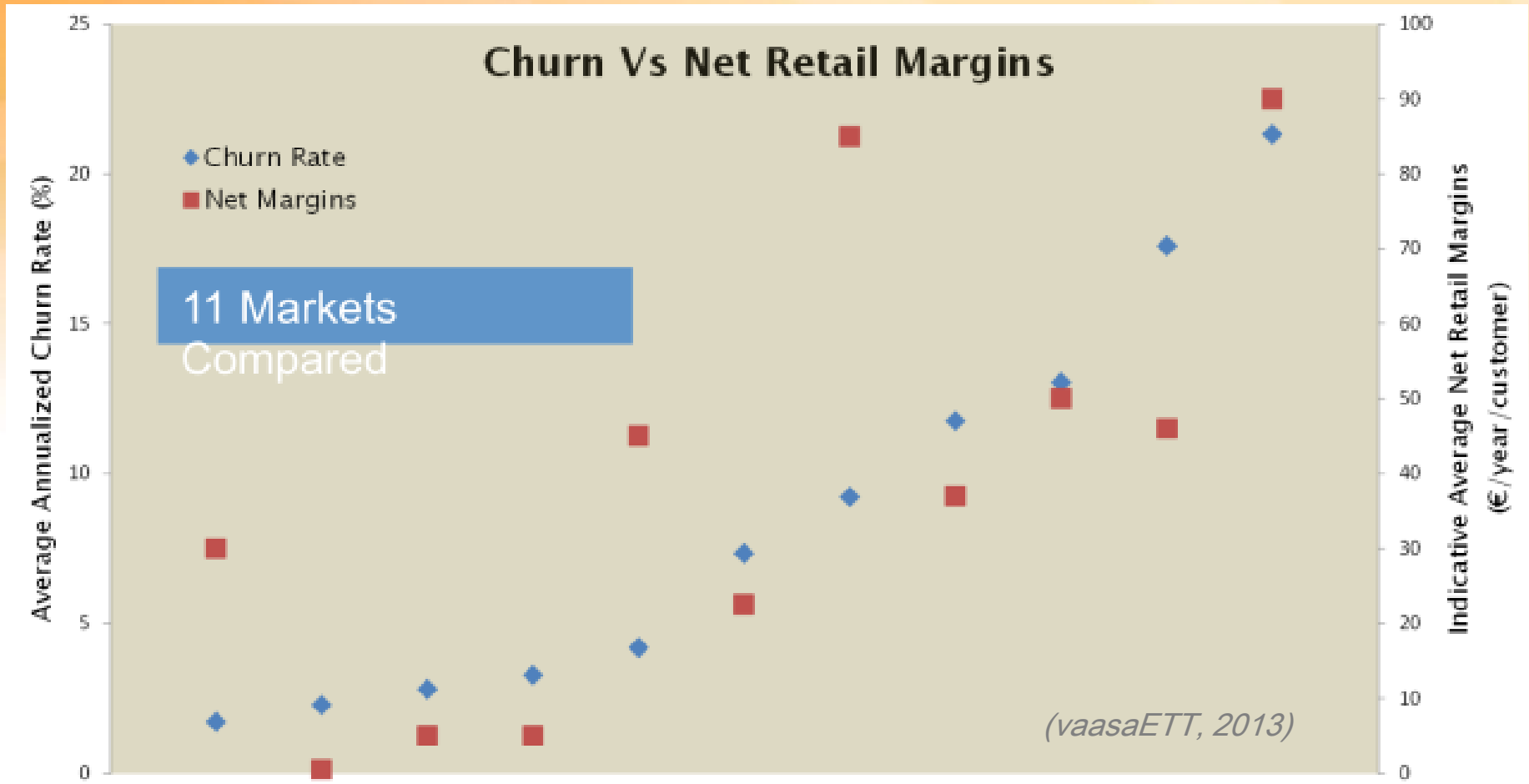


A few key retail players in each market region

