Market Power Update

A SACOSS Energy Briefing Paper

April 2015

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Executive Summary

South Australian households spend over a billion dollars each year on electricity. The 2-year price freeze negotiated with incumbent electricity supplier AGL by the South Australian Government as part of price deregulation in SA expired on February 1st 2015. South Australians are now solely reliant on a competitive electricity market to contain prices.

Due to the importance of this to consumers, SACOSS provides ongoing scrutiny of the effectiveness of competition in the South Australian energy market. This 2015 update coincides with the 15 year anniversary of the privatisation of the state's electricity assets. AGL bought the entire retail franchise in January 2000 and, 15 years later continues to retain over half of the market's customers[1]. Since 2007, AGL has also operated the state's largest generator: Torrens Island Power Station (TIPS) – a 1280MW gas-fired powered station in a market whose demand only occasionally exceeds 3000 MW[2].

AGL Energy's dominant market shares in both generation and retail are defining attributes of the South Australian electricity market. Market data collated for this report indicates that AGL may be turning its competitive focus to the emerging 'behind the meter' market – a market that is forecast to not only meet all future growth but to also erode the size of the existing wholesale market.

This is a changing context for the consideration of competition in the South Australian market. This is not to say that attention should shift entirely from the wholesale market nor that the issue of market power might not also appear 'behind the meter' but it does imply both new risks and new opportunities for consumers.

[1] Australian Energy Regulator 2014, State of the Energy Market, p. 127.

[2] Information on the AGL acquisition of TIPS is summarised in a supplementary AGL Submission to the AEMC review of the Effectiveness of Competition in the Electricity and Gas Retail Markets in South Australia September 2008, http://www.aemc.gov.au/Media/docs/AGL%20Supplementary-760a4c20-1864-4bf1-adda-19a697969a7c-0.pdf

Contents

South Australia is a 'special case'

Two years ago, in April 2013, the AEMC completed an investigation into Generator Market Power and found that the SA market was a special case in this regard and "… *potentially more prone to inhibiting efficient investment and promoting the likelihood of substantial market power*"[3].

Most recently, the AEMC's April 2015 Draft Determination on the *Bidding in Good Faith* Rule Change Proposal resisted aspects of the rule change proposed by the South Australian Minister for Energy on the basis that;

> *"The Commission considers that rules are not an effective means to compensate for a non-competitive industry structure"*[4].

This is not the first time that industry structures have been raised as a barrier to competition. The Case Study prepared for the AEMC to celebrate 15 years of the National Electricity Market (NEM) stated[5]:

> *"Getting industry structures right was key for effective competition"* and that *"… there is an explicit trade-off between the benefits of a competitive industry structure and maximising sales proceeds from privatisation. The gains for the economy of a competitive industry structure needs to take precedence over the fiscal impacts of privatisation. To do otherwise poses a risk to the benefits of the reform being sustained."*

SACOSS is of the view that these comments relate to the South Australian situation and that the market power issues in SA are largely structural. They relate to the monopoly of AGL at market start and their later ownership of such a large generator in such a relatively small market. SACOSS is of the view that this is particularly relevant to the way that competition is judged in the South Australian market.

[3] AEMC 2013, Potential Generator Market Power in the NEM, http://aemc.gov.au/getattachment/3bed8068-c828-4604-8527-51f74a070662/Information-Sheet-South-Australia.aspx

[4] AEMC 2015, Bidding in good faith Draft Determination, http://www.aemc.gov.au/getattachment/f0899ae1-d59e-4531-911a-c1fe87383428/Information-sheet.aspx

[5] AEMC and KPMG 2013. National Electricity Market, A case study in successful microeconomic reform, http://www.aemc.gov.au/getattachment/8c426f7d-ea5c-4823-9b86-510dfd4e82dd/The-National-Electricity-Market-A-case-study-in-mi.aspx

Introduction to the 'small customer' electricity market in SA

This report focusses on competition in the small customer market. The South Australian 'small customer' electricity market serves over 820,000 individual connections generating $1.4bn in retail sales from 5.2GWh of electricity. Of this;

- around 720,000 residential providing revenue of around $1,100m pa from around 4GWh of electricity and,
- 90,000 small business providing revenue of around $330m pa from around 1.3GWh of electricity

These figures contrast the 'large customer market' where around 7,000 customers provide around $1bn in revenue from 7.6 GWh of electricity. This 100-fold difference in the number of customers explains why the small customer cohort is often just referred to as "the mass market."

Further, the small customer market is settled against a single Net System Load Profile (NSLP) – in effect retailers must buy in the wholesale market for a single, aggregated load profile that is only finalised weeks after its costs have been incurred. Large customers are settled against their individual metering data. This 'peaky' load profile of small customers is significantly more costly to serve than the more stable demands of large customers. This is illustrated in Figure 1 by comparing the NSLP and the 'rest of demand' for January 15th 2014 – part of a recent heatwave and a day when prices stayed above $300/MWh from around 9AM to 7PM.

