
National Irrigators' Council, on behalf of the Agriculture Industries Energy Taskforce

ACCC 2017 inquiry into electricity prices

Sapere Research Group

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The views expressed in this document do not necessarily reflect the views of Energy Consumers Australia.

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Executive summary

Introduction

This report has been commissioned by the National Irrigators Council, on behalf of the Agriculture Industries Energy Taskforce¹, to support a submission to the ACCC inquiry into retail electricity supply and pricing. This project was part-funded by Energy Consumers Australia as part of its grants process for consumer advocacy projects and research projects for the benefit of consumers of electricity and natural gas. The views expressed in this document do not necessarily reflect the views of Energy Consumers Australia.

The report responds to the issues for comment in the ACCC's 31 May 2017 Issues Paper for the said inquiry. The focus of this report is interaction between the electricity retail market and primary producers purchasing electricity to power irrigation pumping equipment.

In Section 2, we set out the characteristics of irrigators and agricultural producers as electricity users. This includes a series of case studies on the impacts of rising power prices.

In Section 3, we set out evidence that electricity retail prices substantially exceed efficient costs. We note that excess costs, profits and prices exist not only the contestable parts of the supply chain; they also arise in parts of the supply chain that are subject to economic regulation.

In Sections 4 and 5, we set out characteristics of electricity markets, including various demand-side frictions, that interact to allow excess costs, profits and margins set out in Section 3 to arise in the first place. Each matter, when viewed individually, does not appear to represent a major issue; however in combination, they appear to be sufficient to explain the outcomes discussed in Section 2.

Agricultural producers

Australia has always been one of the world's most efficient agricultural producers, able to supply domestic demand for food and fibre at reasonable prices and to compete in export markets without distorting subsidies. 75 per cent of Australia's agricultural produce is exported, it is a trade exposed sector and that means production costs and prices are critical.

Electricity costs are a core input cost for much of Australia's agricultural product. This applies to product that is produced using irrigation, and product that requires packaging, processing or refrigeration. As the case studies cited in this report show, electricity costs are now making Australian irrigated products, in particular, less competitive.

¹ Agriculture Industries Energy Taskforce members: National Irrigators Council, National Farmers Federation, NSW Irrigators Council, CANEGROWERS, Queensland Farmers' Federation, NSW Farmers, Bundaberg Regional Irrigators Group, Cotton Australia, Central Irrigation Trust, Winemakers Federation of Australia.

Historically, in most parts of Australia, irrigators were able to purchase electricity under specially designed, price regulated irrigator tariffs. The design of these tariffs recognised that irrigators may use significant volumes of electricity.

The design also recognised that irrigator demand profiles are relatively “flat” and do not correspond with system wide demand peaks and associated congestion in generation and network capacity underpinned by cooling loads, particularly during heatwaves, which drive wholesale and network costs in the retail cost stack.²

Where irrigation tariffs remain, they are being phased out and replaced with business tariffs. This transition is coming at the same time as general increase of electricity prices above inflation, affecting agricultural production and profitability.

Efficient, competitive markets would offer irrigators, and other agricultural users, tariffs with average electricity prices that are lower than average prices for typical small business and residential customers. This is because, compared with irrigators and primary producers, typical small business and residential customer demand profiles are more likely to coincide with cooling loads.

Efficient tariff structures (if not levels) appear to apply for very large irrigators and other agricultural producers, because there is a high level of transparency over both network costs and individual demand profiles (as interval metering is used). Most agricultural producers are, however, on standard business tariffs, without interval meters. These tariffs incorporate a substantial price loading for cooling profiles that for the most part do not reflect primary producer profiles.

The fundamental concern for irrigators (and others in the agricultural sector) is the substantial rise in electricity prices well above the rate of inflation. For irrigating businesses, where electrically pumped water is a primary input to agricultural production, the rise in cost of production means that:

- costs cannot be passed on to price sensitive consumers, without affecting demand and profitability,
- agricultural production is reduced and profitability squeezed, and
- in many cases agricultural producers search out alternative sources of power supply.

Higher electricity prices are leading to many farmers making behind the meter investments in electricity efficiency and generation. Case studies across agricultural sectors and jurisdictions are provided in Section 2.2. In summary, farmers are making substantial investments to minimise or avoid rising electricity prices.

Demand response to efficient retail electricity prices is beneficial. However, as shown in this report, current costs, profits and prices across the NEM supply chain are well above efficient prices.

² It is important to note that ‘flat profiles’ here means relative to annual demand profiles and maximum annual demand, that drive wholesale and network costs. This is different from daily demand profiles that reflect the rotation of the earth. This is explained in section 3 of a 2016 report by the present authors: *Errors in Australian Energy Regulator’s Draft Decision on Ergon Energy’s 2016 Tariff Structure Statement*.
<https://tinyurl.com/ycgjmp6r>

Demand response to inefficient prices is not economically efficient or desirable. Investment in alternative generation as a result of inefficient prices, which is not available to agricultural producers, is not consistent with the National Electricity Objective; the long term interests of consumers of electricity with respect to price, quality, safety, reliability and security of supply. Such investment often has second round effects in the form of higher unit costs for monopoly services and reduced revenue for generation (contributing to reduced generation capacity). The result is that resource misallocation within the electricity sector is transmitted into other sectors of the economy.

Prices costs and profits

The substantial run up in retail prices is described in Figure 1 of the ACCC Issues Paper. There is ample evidence that typical electricity retail prices exceed efficient aggregate retail supply costs (the cost stack). By revealing the scale and source of these inefficiencies, the present ACCC inquiry can identify steps required toward addressing inefficiencies and excess profits across the NEM for all consumers, including irrigators.

Further substantial increases in prices and costs are already in train. These include the retail price increases effective from 1 July 2017 and the network price increases due to take place in NSW and the ACT from 1 July 2018.

There is no evidence that rising network and wholesale costs are leading to a substantial moderation in public retail prices offered by the major vertically and horizontally integrated retailers. However, there are indications that rising wholesale costs, and reduced liquidity, could further weaken the pockets of retail markets where competition is effective in constraining prices.