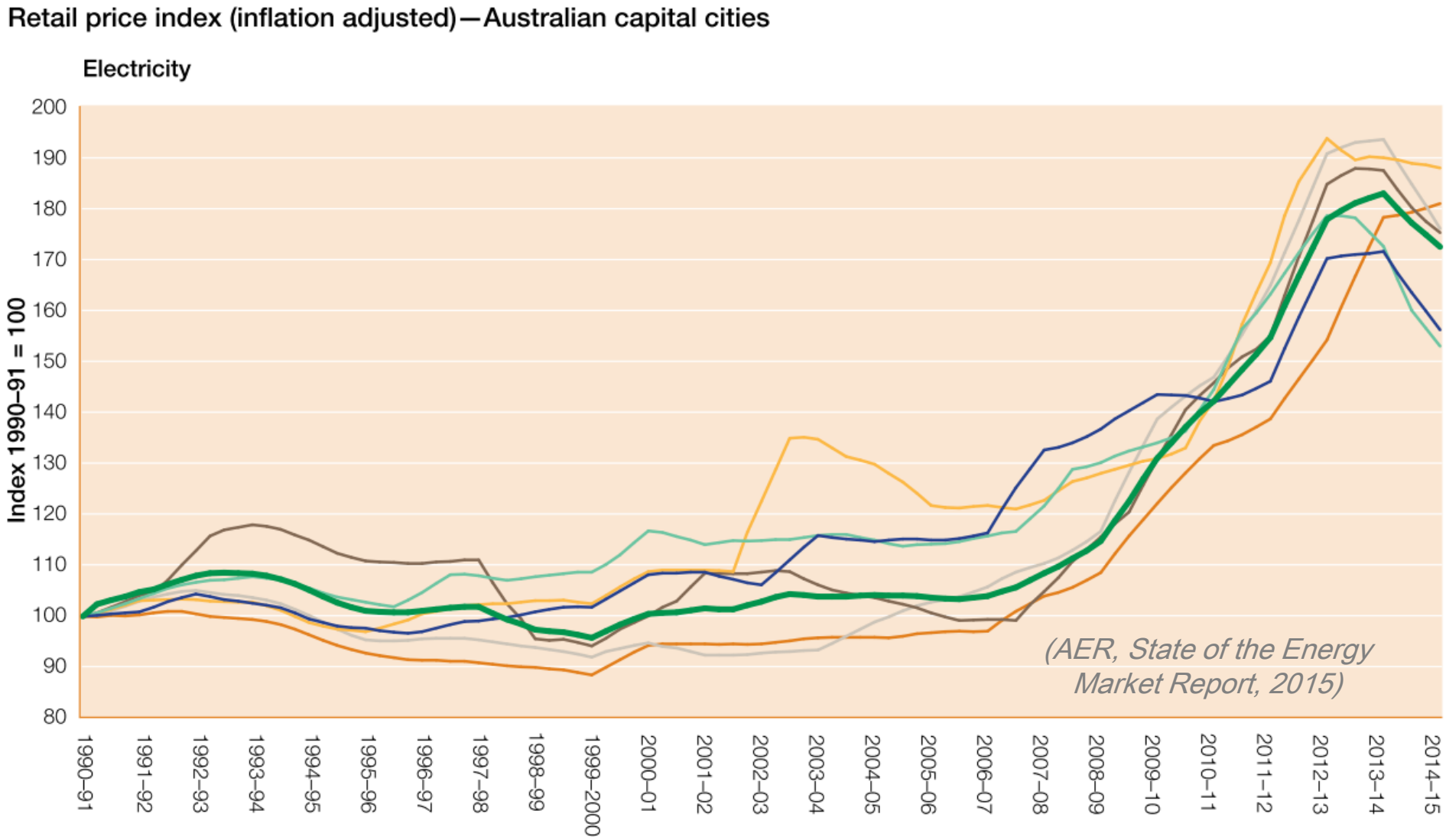


(AER, State of the Energy Market Report, 2015)