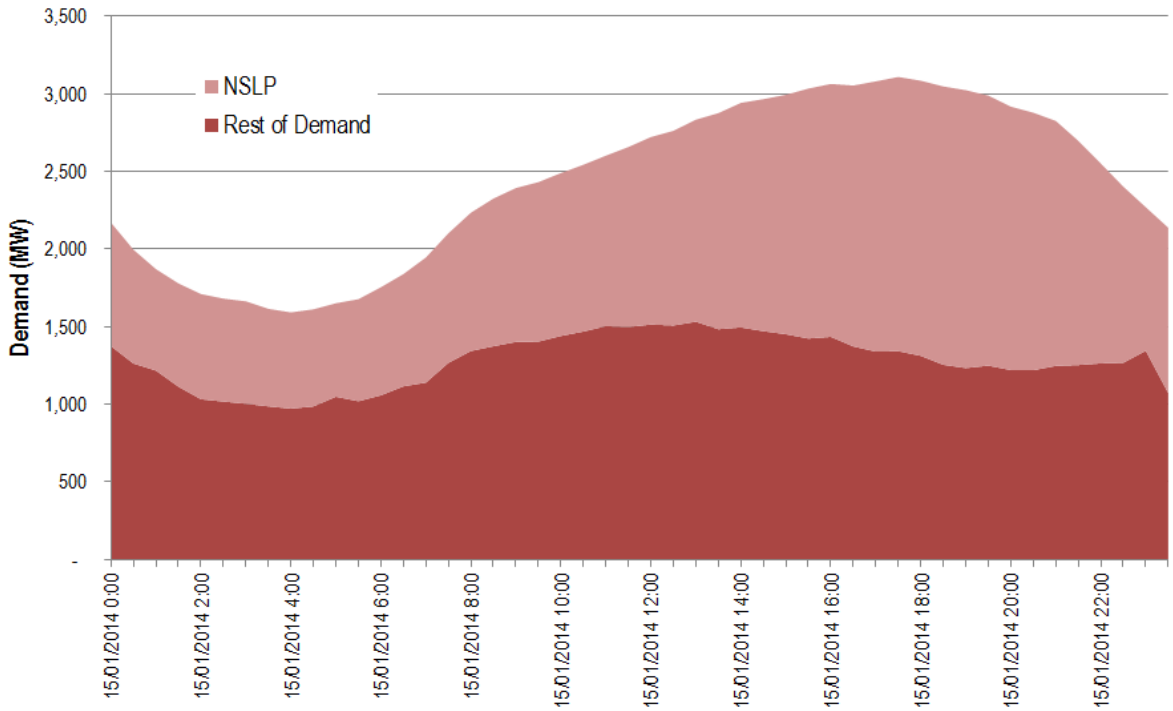


Figure 1: South Australia electricity demand profiles, January 15th 2014. Source: AEMO[6].

[6] Australian Energy Market Operator: www.aemo.com.au/Electricity/Data/Metering/Load-Profiles

However, it can be seen from SAPN data that overall declines in annual energy consumption are mainly confined to the residential sector as shown in Figure 2, below. This has important implications for the level of competition in the small customer market – a market dominated by households and a market that is shrinking.

Figure 2: Comparison of annual electricity volumes delivered to residential vs non-residential customers. Source: SAPN Regulatory Information Notice responses via AER[7].

[7] SA Power Networks Network Information – RIN responses at www.aer.gov.au/node/24388

Vertical Integration

Based on market data (from AEMO, ESCOSA and the AER), SACOSS estimates that 98%[8] of retail electricity customers (households and small businesses consuming less than 160 MWh of electricity per annum) are supplied by vertically integrated (generation + retail or "*gentailer*") energy businesses: AGL Energy (including subsidiary retailer Powerdirect), Origin Energy, Energy Australia, GDF Suez Australia (Simply Energy), Alinta Energy and SnowyHydro (Red Energy, ex-Infratil generators and Lumo).