The causes of excess costs and prices include failures of:

- economic regulation to constrain costs and prices in the regulated parts of the supply chain – transmission and distribution; and
- regulatory monitoring of competitive markets to limit costs and prices in the competitive parts of the supply chain – wholesale and retail.

Excessive costs, profits and prices across the NEM are not consistent with the NEO and are suggest a major failure in the governance arrangements established under the Australian Energy Market Agreement, 30th June 2004.

Evidence is presented in Section 3 that costs, prices and profits across much of the sector, and at multiple points across the supply chain, exceed efficient costs, prices and profits. Despite being subject to price/revenue regulation, network costs, profits and prices also appear to be excessive.

There is evidence of substantial excess network capacity across many parts of the NEM. We have not been able to identify a corresponding reduction in the allowed cost of capital to accompany risk transfer associated with the move to the RAB roll-forward method for setting the RAB at the start of the following price period (replacing the previous method which included provision for asset optimisation). Consequently, it appears that network prices incorporate the double effect of excessive returns on an excessive asset base.

Current network prices incorporate substantial premiums to reflect increases in future network investment in response to new customer connections. Under the network pricing objective and associated principles, these costs should be recovered from connection charges, not from regulated network tariffs.

It is also likely that network connection costs and prices could be reduced if restrictions on competition in network connections services, outside NSW, were removed. Removal of these restrictions would also be beneficial in terms of minimising any network congestion arising from new connections.

The current limited merits review mechanism is expected to result in further increases in regulated network prices in NSW and the ACT, effective from 1 July 2019. Removal of limited merits review does not address the fundamental inefficiency with network prices due to the existence of excess capacity and most likely excess returns. These excess costs will continue to be permitted under the NER whatever changes are made to merits review.

Wholesale costs and prices have risen substantially over the last 18 months and are now clearly excessive relative to efficient generation costs. This reflects a complex set of factors including reluctance by the private sector to invest in new thermal generation due to ongoing uncertainty over carbon emissions abatement policies and lack of clarity over legal rights to emit carbon.

Reflecting ongoing policy uncertainty regarding future policy around pricing of carbon and obligations for low or zero emissions energy, in our view, environmental related costs and prices are higher than they should be. For example, over 2016 spot prices for Large Scale Renewable Energy Certificates were at or close to the post tax penalty cost of non-compliance with the Renewable Energy Target scheme, for extended periods. These prices have recently fallen, reflecting increased investment in renewable energy, but it is likely a significant premium remains.

Retail prices, now substantially exceed aggregate supply costs plus efficient and prudent retailer operating and other costs. This reflects the widespread presence of excessive retail margins.

On reviewing the most recent publicly available evidence, there is no reason to believe that the retailer margins of the major, vertically and horizontally integrated retailer margins have been adversely affected by higher wholesale prices. Smaller retailers, without physical hedges in the form of generation, are likely to be experiencing substantial pressure on their margins. This affects only a minority of retail customer accounts and further reduces competitive constraints on retail prices.

Price deregulation and monitoring

Safeguards to deter any exercise of market power – market monitoring – are not effective. In the absence of direct price regulation, energy retail market monitoring ('light touch' regulation) is intended to be a safeguard to deter any firms or groups of firms with market power from exercising such power, including by way of monopoly pricing. Monopoly pricing incorporates profits in excess of those required to compensate capital providers, including a margin for prudent risk.

When retail price caps were removed in the major NEM retail markets, no systematic market monitoring arrangements were put in place. This contrasts with other markets following removal of price regulation, where market monitoring arrangements are put in place and where suppliers have legal obligations to supply data and information (disclosure requirements). Well known examples include fuel price and airport monitoring undertaken by the ACCC.

Limited retail market monitoring is undertaken by the AEMC, AER and some State regulators including IPART and the Essential Services Commission Victoria. For the most part, these reports do not focus on the effectiveness of competition to constrain margins and discipline efficient prices. Some limited retail market monitoring is undertaken by jurisdictional regulators but this is hampered by unwillingness so far to exercise data gathering powers.

The AER undertakes substantial wholesale market monitoring and exercises its information gathering powers. However, the AER's retail market monitoring does not assess whether prices and margins are efficient and consistent with competition.

This most likely reflects the Australian Energy Market Agreement which suggests responsibility for retail market competition rests with the AEMC. While the AEMC has undertaken a series of reviews considering the effectiveness of retail competition, its conclusions are not evidence based.

The AEMC has undertaken a series of reviews on the effectiveness of retail competition. However, these do not test whether competition is effective. In its first national review of the effectiveness of retail competition, in 2014, the AEMC concluded that Victorian retail prices substantially exceeded prices in other markets, when normalised for differences observable in supply costs. While concluding that retail competition was effective, it did not entertain the possibility that retail prices incorporated excess cost recovery, reflecting the existence of market power on the part of retailers. In other words, its conclusion was not based on evidence.

Nevertheless, the AEMC's conclusion may have influenced a decision by the Australian Competition Tribunal to overturn a decision by the ACCC to reject AGL Energy's purchase of Macquarie Generation. This is because the Tribunal assumed retail margins were normal and hence there was no incentive for vertical foreclosure. The AEMC's conclusion on retail competition may also have influenced a later decision to reject proposals to constrain retailers from unilaterally changing prices during fixed term retail contracts.

There is an opportunity for the ACCC to exercise its information gathering powers to develop robust estimates of efficient aggregate electricity supply costs and thereby determine the extent actual prices exceed efficient prices. By exercising its data gathering powers, the ACCC may significantly reduce the uncertainties associated with estimating costs and profits, and offer a more robust set of conclusions regarding whether prices are consistent with the existence of workably competitive markets and effective economic regulation.

In turn, that transparency will enhance the ability for consumers, the intended beneficiaries of the NEM, to understand and test both supply and demand side practices in the market that may be obstacles to improved customer experiences in buying electricity services.

Market structure and nature of competition

Section 4 focuses on the supply side of retail electricity markets, and regulatory and market barriers to competitive energy markets being effective. It sets out a series of interconnecting hypotheses on how regulatory, market and other factors can have the combined effect of limiting the effectiveness of competition.