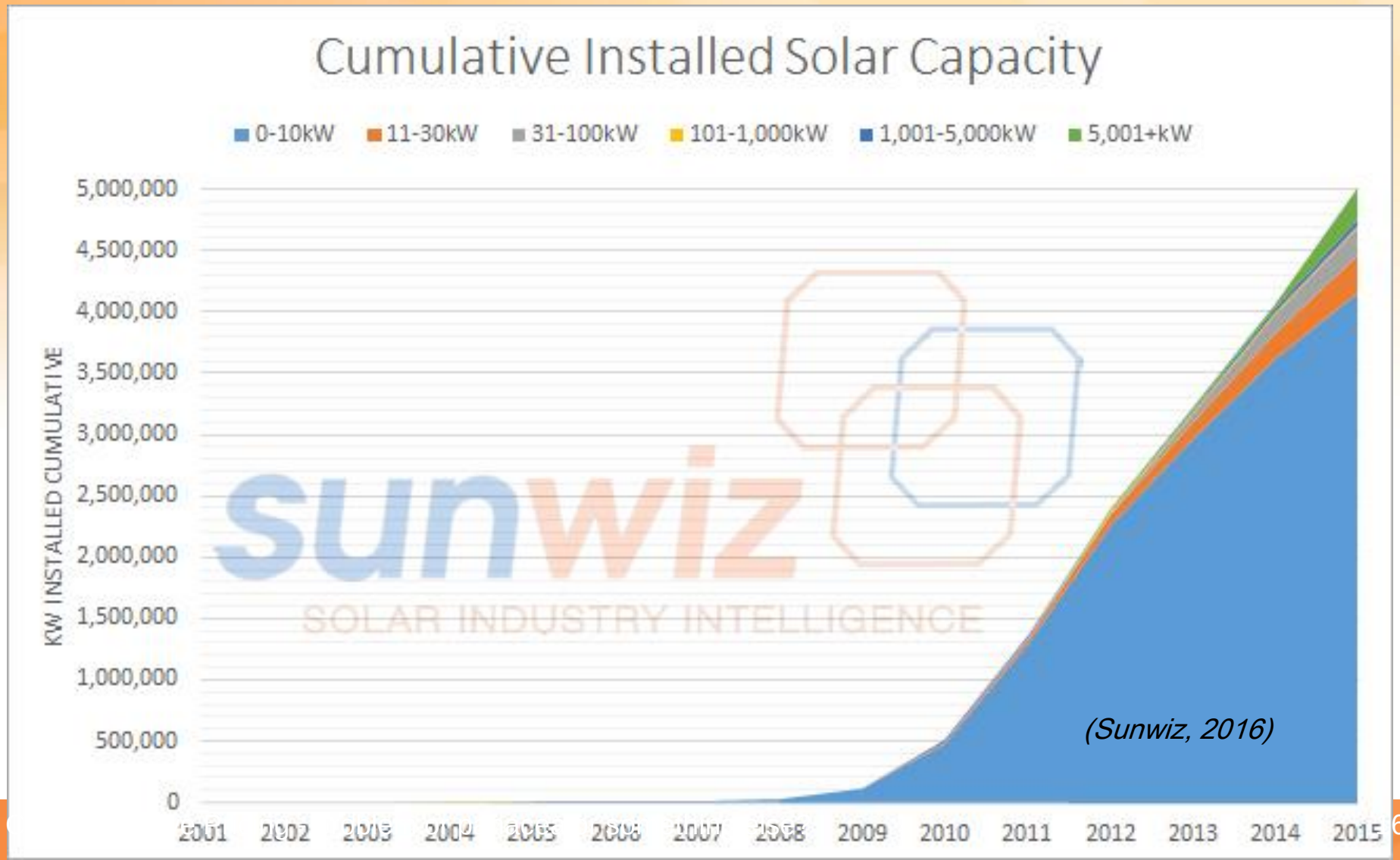
More competition the answer?