Customer Numbers according to ESCOSA's latest ministerial pricing report, as at June 30 2014:

Retailer	Customer Numbers 30 June **2013**	Customer Numbers 30 June **2014**	Market Share 30 June **2013**	Market Share 30 June **2014**	Generation Capacity per Small Customer
AGL + PowerDirect	438,948	431,134	52.4%	51.1%	2.9 kW
Origin	157,927	164,147	18.9%	19.5%	2.6 kW
EnergyAustralia	95,315	85,575	11.4%	10.1%	2.3 kW
Simply	68,958	73,004	8.2%	8.7%	10.2 kW
Lumo + Red	52,093	49,637	6.2%	5.9%	2.6 kW
Alinta	14,095	25,505	1.7%	3.0%	21.4 kW
Momentum	9,265	12,362	1.1%	1.5%	*Footnote*[6]
Sanctuary	612	644	0.1%	0.1%	
QEnergy	134	463	<0.1%	0.1%	
Diamond	137	339	<0.1%	0.0%	
M2 Energy (dodo)	-	297	-	0.0%	
PacificHydro Retail	-	112	-	0.0%	
ERM Power	37	83	<0.1%	0.0%	
Progressive Green	-	2	-	0.0%	
Total all retailers	**837,521**	**843,304**	**100%**	**100%**	

Table 1: South Australian small electricity customer market shares 2013-14. Source: ESCOSA[9]

[8] It is noted that Momentum is the retail arm of Hydro Tasmania and is therefore also paired with hydro, wind and gas generation assets in Tasmania and trading rights to the Starfish Hill Windfarm. It is unclear just how effective these assets are in managing wholesale market risks in the South Australian region of the NEM so they have been left off the gentailer assessment. Including these customers would mean around 99.5% of customers are supplied from a gentailer.

[9] 2014 Ministerial Pricing Report from: www.escosa.sa.gov.au/electricity-overview/pricing-access/price-monitoring.aspx

In our view, it is clear that the *gentailer* model comprehensively dominates the SA market and that when examining competition, the wholesale and retail electricity markets in SA should not be analysed separately.

The Pivotal Generator

The AER has recently elaborated on the concept of the 'pivotal generator' – the situation where a generator is of sufficient size that under certain conditions must be called upon to meet demand. This occurs in each NEM region but is most acutely illustrated by AGL's Torrens Island Power Station (TIPS) in the South Australian market. From the AER's State of the Market 2013[10]:

> ***Illustration of the pivotal generator concept:***
>
> *"The AER published a detailed report on the South Australian market during April–May 2013. It did not find evidence of generators engaging in significant short term strategic bidding to capitalise on market conditions during this period. Instead, a general withdrawal of capacity created tight conditions that left AGL Energy's Torrens Island plant strongly positioned to materially influence spot prices.*
>
> *During this period, it was the key generator available to meet demand when the interconnectors were importing at limit and/or wind output was low".*

This is further illustrated by the AER's 'barometers of competition in the NEM' and the following table from the AER's State of the Energy Market 2013 illustrating the percentage of time that a region's largest generator is pivotal. This is most acute in SA[11]:

Table 1.9 Percentage of time when the largest generator is pivotal, 2012–13

QLD	NSW	VIC	SA
17	18	20	29

Source: AER.

And again in the AER's State of the Energy Market 2014:

> *"Among the regions, the largest generator (AGL Energy) was most pivotal in South Australia, and the need for it to meet peak demand increased in 2013–14"*[12].

In its 2012 State of the Energy Market report, the AER observed:

> *"AGL Energy's strategic withholding of generation capacity contributed to average spot prices in South Australia being significantly above those in other NEM regions between 2007-08 and 2009-10"*[13].

[10] AER 2013, State of the Energy Market, p. 43.

[11] ibid, p. 52.

[12] AER 2014, State of the Energy Market, p. 57.

[13] AER 2012, State of the Energy Market, p. 47.

SACOSS notes that AGL (and its wholly owned subsidiary Powerdirect) managed to stabilise market share at around 55% since 2007-8. This is illustrated in Figure 3 (noting that since December 2012, the AER has been responsible for reporting retail statistics but does not include separate reporting of Powerdirect. However, ESCOSA reported in 2014 that as at June 2014, the combined businesses had a market share of just over 51%). Clearly AGL's purchase of Torrens Island Power Station in July 2007 coincides with the stabilisation of its market share.