In combination, regulatory and market barriers have the effect that any smaller retailer seeking to expand is likely to face higher risks and costs than the major retailers with which it is competing. These barriers make it difficult for smaller retailers to reduce the aggregate market share of the larger retailers. As a result, smaller retailers may acquire customers based on offering lower prices compared with large retailers.

Collectively, however, smaller retailers seem unable to create a dynamic under which broad retail prices converge toward costs. A key barrier to expansion by smaller retailers is customer acquisition.

By contrast, statements by two of the three major retailers indicate their objective is to maximise their share of customer value, rather than increase market share. The fourth largest retailer, Snowy, has also expressed similar views. This raises the question whether the major retailers have strong incentives to expand and whether rivalry between major retailers is effective in constraining retail prices.

Customers and their interaction with the market

Effective markets require both demand and supply sides to be efficient and effective. Section 5 focuses on the demand side, and demand side frictions that contribute to and help explain why retail market outcomes do not appear to be consistent with workably effective competition.³

Retail market frictions principally take the form of high search costs for consumers (the Diamond Paradox). This means that competition is only effective in constraining prices in some smaller market segments. The key frictions are search costs and switching costs, with search costs generally agreed as being the most important. Search costs have significant impacts on market efficiency.

One example of this is the Diamond paradox.⁴ This occurs when, despite there being multiple firms, they can charge monopoly prices. If there are material search costs, and consumers think that firms are all charging at the same level, consumers may not be bothered searching for better prices but simply choose a firm at random (or where default contracts are available, make no choice at all). The profit maximising response for firms is to charge a monopoly (significantly higher than efficient cost) price for these consumers.

³ Workably effective competition is a far less demanding standard than perfect competition.

⁴ See a brief explanation here: http://economix.blogs.nytimes.com/2010/10/11/the-work-behind-the-nobel-prize/?_r=0

Potential outcomes

This report sets out a host of regulatory and market issues that inhibit workably effective competition in retail electricity markets across most of the NEM. These are for the most part set out in Sections 4 and 5. Viewed individually, each matter or issue may appear relatively innocuous. We would stress that the ACCC needs to view these issues collectively, noting that many are interactive and mutually-reinforcing. Key issues include:

- A small but significant set of remaining regulatory privileges for some but not all retailers
- High consumer search costs, in part due to complex tariffs and lack of consumer engagement
- Substantial barriers to expansion by smaller retailers
- Market structures including vertical and horizontal integration (a merger approval that appears to have been influenced by a view that retail margins are normal (and hence there is no incentive for vertical foreclosure)
- Weak incentives for rivalry among major, vertically integrated retailers and the potential for tacit collusion; and
- The absence of effective retail market monitoring to constrain any retailer market power.

By exercising its data gathering powers, the ACCC may significantly reduce the uncertainties associated with estimating costs and profits, and offer a more robust set of conclusions regarding whether prices are consistent with the existence of workably competitive markets and effective economic regulation. Being able to conclude that there are market and regulatory failures, the ACCC may then be able to test hypotheses on the origins of these failures and begin to identify remedies. It is suggested that the ACCC acquire data from retailers necessary to arrive at robust findings regarding:

1. Structural, competitive or behavioural issues in the industry;
2. Identification of any behaviour that raises concerns under the Competition and Consumer Act 2010;
3. Improved transparency regarding electricity offers and pricing;
4. Increased information about competition, pricing and other practices in the supply chain that may improve customer experiences in buying electricity services; and
 - (a) For the reasons set out earlier, the ACCC Inquiry should also review the regulated components of the supply chain.

Depending on its findings, we would also suggest the ACCC could consider and make recommendations on options for establishing a framework for effective ongoing regulatory monitoring of electricity and gas retail markets. This reflects our observation there is no such monitoring at present. Precedents in the airports and petrol retail sector may be useful in this regard.

1. Introduction

This report has been commissioned by the National Irrigators Council, on behalf of the Agriculture Industries Energy Taskforce⁵, to support a submission to the ACCC inquiry into retail electricity supply and pricing. This project was part-funded by Energy Consumers Australia as part of its grants process for consumer advocacy projects and research projects for the benefit of consumers of electricity and natural gas. The views expressed in this document do not necessarily reflect the views of Energy Consumers Australia.

The report responds to the issues for comment in the ACCC's 31 May 2017 Issues Paper for the said inquiry. The focus of this report is interaction between the electricity retail market and primary producers purchasing electricity to power irrigation pumping and other equipment. The report draws on previous work undertaken by the authors. Our relevant credentials are briefly summarised in Appendix 1.

The report commences in Section 2 with a description of the agricultural producers as a particular segment of consumers for whom energy is a key input in their productivity. This includes case studies of the price increases faced by agricultural producers and various responses, for a range of primary producers varying in scale, energy use, agricultural sectors and regions around Australia.

Following Section 2, the remainder of the report follows the structure of the ACCC's Issues Paper:

- Section 3 sets out evidence that costs, prices and profits across much of the sector, and at multiple points across the supply chain, exceed efficient costs, prices and profits. It includes a discussion on the impact of the removal of price regulation. It also evaluates the effectiveness of energy retail market monitoring by the relevant regulators in constraining pricing behaviour. We note that excess costs, profits and prices exist not only the contestable parts of the supply chain; they also arise in parts of the supply chain that are subject to economic regulation. Section 3 also includes a section proposing data the ACCC could request from retailers, in order to overcome data constraints to drawing robust conclusions regarding costs, prices and profitability across the sector.
- Section 4 sets out a series of interconnecting hypotheses on how regulatory, market and other factors can have the combined effect of limiting the effectiveness of competition. Each matter, when viewed individually, does not appear to represent a major issue; however in combination, they appear to be sufficient to explain the outcomes discussed in Section 3.
- Section 5 focuses on demand side frictions that contribute to and complete a possible explanation as to why retail market outcomes do not appear to be consistent with workably effective competition.