Does this look like retail market success?

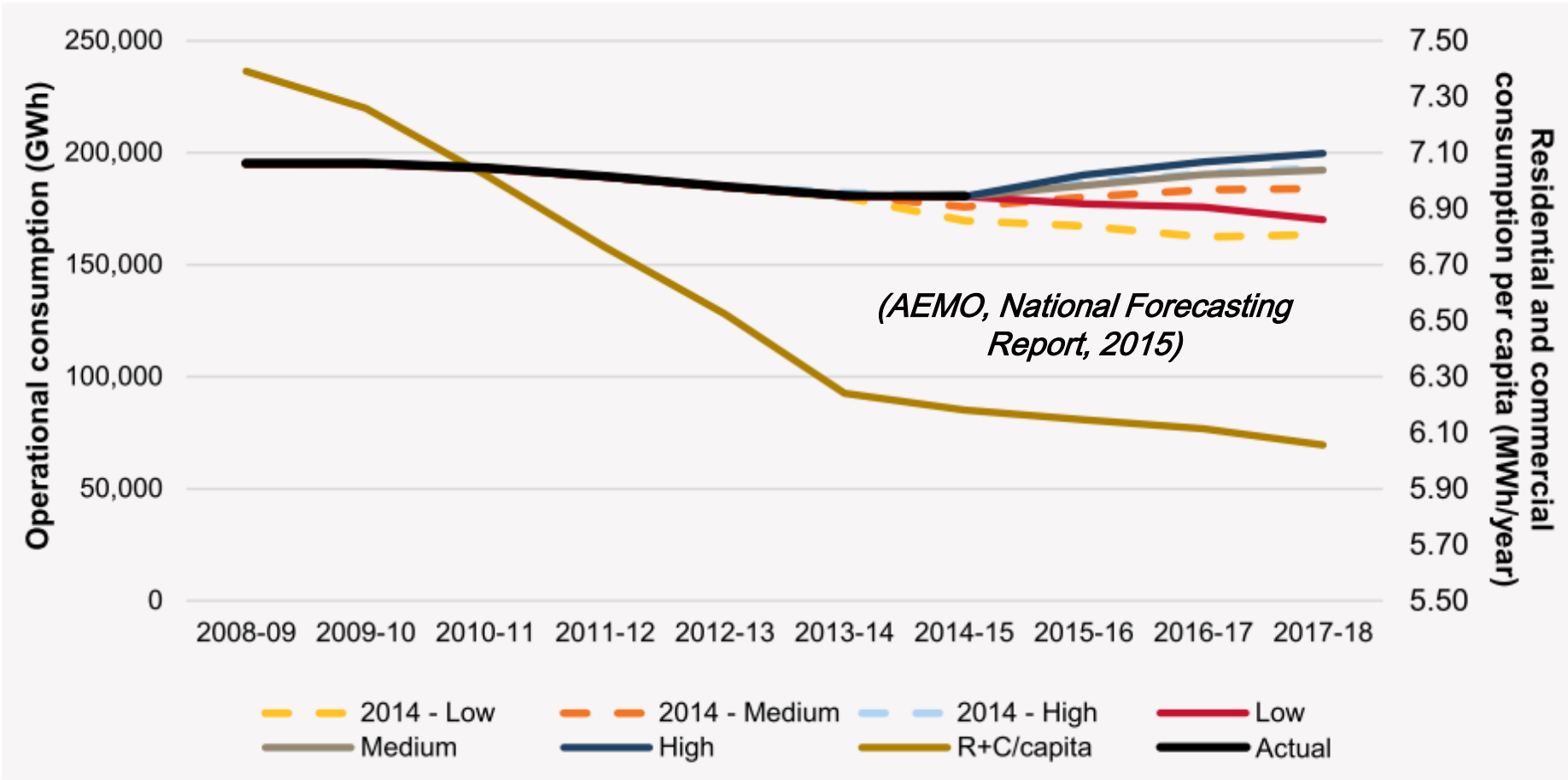


PV now offering some real competition



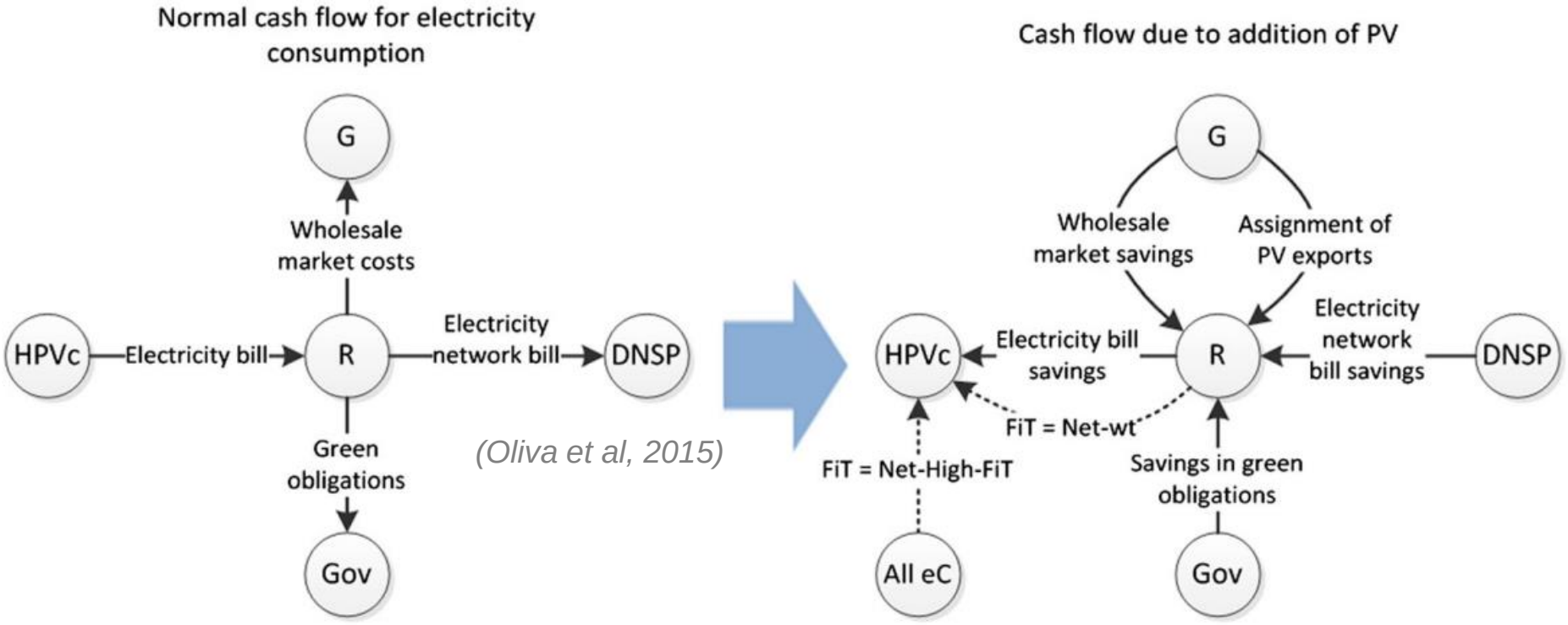
End-users are also responding with EE

(facilitated by range of govt EE policy efforts)



How is this impacting incumbents?

follow the money, particularly falling revenues from households with PV, perhaps soon with Battery Systems