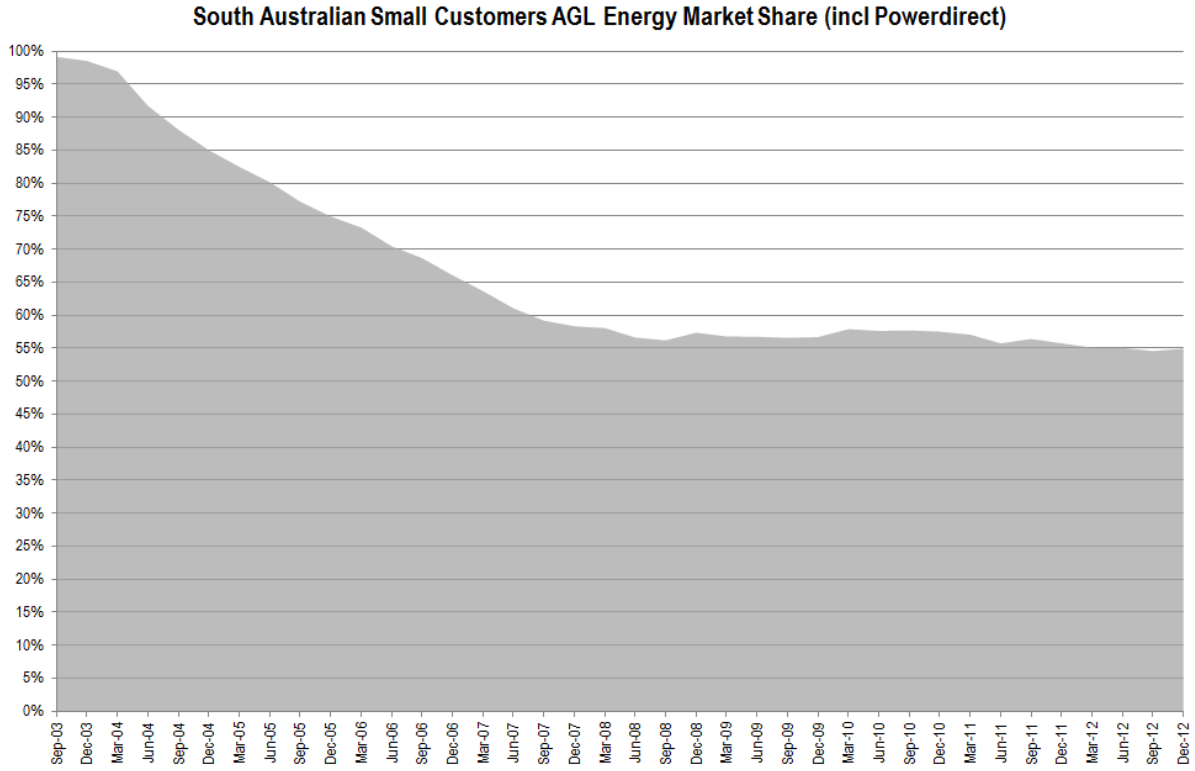


Figure 3: AGL Energy electricity small customer market share 2003-12. Source: ESCOSA[14].

[14] Energy Retail Market time series data from ESCOSA Annual Performance reports available from: www.escosa.sa.gov.au/electricity-overview/reporting-and-compliance/annual-performance-reports.aspx

Behavioural Indicators of Market Power: The $300/MWh threshold

The wholesale market spot price can vary in a range from -$1,000/MWh to $13,500/MWh with $300/MWh being a recognised marker of 'high' spot prices. A key risk facing a retailer is that they will be exposed to price spikes. Retailers can take out insurance from generators through 'cap' contracts that limit their exposure to price spikes by capping an effective price of $300/MWh[15]. By analysing the behaviour of the key generator-retailers when prices climb above the $300/MWh threshold, it is clear that any new retailer seeking to buy 'cap' contracts would often have to go to one of these generator-retailers to buy it. In effect, the price of managing risk - a critical part of participating in the market - is set by your competitors in the retail market.

In 2013 SACOSS partnered with Carnegie Mellon University (Australia) to investigate the impact of wholesale market power on South Australian electricity prices. The project investigated price spikes of April and May 2013 and complemented the Special Report published by the AER[16]. The project recommended SACOSS monitor the prevalence of wholesale prices in excess of $300/MWh – the market price used as basis for "cap" hedge contracts in the NEM in order to quantify the potential scale of the issue.

SACOSS subsequently purchased a license for the NEMReview[17] software package and analysed the trading intervals (i.e. the half-hourly intervals) where the average price exceeded $300/MWh for the period from April 2007 to the end of March 2015. It was observed that the nature of the events seem to be changing. In Figure 4, it is shown that the average turnover in each event has fallen – even despite the spike in the number of >$300/MWh intervals in the 12 months to March 2014 (as noted in the earlier illustration of the pivotal generator concept). This suggests a change in market dynamics over time where, possibly, other market participants are responding during an exercise of market power which is making it harder for any exercise of market power to be *sustained*. The decline in residential demand since 2010 may also be relevant. The number of intervals are as high as 2008 but total value of it (average value per cent) is low.

[15] ASX 2015, Quarter Base $300 Cap Products, https://asxenergy.com.au/products/electricity_futures/quarterly_300_caps

16 AER 2013, Special Report – Market outcomes in South Australia during April and May 2013, http://www.aer.gov.au/sites/default/files/20130801%20-%20Special%20Report%20-%20Market%20outcomes%20in%20South%20Australia%20April%20May%202013.pdf