⁵ Agriculture Industries Energy Taskforce members: National Irrigators Council, National Farmers Federation, NSW Irrigators Council, CANEGROWERS, Queensland Farmers' Federation, NSW Farmers, Bundaberg Regional Irrigators Group, Cotton Australia, Central Irrigation Trust, Winemakers Federation of Australia.

2. Agricultural producers as energy consumers

A fundamental concern for irrigators (and others in the agricultural sector) is the substantial rise in electricity prices well above the rate of inflation. For irrigating businesses, where electrically pumped water is a primary input to agricultural production, the rise in cost of production means that:

- costs cannot be passed on to price consumers without affecting demand and profitability,
- agricultural production is reduced and profitability squeezed, or
- in many cases, agricultural producers search out alternative sources of power supply.

2.1 Characteristics of irrigators & agricultural energy users

Electricity is a key input to the production of many of Australia's most important agricultural products for domestic consumption and for export. Australian consumers expect to have reasonably priced fresh food and locally produced fibre, and the Australian people and their Governments consistently highlight the potential for Australian agriculture to generate jobs and income through exports.

Electricity is a major input cost for agricultural producers. Electricity loads include pumping for irrigation, refrigeration and processing.

Irrigators are a diverse group of customers. They span a range of regions and different agricultural primary sectors, scale and types of irrigation and irrigation patterns (and corresponding energy use). Nevertheless some overall observations are possible.

Historically, in most parts of Australia, irrigators were able to purchase electricity under specially designed, price regulated irrigator tariffs. As retail electricity markets have been opened to competition, regulated irrigation tariffs have largely been replaced by business tariffs.

The design of regulated irrigator tariffs recognised that irrigators may use significant volumes of electricity. It also recognised that irrigator demand profiles are relatively flat.⁶ While irrigation demands are typically higher during summer and sometimes during heatwaves, the available evidence suggests the consumption of electricity for irrigation purposes generally does not drive or correspond with maximum demand and associated congestion in

⁶ It is important to note that 'flat profiles' here means relative to annual demand profiles that drive wholesale and network costs, and not daily profiles that merely reflect the rotation of the earth. This is explained in section 3 of a 2016 report by the present authors: *Errors in Australian Energy Regulator's Draft Decision on Ergon Energy's 2016 Tariff Structure Statement*. <https://tinyurl.com/ycgimp6r>

generation and network capacity that drives wholesale price spikes.⁷ As noted in the AEMO's 2017 Electricity Forecasting Insights:

Maximum operational demand (10% probability of exceedance, or POE 10) is driven by cooling loads and occurs in summer in all regions except Tasmania... page 7

The issue with cooling loads is that they drive spikes in demand and also network and wholesale market congestion. This in turn drives high costs and prices and represents a substantial portion of total electricity supply costs over a year.⁸ By contrast, irrigation equipment does not use more electricity during extreme heatwaves.

This means that in markets providing efficient prices, irrigators should be paying average electricity prices that are lower than average prices for typical small business and residential customers. This is because, compared with irrigators, typical small business and residential customer demand profiles are more likely to coincide with cooling loads.

Agricultural producers do have some cooling loads, notably for temperature controlled food storage and freezing processes. For these applications, demand profiles are more akin to refrigeration. Load increases during extreme heatwaves. However, even during other times, refrigeration equipment may still be running. This contrasts with some air-conditioning when the equipment may only be operating during certain times. Consequently, the load factor for such refrigeration loads is better than that for air-conditioning loads.

The available customer switching data suggests that consumers outside cities – possibly including irrigators – may be less likely to switch retailers. Irrigators have attractive load profiles and significant volumes compared with other users. However in addition to increases to prices in general, irrigators may face higher prices through the mismatch of the load profile costs and tariff prices under business tariffs, and are not seeing competitive tariffs offered by the market to supply their demand. Excessive prices and demand response by agricultural producers

Up until the last decade, electricity demand was considered to be relatively inelastic – demand would not respond to increases or decreases in price. The substantial run up in retail prices as described in Figure 1 of the ACCC Issues Paper is, however, contributing to a substantial demand response by consumers in general. Coincident with the increase in prices across the NEM, aggregate demand has been decreasing.

The electricity sector represents a significant input for the production of Australian food and fibre. Energy costs are particularly significant for irrigated agriculture, which can see more than a third of overall cost of production taken by up by energy. It is also significant for many aspects of agriculture overall, with processing, packing and cooling all requiring energy usage.

⁷ Note that in many areas, for small business customers, there is no widespread metering and hence there is limited information about irrigator profiles. However, where irrigator profiles have been analysed using demand interval data, this shows there is no increase in electricity demand during the limited periods of the year where maximum demand that drives a requirement for new capacity investment may be required.

⁸ See for example Section 3 of a 2014 report prepared by the present authors for the Australian Government entitled *Implications of extreme weather for the Australian National Electricity Market: historical analysis and 2019 extreme heatwave scenario*. <https://tinyurl.com/y97glnor>

Failing to respond to electricity price increases is not an option for agricultural producers – they cannot pass on costs to consumers, particularly for export markets. This can result in various combinations of reduced production or investments behind the meter to offset the impact of price rises, including increasing energy efficiency and use of alternative energy sources.

To the extent that prices significantly exceed efficient costs, the suppression of demand and investments in demand response to inefficient prices is neither economically efficient nor desirable. The result is that resource misallocation within the electricity sector is transmitted into other sectors of the economy. In the agricultural sector this is critical not just for the farming community, but also the downstream agricultural processing industries and irrigation infrastructure industries reliant on the productivity benefits of irrigation, as well as the regional businesses and community looking to those industries for their income.

2.2 Case studies

The case studies set out below reflect the responses to rapidly rising electricity costs by agricultural producers, particularly irrigators pumping water as an essential input to agricultural production. These examples reflect the common challenges of increasing electricity costs across jurisdictions and agricultural sectors. The case studies also present examples of actions farmers have taken to reduce energy costs that include⁹

- reducing demand for network provided electricity by reducing production
- reducing demand for network provided electricity through increasing energy efficiency;
- substituting demand for network provided electricity with distributed generation; and
- collaborating with other energy users to strengthen bargaining power in electricity markets.