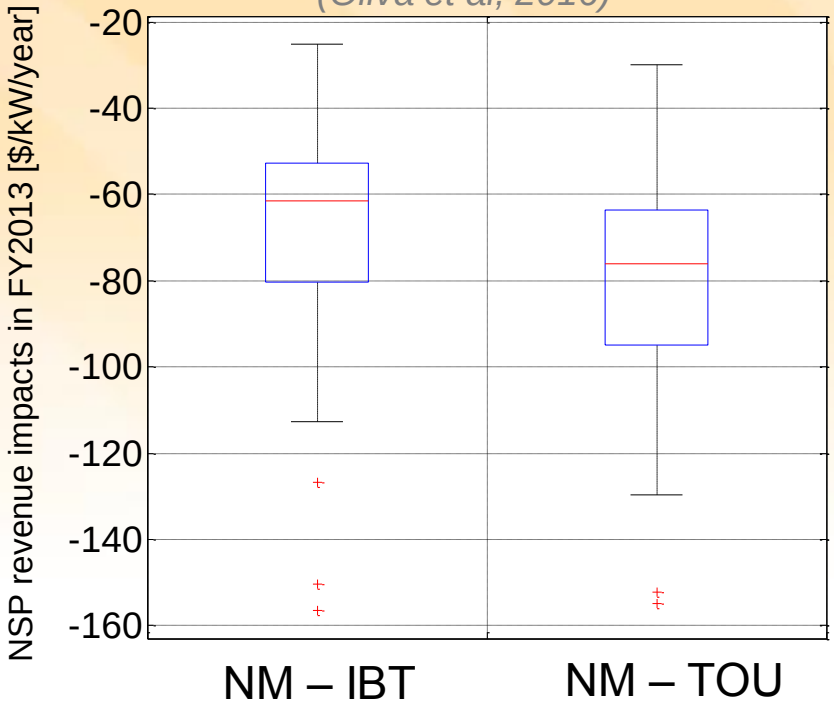
HPVc: Household PV customers
R: Electricity retailers
DNSP: Distribution network service providers

G: Generators
Gov: NSW government
All eC: All electricity customers

Potentially adverse revenue impacts on retailers, even more on DNSPs

- Net metering with low export rate favors household self consumption with volume based flat, TOU tariffs
- Possible major revenue impacts for key industry stakeholders

(Oliva et al, 2016)



PV unit size	Median annual net exports (kWh)	Median daily net exports (kWh)	Median annual export ratio
1.0 kW	393	1.1	32%
1.5 kW	616	1.7	35%
2.0 kW	1,007	2.8	41%
3.0 kW	1,703	4.7	49%
4.0 kW	2,378	6.5	52%
5.0 kW	2,921	8.0	50%

(Ausgrid/IPART, 2012)

Possible incumbent responses

- For DNSPs under monopoly economic regulation, revenue cap based on approved expenditure can correct revenue shortfalls
  - Changing current tariff levels (eg. volumetric c/kWh)
  - via more fundamental tariff restructuring (mix across fixed, consumption and perhaps peak demand charges)
- The risks
  - No unprofitable customers for DNSPS if can get approval for expenditure required to serve them; *how do we incentive businesses to facilitate PV households to deploy DSP and storage in order to reduce peak demand hence required network capacity and longer-term expenditure*?
  - Network tariffs have wide range of cross-subsidies already – between households with and without Air-C, city versus regional and rural, as well as those with PV versus those without. *If solar cross-subsidies are to be targeted, what about the rest of these?*

Facilitating greater consumer engagement – *in principle* ***(AEMC, Power of Choice, 2012)***

The recommendations form a package of integrated reforms and act to facilitate efficient DSP in two ways:

- Enabling consumers to see and access the value of taking up demand side options; and
- Enabling the market to support consumer choice through better incentives to capture the value of DSP options and through decreasing transaction costs and information barriers.

The Power of choice review has identified opportunities for consumers to make more informed choices about the way they use electricity. Consumers require tools - information, education, and technology, and flexible pricing options - to make efficient consumption decisions. Recommendations presented in this report will support these conditions and enable consumers to have more control of their electricity expenditure.