17 More information is available here: http://v6.nem-review.info/what/index.aspx

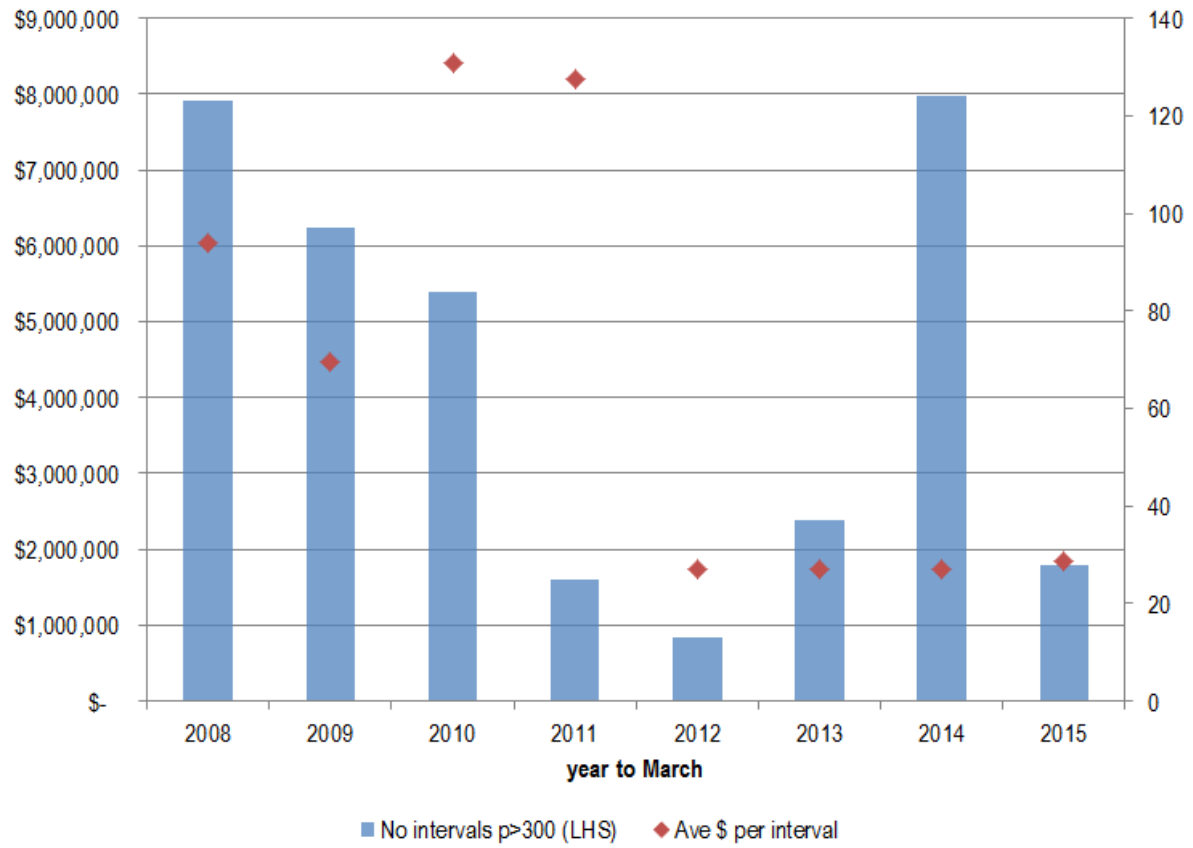


Figure 4: Trading Intervals in excess of $300/MWh, South Australian NEM Region
Source: SACOSS analysis of AEMO market data[18] via NEMReview[19]

Figure 5, below, illustrates the impact of these >$300/MWh events on the volume weighted annual average wholesale price for South Australia. An estimate has been made of the carbon price in the years in which it applied (July 2012 to June 2014) in order to reveal a relatively comparable time series[20].

[18] Electricity price and demand data is published here: www.aemo.com.au/Electricity/Data/Price-and-Demand