2.2.1 PV Water Mackay irrigation network

PV Water is a not for profit entity operating an irrigation water supply network at Mackay supplying 250 customers for irrigation of sugar cane. The viability of these farmers supports the local sugar milling industry and the regional businesses and community.

The irrigation network combines five irrigation Schemes with 4 major pump stations, PV Water supplies a total irrigation water allocation 47,390 megalitres per annum. The irrigation supply supplements effective rainfall, and the network was established to aid with crop survival and increased productivity. The total project cost in 1993 dollars was \$56.7 million by a joint venture between the Commonwealth and Queensland Governments, Mackay Sugar Limited and the irrigation network customers.

The network was designed to utilise off-peak electricity tariffs, not only to minimise electricity costs, but to maximise efficient use of both the electricity network infrastructure and the available water resource. Irrigation customers similarly operate their individual on-

⁹ The case studies have been provided by members of the Agriculture Industries Energy Taskforce. For the purpose of this report, Sapere is interested in the scale and impact of electricity price increases. The views expressed in the case studies do not necessarily reflect the views of the present authors.

farm reticulation infrastructure during off-peak electricity tariff periods, maximising resource efficiency by avoiding higher evaporation rates and spray drift associated with application of irrigation water during hotter, generally more windy daylight hours. Once again, this also flattens the load profile for electricity network infrastructure.

Electricity comprises a significant component of production costs and as price-takers, many irrigators are choosing to gamble on rain falling rather than switch on electric irrigation pumps. Sugar cane is a robust crop and will not necessarily die under this strategy, but yield is dramatically reduced due to a lack of water reaching the crop in peak growing periods.

From commissioning of the irrigation network up to all PV Water electricity consumption was under Business tariff 22. Already between 2009 and 2013 in electricity costs increased 52 per cent. Sugarcane farmers are not indifferent to these increases, consequently water demand as decreased by nearly 20 per cent despite lower rainfall.

In 2012/13 the Queensland Competition Authority (QCA) restructured electricity tariffs on the path to 'cost reflective' pricing. On a transitional basis, PV Water was able to move to Irrigation Tariff 62 (T62) which maintained a clear differential between peak and off-peak tariffs. With total demand in excess of the 100MWh threshold, it is proposed that PV Water moves to Large Business Tariff 44 Demand Small (T44), with Time of Use Tariff 50 (T50) put forward as a possible alternative tariff option.

On top of historic prices increases, PV Waters modelling suggests moving to T50 will increase costs by 110 per cent while moving to T44 will increase costs by 145 per cent. There is no capacity to absorb such price increases.

PV Water has engaged engineering consultants SMEC to investigate existing energy and water use with a view to maximising efficiency. While efficiencies such as variable frequency drives and increasing existing water storage capacity have been identified, these will not reduce consumption below the T44 tariff threshold, so PV Water must investigate supplementary energy source, either diesel or solar, to reduce demand or going completely off grid.

At PV Water's most recent AGM, irrigators were asking the very troubling question "should we invest in on-farm infrastructure, or will the electricity component of water charges make using water unaffordable, and effectively close our scheme, further curtail our productivity, and threaten the local sugar industry?".

2.2.2 Cotton industry case study

Gunnedah farmer, Scott Morgan grows cotton, wheat and other grain on his 730 hectare Liverpool Plains property. His farm is dependent on bore water, requiring significant energy to lift. His 40kW mixed flow pump moves 30 ML per day in irrigation season.

Mr Morgan has installed 160 amorphous silicon solar panels to power his bore lift pump. He installed a travelling irrigator fed by a two-kilometre pipeline which has eliminated the need for two lift pumps and at the same time installed the solar array to power the remaining lift pump. The solar power cost was close to \$60,000, but the combined efficiency of this system has shaved \$18,000 off his power bill.

Mr Morgan reports the system is working well, noting the capacity for solar as a good technology to support agricultural production. A key challenge for irrigators is the seasonal

nature of electricity demand where irrigators generally only pump high volumes of water three months of the year. While he is keen to go fully solar, viability of the system would depend on receiving income for generation capacity off season.

The price of solar panels has come down dramatically where a system to meet his energy needs would now cost around \$20,000. For Scott Morgan this means that his payoff time is three times longer than otherwise. For other irrigators in the region, the threshold for switching is three times lower as prices are flagged to increase by up to 40 per cent.

2.2.3 Sugar industry case studies ¹⁰

Kelvin Griffin is a cane farmer at Bargara, near Bundaberg, on Queensland's central coast. The high cost of electricity was a key factor in his decision to invest \$100,000 in a solar system designed to power his farm's high-pressure irrigation pumps. To reduce their electricity costs, the family was irrigating off the head pressure on the SunWater system and using grid power sparingly on weekends or at night using cheaper tariffs. This approach however, was holding back their production and as electricity prices rose, production dropped by around 15% on the area which required high pressure irrigation.

In 2014, the family made the decision to move to solar powered high-pressure irrigation. The initial outlay was \$20,000 to install concrete slab bases for the solar panels. The system was completed over an eighteen-month period, with some changes along the way driven by the need to find the right technology.

The Griffins are confident of significant savings and a boost in production of 10% to 20% over the system's 25-year life. Had the family remained with the electricity grid and the ever-increasing cost of power, they would have faced a power bill of around \$35,000 to \$50,000, more than double the bill he now pays. Mr Griffin says he would have preferred to spend the \$100,000 on improving his farm layout and lifting over all cane production and productivity rather than investing it to generate electricity.

Also near Bundaberg, sugarcane grower Mr Allan Dingle uses electric powered pumps to water 110 hectares of his cane fields. The price of electricity to run those pumps has more than doubled over the past decade.

In 2007, the off-peak price of power on tariff 65 was 8.83c/kWh, the peak price was 16.04c/kWh and the service charge of just \$10.32 a month. Now, on that same tariff the off-peak rate is 20.321c/kWh, the peak rate is 36.894c/kWh and the service charge is \$23.73 a month. Mr Dingle asks, how is that justified?