Federal Government Perspective:

- Retail competition
  - *"…development of market frameworks to encourage innovative products & services that give consumers more choice in managing bills & support greater competition" "Regulation should generally encourage competition & consumer choice, not stifle it"*

(Federal Energy White Paper, 2015,)

Facilitating greater engagement *in practice?*

'Cost Reflective Tariff' reform to date seems to involve steep declining block tariffs, increasing fixed charges, 'non-peak demand' demand charges

All limit consumer options to invest in new technologies and behave in ways that reduce bills while also reducing longer-term network expenditure

Fixed charges for households will jump more than 20 per cent to $1.07 a day, meaning that with GST, households will pay a minimum $428 a year on fixed charges, no matter how little electricity they consume.

The consumption rate has been cut to 22c/kWh but this means nothing for households that consume around 7kWh a day – pensioners and single person households for instance, and others who pay attention to energy efficiency.

Their annual bill will now be more than $1,050 – which equates to a rate of 42c/kWh, probably the highest in the world. And their ability to offset that with solar is greatly reduced because so much of the cost is unavoidable.

But small businesses – butchers, restaurants, takeaway food installations, or anyone using refrigeration and cooking – face an even greater proportion of fixed charges under the new scheme.

Demand Charge –	
$37.730 per kilowatt per month of chargeable demand.	
Energy Charge –	
All Consumption	**10.529 c/kWh**
plus a Service Fee per metering point per day of	**5,072.121 c**

(Reneweconomy, 2015)

According to the new tariff 44 (above) – which will now be compulsory for businesses consuming more than 100MWh a year (275kWh a day) – the fixed charge will be $50 a day, or $8,000 a year including GST.

The consumption rate is slashed to just 10.6c/kWh, or around $27 a day, which means that if a business uses just over 100MWh a year, its bill will be two-thirds unavoidable fixed charge, and one-third on consumption.

But it gets worse. If, on just one day a month, the business's consumption goes over 30kW on average in any one 30 minute period, the business will be hit with a "demand charge". If it uses 40kW in that time period, for instance, it will pay another $400 for that month, even if that day's consumption was a one-off.

And to top it off, all consumers will face as-yet unspecified "metering charges".

As we reported last year, fixed charges for the biggest consumers have jumped even more extravagantly to nearly $500 a day

The death of the 'death spiral'?

Argued that rising prices encourage end-users to reduce consumption or even leave, meaning fixed costs have to be recovered from less and less consumption and/or customers

However; s*avings from demand reduction depend critically on energy/network tariffs..and end-user departure depends critically on DG technology progress, particularly storage*

(via google news archive)

Thursday, August 4, 1983 — THE NEWS — Page 7A

Utilities grapple new enemy: a rate increase 'death spiral'

By Jack Danforth
Orlando Sentinel

TACOMA, Wash. — There is a new buzz word surfacing in Pacific Northwest electric utilities these days. It is the "death spiral." The concept is simple, and consumers of electric power from Florida to Alaska have recognized it for years.

A death spiral occurs during periods of rising electric rates. The theory is that as electricity demand increases, electric utilities are forced to build expensive new power plants.

This causes electric rates to rise and consumers to use less power. Electric utilities have large fixed costs, so as demand — thus revenue — is reduced, rates must be increased again, causing further reductions in consumption, and the cycle is repeated: a death spiral.

The recent collapse of the Washington Public Power Supply System, also known as Whoops, has focused attention on the death spiral. In this region, electric rates for some utilities have tripled during the past three years.

The increases and the Whoops collapse have forced utilities, for the first time in the industry's history, to come to grips with the possibility that they have reached the limits of their customers' pocketbooks.

It long has been known that there is a finite amount of money available in the family budget for the electric bill. Consumers have different limits, but when taken as a whole there clearly is an economic wall that electric utilities cannot go past.

For the past 30 years, energy prices have been so low and relative incomes so high that the "wall" was far

alternative sources: gas-fired fuel cells, photovoltaic cells and a more efficient end-use of conventional resources, all of which are distinct possibilities within the next decade.

The old days of building more power plants regardless of the cost are gone. Utilities that continue that philosophy ultimately will be priced out of the market.