19 More information is available here: http://v6.nem-review.info/what/index.aspx

20 Carbon price applied simply as $23/t and 0.75t/MWh to provide an indicative result

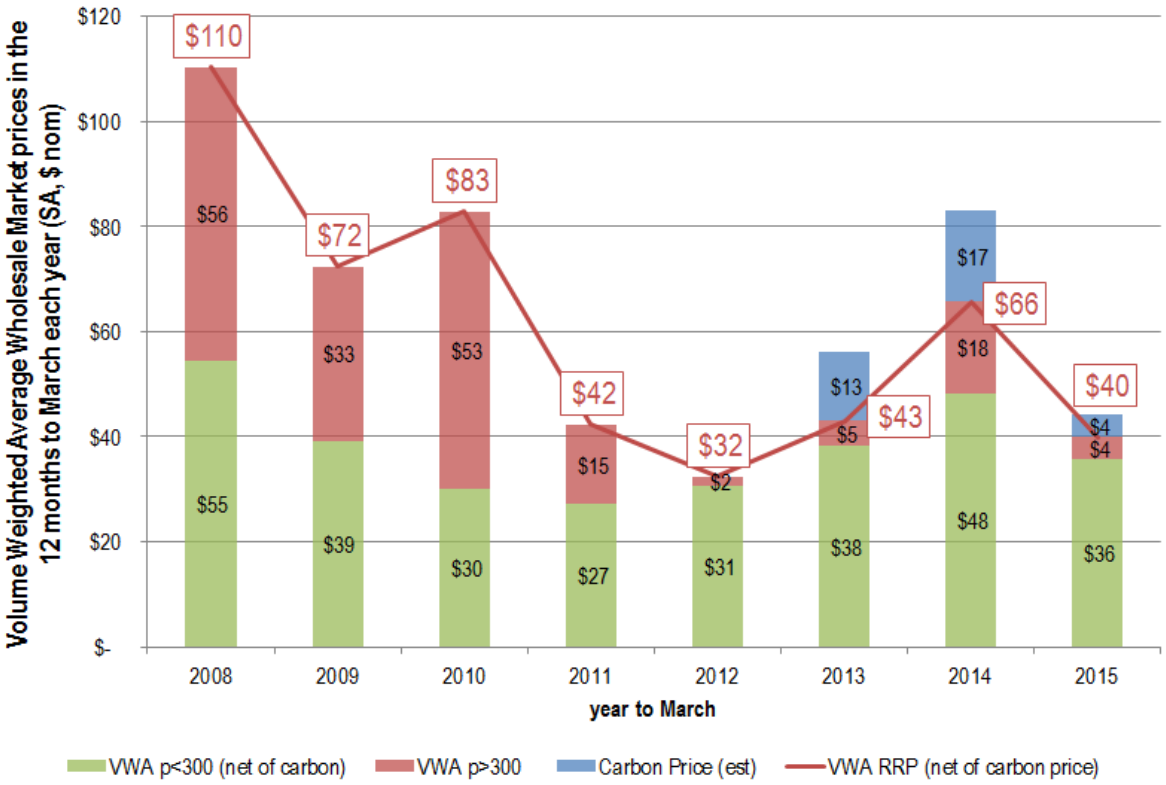


Figure 5: Components of Volume Weighted Annual Average Regional Reference Price (VWA RRP), South Australian NEM Region. Source: SACOSS analysis of AEMO market data[21] via NEMReview[22].

Figure 5 certainly appears to indicate that price spikes have had a relatively subdued role in the market over the four years to March 2015. The increase in high priced intervals in the year to March 2014 clearly did manifest as a sharp increase in the annual average price in that year but – importantly – had a much smaller impact than price spikes did for the 3 years to March 2010.

Reflecting on the illustration of the pivotal generator concept (from the AER State of the Market 2013, p. 43):

> ***Illustration of the pivotal generator concept:***
>
> *"The AER published a detailed report on the South Australian market during April–May 2013. It did not find evidence of generators engaging in significant short term strategic bidding to capitalise on market conditions during this period. Instead, a general withdrawal of capacity created tight conditions that left AGL Energy's Torrens Island plant strongly positioned to materially influence spot prices.*
>
> *During this period, it was the key generator available to meet demand when the interconnectors were importing at limit and/or wind output was low".*

[21] Electricity price and demand data is published here: www.aemo.com.au/Electricity/Data/Price-and-Demand

22 More information is available here: http://v6.nem-review.info/what/index.aspx

The *availability* of capacity to serve the market is an important criterion for the exercise of market power. On this subject, AGL announced their intent to mothball part of Torrens Island Power Station in 2017 "… [unless] *market conditions change materially*"[23]. Given that AGL announced a planned 700MW expansion of the plant 5 years earlier in 2009[24], it is unclear just how firm the announced mothballing is. The announcement to close TIPS 'A Station' would leave the 800MW of Torrens Island B Station as AGL's key generation asset. However, on current trends AGL is likely to retain close to 380,000 small customers (around 45% of the market) in 2017 and with only 800MW available would find itself with less generation capacity per customer than its main competitors (see Table 1).

However, it may be relevant that AGL is also expanding into more 'behind the meter' energy services – including solar and storage. The recent announcements of a corporate restructure[25] and of AGL's new Greenhouse Gas Policy[26] both indicate that AGL may be seeing the competitive frontier as changing from the wholesale market to the market 'behind the meter'.

[23] AGL 2014, media release, www.agl.com.au/about-agl/media-centre/article-list/2014/december/agl-to-mothball-south-australian-generating-units

24 ABC 2009, 'AGL plans Torrens Island expansion', http://www.abc.net.au/news/2009-11-06/agl-plans-torrens-island-expansion/1132522

25 AGL 2015, media release, http://www.agl.com.au/about-agl/media-centre/article-list/2015/april/changes-to-agl-leadership-structure-to-meet-future-industry-challenges emphasises the status of the 'New Energy' business

26 AGL 2015, media release, http://www.agl.com.au/about-agl/media-centre/article-list/2015/april/agl-policy-to-provide-pathway-to-decarbonisation-of-electricity-generation (17 April 2015) "AGL will make available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions."