Limited by the topography of his farm, Mr Dingle has installed soil moisture probes and taken other measures to improve his water use efficiency. He keeps a close eye on passing storms in making his irrigation decisions. Mr Dingle says I've had to lift my productivity, yet I'm seeing little evidence that Ergon is lifting its game.

¹⁰ Sources include: <http://www.abc.net.au/news/2017-03-09/rural-businesses-turn-to-diesel-power-as-electricity-prices-soar/8339346>

Local irrigators' council representative and CANEGROWERS District Manager, Dale Hollis, is hearing about electricity price hikes right across the district. He says right now, irrigators have two options: switch off the pumps and go back to dryland cropping, or go off the grid and look at alternatives.

While some farmers now find it economical to install solar panels, many growers require power to irrigate at night. Although battery prices are falling, currently battery storage is more expensive than conventional diesel generation. Some irrigators, like Bundaberg Sugar which produces 220,000 tonnes of raw sugar every year, are returning to diesel pumps.

Simon Doyle, in charge of farm operations at Bundaberg Sugar, says it's already 30 per cent cheaper for Bundaberg Sugar to pump water with diesel than electricity, and electricity prices set to rise even higher in the future, that number will become even greater.

While Mr Doyle considers electricity is "cleaner, more user-friendly and probably more reliable. But it is becoming cost prohibitive." As he turns to alternatives to manage costs, he is concerned that abandoning the grid altogether will hurt his neighbours by increasing their prices.

Dean Cayley operates a 150 hectare farm in the Bundaberg district, Queensland. Although its predominately a sugarcane farm, it also produces peanuts and some of the land is leased to sweet potato production.

Mr Cayley mainly uses his irrigation systems from September through to April. In 2016 responding to ever increasing electricity costs (his power bill for the year was more than \$70,000), Mr Cayley invested more than \$200,000 on a new lateral move and associated equipment and delivery upgrades just to stay in business. This has reduced his power costs by around 50 per cent and lifted production by 25 per cent. Without this investment, Mr Cayley says he may have reduced the area of cane production and switched to higher risk small crops and macadamia nut trees.

With rising prices, the payback period is shorter. But the upfront capital cost is large. World sugar prices have fallen sharply this year. Unsustainable electricity prices are forcing farmers to cut back on the irrigation or turn off their pumps, just to stay afloat. They're not getting the best out of their crops. Everyone loses. Our incomes are down. With farmers not earning, they're not spending. That hits local towns hard, jobs are lost. The viability of the local sugar mill is put at risk and everyone suffers.

In eight years Australia has gone from having among the cheapest electricity in the world to among the most expensive. We are being forced to make investments that would not otherwise be needed. As exporters, we can't pass the electricity price hikes on to our customers. Our competitiveness in the world sugar market is at stake. If the electricity price spiral is not stopped, we simply must find a way to regain control of our costs.

2.2.4 West Corugan Private Irrigation District

The Southern NSW districts of Corowa, Urana and Berrigan produce sheep and beef, rice, vegetable, oilseeds and cereal cropping, yielding an approximate gross \$90 million value annually.

West Corugan Private Irrigation (WCPID) is based in Berrigan in Southern NSW. WCPID is a private Irrigation District providing irrigation water to approximately 300 properties

covering an area of some 212,000 Hectares between the Murray river and the Billabong Creek. West Corugan lifts water 13 metres from the Murray via electric pumps and then into a gravity fed channel system.

Electricity cost for the pump station out of the river is one of the significant input costs for the business and as a component of costs passed on to customers.

For the 2016-17 financial year electricity costs for the single pump station was likely to be \$284,000. West Corugan will experience a 40% increase in that cost in the next year budgeting \$398,000. A single year price increase of \$114,000.

2.2.5 Australian dairy industry case study

Electricity (and gas) account for a significant proportion of costs of dairy production. Dairy farmers effectively pay twice for higher energy costs, in the dairy sheds and at the farm gate.

According to Dairy Australia the current cost of energy for dairy processors is about \$160 million a year, set to rise by tens of millions of dollars as long term contracts are renegotiated. These costs are passed on back to dairy farmers through a lower farm gate milk price.

Electricity accounts for a significant proportion of a dairy farm's shed cost, which vary from \$17,000 to \$40,000 on average per year across Australia with a national 3 year rolling average \$24,200 a year.¹¹

In 2012 Dairy Australia, already responding to concerns about the rising cost of electricity, obtained grant funding from the Australian Department of Industry and Science to deliver the 'Smarter energy use on Australian dairy farms' project, aimed at helping dairy farmers use energy more efficiently.

The project enabled 1400 dairy farmers, or 21 per cent of the dairy industry, to access to personalised on-farm energy assessments, workshops and information resources. The assessments demonstrated while no two dairies are the same, milk cooling, milk harvesting and hot water production are the areas of highest energy use in the dairy shed.

Around two thirds of the farmers who have had energy efficiency assessments at the dairy are reaping the benefits of having identified areas for improvement, and are investing in changes. The assessment recommendations ranged from small changes to existing equipment that can be implemented immediately, to advice on new technology and long term investment options. Examples included

- Switching to cold water cleaning methods
- Solar water heating
- Installing heat recovery systems to use heat from milk refrigeration systems to heat water
- Pre-cooling water operating milk plate coolers
- Pre-cooling milk entering plate coolers

¹¹ ABARE National Farmer Survey, providing costs up to 2015/16

- Installing variable speed drives on vacuum/milk pumps.

As a result of these energy efficiency investments, more than half of participating dairies identified significant energy savings that translated into cost savings of up to \$2,000 per year, 40 per cent savings of \$2,000–\$10,000 and 5 per cent savings up to \$29,000 annually.

While this project has been running since 2012 average dairy farm electricity costs have risen between 26 and 65 per cent across Australia, with increases averaging 48 per cent nationally. Dairy farmers now face paying up to 20 per cent more on their own power bills for dairy sheds.

2.2.6 Horticulture case studies

AE Cranwell & Sons – South Australia

The Cranwell Family run one of Australia's biggest Brussel Sprouts farms with properties at Langhorne Creek and Nairne in South Australia. The Cranwell's contract for electricity to supply their packing shed was up for renewal this year and the cost increased by 126% from around \$50,000 pa to more than \$113,000. The business now also invests in diesel and tractor driven generators, as back up for unreliability in the network, ensuring that key irrigation, packing, and cooling equipment can keep functioning in a blackout.