Conservation still is a vital cog in our energy policy of the 1980s. It is a dangerous oversimplification to say that conservation at a time of surplus energy only further reduces utility revenues, thus causing higher rates.

Programs as simple as the rebate program in Kissimmee, Fla., are one of the most cost-effective methods of stimulating energy efficiency in the country.

The rebate program concept originated there in 1981 and now is being used successfully by such major utilities as Pacific Gas & Electric in California. In these programs, utilities help customers pay the cost of conservation improvements, which is cheaper than building another expensive plant.

But consumers must understand that it is not a contradiction to promote more use of electricity, more industry and conservation at the same time. In many areas, thousands of kilowatts of electricity are available during off-peak times without building another plant. That results in a lower average cost of energy production.

There are times, of course, in a growing economy, when a new generating plant must be built. But that should not be done until the u ility has explored all the cheaper alternatives — con ervation and helping industries generate their own power from wasted

Leaving the grid – the ultimate N/W competition?

- The grid a very valuable asset – not because of sunk investment, but because of very valuable service it provides.
- With regard to possible grid defection, storage deployment etc, all mkt forecasts wrong… although some may be useful
- Do not under-estimate the costs and challenges of off-grid supply – average demand and PV generation is irrelevant to understanding reliability of supply
- *However, distributed storage, DSP and generation providing an increasingly attractive option and alternative – may provide a useful discipline to network pricing*
- *And excellent fringe-of-grid opportunities, if DNSPs ready, willing and able to pursue them*

Possible risk with renewables + energy storage

- A potentially influential confluence between those who support energy storage for the wide ranging roles it can play in better integrating renewable energy into electricity industry while saving users and networks $
- …and those perhaps happy to see renewables saddled with costly energy storage obligations, or arguing for ‘light handed’ network regulation on basis that competition will discipline DNSP behaviour

Bootleggers and Baptists

From Wikipedia, the free encyclopedia

Bootleggers and Baptists is a catch-phrase invented by regulatory economist Bruce Yandle[1] for the observation that regulations are supported by both groups that want the ostensible purpose of the regulation and groups that profit from undermining that purpose.[2]

For much of the 20th century, Baptists and other evangelical Christians were prominent in political activism for Sunday closing laws restricting the sale of alcohol. Bootleggers sold alcohol illegally, and got more business if legal sales were restricted.[1] "Such a coalition makes it easier for politicians to favor both groups. … [T]he Baptists lower the costs of favor-seeking for the bootleggers, because politicians can pose as being motivated purely by the public interest even while they promote the interests of well-funded businesses. … [Baptists] take the moral high ground, while the bootleggers persuade the politicians quietly, behind closed doors."[3]

Contents

Californian police agents dump illegal alcohol in 1925, Prohibition-era photo courtesy Orange County Archives.

Is Cost Reflective Pricing a:

- **Panacea –** No, clearly not
- **Pandora's box –** Yes, given experience to date and flawed broader context within which CRT resides
- **Predicament –** certainly some predicaments where we have no perfect answers, yet still opportunities to progress
- **Phantasy –** seems likely given unrealistic expectations that seem to placed on CRT to address current inadequacies in the electricity industry's end-user interface

Possible conclusions

- Cost Reflective Tariffs certainly provide a possible *means* to improve desired electricity *ends* of an affordable, secure, environmentally sustainable energy services
- *…but also an opportunity to work against these, even with the best of intentions*
  - More Cost Reflective Tariffs will reduce cost of energy consumption, in a market that doesn't currently price environmental externalities driven by consumption; *may actually reduce economic efficiency of overall retail prices given this*
- And we still need better institutional + regulatory arrangements to facilitate appropriate end-user engagement in the provision of their energy services
- And doesn't relieve DNSPs of their key role in such facilitation, or regulators and market makers of their key roles either

Where next?

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

Abraham Lincoln

"That depends…"

– *certainly opportunities to improve outcomes from what look to be current directions*

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Thank you… and *questions*

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