Implications

To the extent that AGL is such a dominant influence on the South Australian market, it is worth noting that a more subdued wholesale market in recent times may be because attention is being placed on emerging and 'disruptive' technologies such as solar, storage and smarter meters.

It is worth noting that both AGL and Origin (over two-thirds of the market customers) have established 'energy services' companies that will operate solar power systems and sell electricity directly to customers from 'behind the meter' – bypassing the wholesale market for at least part of their demand. The AER establishes a register of all such businesses:

- AGL Energy Services Pty Ltd (trading as AGL Solar) retail exemption
  "AGL Solar proposes to provide solar photovoltaic (PV) power arrays to customers under the Power Purchase Agreement model at the individual customer's premise(s) to produce solar electricity"[27].
- Origin Energy Retail No.2 Pty Ltd individual exemption
  "The business activities proposed by OER2 involve the installation of distributed energy generation systems, such as a solar PV, at individual customer premises"[28].

SAPN commissioned modelling from consultants Energeia for its 2015-20 Regulatory Proposal to the AER that suggests that a majority of residential and business customers may have a *Distributed Energy Resource* (DER; solar and/or storage 'behind the meter') by the mid 2020's under a range of alternative tariff scenarios[29]. If this turns out to be accurate then the outlook is for long term reductions in the energy supplied from, and also the peak demand served by, centralised generation[30].

Energeia's Figure 59, reproduced below, shows how DER is projected to not only meet all growth in end-use consumption but erode the size of the market served by the current gentailers. With this as a context for the market, it is perhaps not surprising that the larger gentailers are also the early movers into the emerging market behind the meter.

[27] AER, AGL Energy Services Pty Limited retail exemption, p. 3, http://www.aer.gov.au/node/27633

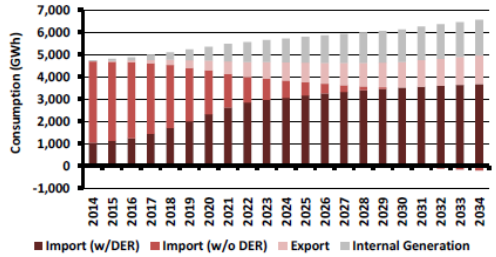
[28] AER, Origin Energy Retail No.2 Pty Ltd individual exemption, p. 1, http://www.aer.gov.au/node/27488

[29] Energeia and SA Power Networks 2014, Energy Assessment of Future Tariff Scenarios for South Australia, http://www.aer.gov.au/sites/default/files/SAPN%20-%205.3%20PUBLIC%20-%20Energeia%20Assessment%20of%20Future%20Tariff%20Scenarios%20for%20South%20Australia%20July%202014.pdf

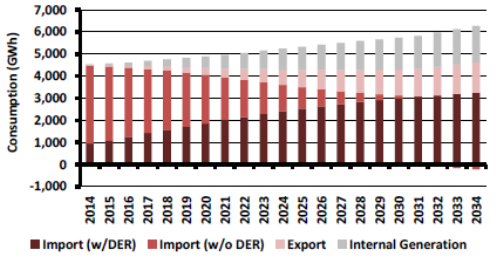
[30] Energeia and SA Power Networks 2014, Energy Assessment of Future Tariff Scenarios for South Australia, Fig 58 & 59 pp. 66 & 67.

Figure 59 – Cumulative Market Consumption

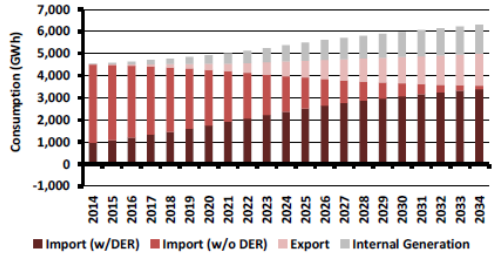
Tariff Type 1 (IBT)



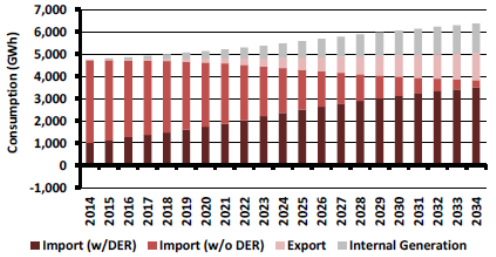
Tariff Type 2 (ToU)



Tariff Type 3 (MD + ToU)



Tariff Type 4 (MD + DPP)



Source: Energeia

Under all tariffs there is a reduction in energy supplied by centralised generation (imports). Under Tariff Type 1 and Tariff Type 2, where network revenue is directly related to consumption, this consumption decline gives rise to network price increases and a corresponding divergence in bills between customers adopting and not adopting DER. For the maximum demand tariff (Tariff Type 3 and 4) these effects are less pronounced as revenue is more strongly related to peak demand.