Despite being a major producer of Brussel Sprouts the Cranwell's are essentially price takers and like all vegetable growers they haven't seen a real increase in the price paid for their product for years. Increasing costs are making the business less competitive in the international markets as well, where once they exported to Korea and Japan now they find that their major competitors in that market from the US and Europe can offer cheaper product because of lower input costs.

Southern Qld Horticultural Business

One Southern Queensland vegetable grower producing beans for export, carrot, onions and pumpkin has seen electricity costs go from being a small part of input costs to being a major brake on competitiveness and profitability. The operation's major electricity costs come from irrigation and their packing shed.

The decision to ditch irrigation tariffs in Queensland has seen the cost of electricity for that aspect of the operation go from a price of 18c/kWh to 28c/kWh peak and off-peak 11c/kWh to 24c/kWh c off-peak. Coping with that for this business has meant a \$1 million investment in new irrigation equipment - \$1 million spent just to keep the power bill at the same dollar level.

The packing shed is a key part of the business and its demand for power sees its bill on its current contract standing at \$675,000 this year. This year the electricity component of the bill will double adding \$175,000 to the total bill. A 25% single year increase in the total bill.

This is a business that is generating jobs in South East Queensland, export is a key part of generating that activity with fresh beans heading overseas by airfreight several times a week in season. As businesses costs increase, the competitive position in the international market decreases, with potential flow on impacts for the regional whole community.

2.2.7 Australian wine industry case studies

A number of wine producers and grape growers have taken steps in recent year to mitigate the unsustainable cost of electricity. Many are considering the cost effectiveness of alternatives and moving off grid in an effort to regain control of their rising cost of production. A large number of wine businesses have invested heavily in solar systems as a result, with some utilising alternatives such as diesel generation in order to reduce reliance on Australia's energy grid.

In December 2016, Yalumba Family Vignerons in South Australia installed one of Australia's largest photovoltaic systems in a winery. The decision to install the 1.4MW system was taken against the backdrop of projected increased business energy costs of around 85% between 2015 and 2017. The system has the ability to deliver up to 20% of the businesses electricity needs and will help to alleviate this pressure. Installing the system required significant investment by Yalumba. The decision was taken as an alternative to cutting production costs through cutting jobs or passing these costs through to consumers through increased price of wine.

Redmud Green Energy based in the Riverland, South Australia is an initiative of Yates Electrical Services which offers land-owners the opportunity to re-purpose their properties for the construction and implementation of large scale Solar Farms. Utilising vacant land titles with a footprint of approximately 1.2 acres, Redmud Green Energy Solar Farms are designed solely to export generated energy into the grid, enabling energy to be sold on the National Electricity Market while simultaneously generating Large Generation Certificates.

Redmud Green Energy are focused on making the process and installation of these Solar Farms as seamless as possible by engaging farmers, primary producers and investors to work with us in offering a standardised turn-key Solar Farm solution. Redmud Green Energy notes the project's aim is to provide growth and prosperity in several key areas simultaneously by:

- the generation of maintenance and constructions jobs
- Providing supplementary income to land and property owners
- Strengthening the local economy
- Utilisation of current government incentives through STC and LGC creation
- Introduction of new innovative industry to the Riverland and surrounding regions.

The project enables money remaining within the local community, providing the economy the assets to improve infrastructure, and create a stronger and much more sustainable population. The quality of education of the need for a greener planet for the next generation of innovators will increase significantly, with our region being at the epicentre of contemporary thinking.

Redmud also aims to expose the Riverland and surrounding regions to the National Electricity Market, and enable generators the ability to trade their power generation, increase local revenue, and create a new industry for the Riverland.

2.2.8 Australian pork industry case study

Blantyre farms near Young, NSW, runs a 2,000 sow piggery, and at any point around 20,000 pigs on hand. As electricity charges were about 20 cents/kW, Blantyre farms turned to its

pigs for power. Blantyre farms is first in the Australian pig industry to complete a commercial digestion system.

Methane from piggeries is released into the atmosphere from the anaerobic decomposition of pig manure in settling ponds. A methane digestion system captures this gas under a pond and burns the methane for power generation.

A methane digestion system has been installed at both the breeder site and the grower site on the farm. At each site a dam holds 50 days-worth of effluent, covered by a low density poly ethylene that captures the gas. The gas runs from the pond through a scrubber, which cleans the gas of impurities and then a chiller which removes condensation. The methane gas is a fuel source for a converted diesel engine, which is coupled to a generator. Generators are controlled by computer which can be accessed remotely. An auto alarm sends text messages signalling any problems with the generator.

For a further flexibility the separate digestion systems are connected by an underground pipe that maintains gas supply to the breeder site which uses the most power, but produces less gas.

Blantyre has three 80kWh generators that are set up for co-generation – that is the exhaust heat is used to provide hot water that is reticulated through weaner rooms and the farrowing house to provide heat to piglets. This efficiency replaces heating generated using electricity and LPG. Blantyre expects the project will have a 2-3 year payback period. A further advantage is the power that is sold to the grid at the rate of around 3.5 cents/kW – compared to the electricity purchase price of 20 cents/kW.

2.2.9 Central Irrigation Trust case study

Central Irrigation Trust (CIT) which is situated in Barmera, pumps water from the River Murray through large diameter pipeline systems to 1,600 growers who irrigate 14,000 hectares of horticultural crops in twelve Private Irrigation Districts in the Riverland Region of South Australia. CIT has an annual water allocation of nearly 120,000 Megalitres.

In seeking to be a leader in water management CIT water is supplied through fully automated pumping stations and pressurised pipeline systems. Their entire pumping infrastructure uses electricity as its source of energy.