The electricity competition landscape appears to be taking on a new frontier and it will be one that has different characteristics to what exists now. This is not to say that attention should shift entirely from the wholesale market nor that the issue of market power might not also appear 'behind the meter' but it does imply both new risks and new opportunities for consumers.

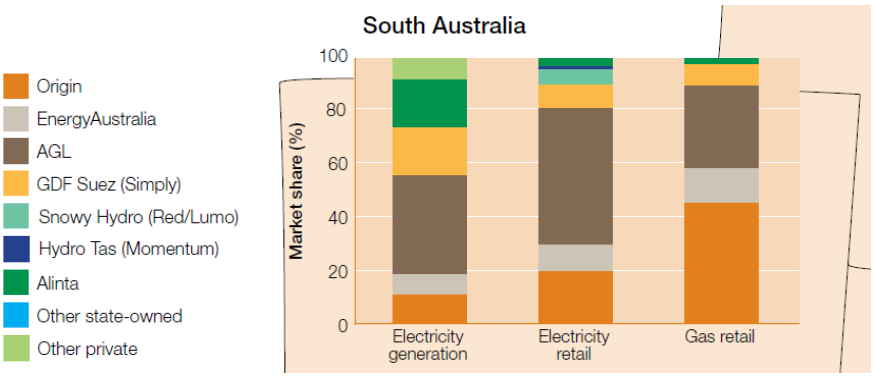
Annex A: A selection of regulatory commentary on market power in SA.

The Australian Energy Regulator (AER) recently stated:

> *"High levels of market concentration and vertical integration between generators and retailers give rise to a market structure that may, in certain conditions, provide opportunities for the exercise of market power …. In April 2013 the AEMC [Australian Energy Markets Commission] found potential for substantial market power to exist or be exercised in future in the NEM, particularly in South Australia"*[31].

AER State of the Energy Market 2014 p. 126:

Figure 5.2
Vertical integration in NEM jurisdictions, 2014



AER State of the Energy Market 2014 p. 127:

> *"South Australia's electricity sector is concentrated, with AGL Energy supplying over 50 per cent of retail customers. AGL Energy also controls 37 per cent of generation capacity. Origin Energy, EnergyAustralia, GDF Suez (Simply Energy) and Alinta are significant but minority players in both generation and retail. Gas for electricity generation is sourced mainly from the Cooper and Otway basins; Origin Energy is a producer in both basins."*

The AEMC considered the issue of *Generator Market Power* in its assessment of Rule Change ERC0123. Its final determination was to not make the rule proposed by the rule change proponent, the Major Energy Users Inc (MEU), nor make an alternate rule. However, the AEMC published a Fact Sheet with its final determination that focussed on the South Australian situation[32]. The fact sheet states:

> *"… the Commission's analysis has demonstrated that South Australia may have some characteristics that may make it different from other NEM regions and potentially more prone to inhibiting efficient investment and promoting the likelihood of substantial market power.*

[31] AER 2014, State of the Energy Market, p. 40.

[32] AEMC 2013, Potential Generator Market Power in the NEM, http://www.aemc.gov.au/getattachment/3bed8068-c828-4604-8527-51f74a070662/Information-Sheet-South-Australia.aspx

… Recognising the potential for substantial market power to exist or be exercised in the future, the AEMC has explored the possibility of making a rule which would confer on the Australian Energy Regulator (AER) a specific function to monitor the wholesale electricity market, but considers there is material doubt as to whether this function is compatible with the existing functions of the AER.

Therefore, the Commission recommends that the Standing Council on Energy and Resources (SCER) consider conferring on the AER such a monitoring function, and add accountability mechanisms to the AER's current information gathering powers in relation to this monitoring function.

An appropriately developed monitoring regime is a pre-requisite for identifying at an early stage any evidence that the efficient operation of the wholesale electricity market is constrained by the presence of significant barriers to entry or other features of the industry structure.

The monitoring would allow identified constraints to be addressed in the long term interests of consumers based on an understanding of the underlying cause(s).

This approach was supported by a number of stakeholders including the SA Minister for Mineral Resources and Energy.

This was discussed again at the December 2013 meeting of the Standing Council on Energy and Resources (SCER)[33]:

Other matters considered by Ministers**: **Market Power

SCER noted advice from officials on the potential need for amendments to the National Electricity Law (NEL) to introduce a new wholesale market monitoring function for the Australian Energy Regulator (AER). SCER requested officials further define requirements of and approach to a market monitoring function in the NEL.

[33] SCER 2013, Meeting Communiqué #5, http://www.scer.gov.au/files/2013/12/SCER-Communique-DEC-2013-v.2.pdf