CIT has seen significant and unsustainable increases in its electricity charges over the last seven years. Energy delivered to CIT increased in price by 82 per cent from 2010 to 2017 when the CPI increase for the same period has been less than 15 per cent. This includes network costs increasing over 60 per cent as well as the recent doubling of retail energy as gas generators have dominated pricing in South Australia since the closure of Northern Power Station in Port Augusta. No other input cost in their business has risen anywhere near these levels.

CIT actively seeks to reduce electricity costs, participating in the AER's SA Power Networks Regulatory Proposal 2015-2020 process and partnering with 27 large consumers in South Australia in an energy purchasing group. Together, the group's total load of 269 MW accounts for around 16 per cent of electricity demand in South Australia. It is hoped that the groups combined load increases the group's bargaining power in the retail supply of energy contracts in South Australia, in a market which is highly concentrated at times on the supply side.

While attempting to mitigate these cost impacts, nonetheless CIT has to raise its water prices to cover costs. The price increases for 2017-18 range from 47 to 66 per cent above 2016-17 prices for peak delivery and 24 to 43 per cent for off peak delivery.

2.2.10 Almond orchard case study

Omega almond orchards

Drew and Caren Martin run a dry land cereal and irrigated almond property. We currently irrigate 180ha with drip on a range of tree ages from 2 – 17 years. We pump water from the Murray River 3km away at a 60 meter head to a dam where we push water a further 1.7 km to the last blocks on the verge on the current low salinity zoning area. Our Five pumps all run on variable speed drives and are fully automated under the guidance of world's best scheduling. Even with the most efficient pumps, motors, PLC's and Drives, irrigation design, monitoring tools available we still manage to consume a colossal 1.5 GWh per year. Our latest power contract has increased 50% to 15.45 cents /kw peak, and 46% to 8.05 cents / kw off peak. This contract expires on the 30th of December and my broker informs me that the retail market is around 20 cents for peak.

Our scheduling crop factors are based on the results achieved though the Almond Board of Australia Irrigation Optimisation trial conducted by the famous Professor Raphael Assaf from Israel. Watering during the day is a key factor in achieving world's best yields per mega litre applied. Due to the exorbitant demand tariffs we pay to SAPN these gains have diminished if we pump between 12 noon and 9pm. To counter this we are considering installing a new filter, pump, motor and associated smarts in order to maintain capacity outside of these times. The flip side is we fall into a more costly demand tariff bracket due to the load increase only adding to the \$160000p.a. network fees. In this calendar year we will pay \$87340 more for electricity than we did last year (previous total cost \$320,000).

Reliability has been an issue here for 12 years. We have power disruptions regularly particularly during summer where you can expect power flicks on a daily basis causing significant challenges for management. Over the last 5 years we have invested \$200000 plus on equipment in an effort to curtail the effects on our production, these items were not budgeted for, however very timely in that we can currently afford it and with the situation in SA said only to worsen.

History tells me when you couple these new power costs with a commodity cycle downturn, the increase cost of water under the new SDL's it will not be sustainable for many business with high debt / equity ratios.

3. Prices, costs and profits

3.1 Overview

In addition to seeking feedback from interested parties, the ACCC will also seek information directly from electricity retailers on the costs that they incur in supplying customers throughout the course of the Inquiry. This may occur through methods including voluntary information requests, formal (compulsory) information requests and/or hearings. The information the ACCC may seek from retailers could include:

- *actual data on retail costs and profit margins, including costs associated with attracting and retaining customers*
- *information relating to the types of risks that retailers face in relation to the supply of electricity.*

There is ample evidence that actual electricity costs, profits and typical retail prices across the NEM substantially exceed economically efficient levels.

Excess costs and prices arise from failures of:

- economic regulation to constrain costs and prices in the regulated parts of the supply chain – transmission and distribution; and
- competition, regulatory design and oversight to limit costs, prices and profits in the competitive parts of the supply chain.

The National Electricity Objective (NEO) requires the NEM to operate in the long term interests of consumers of electricity with respect to price, quality, safety, reliability and security of supply. Excessive costs, profits and prices across the NEM are not consistent with the NEO and suggest a major failure in the governance arrangements established under the Australian Energy Market Agreement, 30th June 2004.

Electricity represents a substantial input cost for the production of Australian food and fibre. Energy costs are particularly significant for irrigated agriculture, which can see more than a third of overall cost of production taken by up by energy. It is also significant for many aspects of agriculture overall, with processing, packing and cooling all requiring energy usage.

Where electricity prices significantly exceed costs, demand is suppressed compared with what it would have been. This can result in various combinations of reduced production, and investment in and use of alternative energy sources. Whatever the response, the effect is to reduce the international competitiveness of agricultural industries.

The case studies set out in the previous section show that some agricultural producers have responded to prices and excess prices by making substantial investments in, and use of, energy efficiency and alternative energy systems and supplies, at least in part by-passing grid supplied power.

The decision to move from the grid to diesel generation being made by some of these producers would also appear to be at odds with the policy outcomes advocated by Government. Not all agricultural producers are in a position to be able to afford to make large investments that might allow them to by-pass the grid or significantly reduce their consumption. Those producers are often the producers left on the grid as others leave, they

end up bearing higher unit prices for regulated network services, or lower levels of reliability following early retirement of generation due to falling demand.

While such responses could be efficient, they appear at least in part to be a response to excess costs, price and profits. This represents a significant misallocation of resources across the economy. Inefficiencies in NEM electricity markets appear to be leading to higher costs and a second round of economic distortions in the agricultural sector (and no doubt elsewhere).

3.2 Excess costs throughout the supply chain

This section summarises the basis for our view that aggregate retail supply costs (the cost stack) are not efficient.

3.2.1 Network costs

Network costs and prices are higher than they should be. This reflects a combination of substantial excess network capacity and regulated rates of return that are overly generous. In a report prepared for CANEGROWERS¹² and the NSW Public Interest Advocacy Centre¹³, using data contained in Queensland and NSW network's Distribution Annual Planning Reports, we have assessed distribution congestion in the context of network pricing reform. There is spare capacity across almost all zone substations across both NSW/Queensland. This suggests there is no congestion in the parts of the network that supply irrigators in NSW and Queensland.

Table 1 below summarises spatial congestion at zone substations across NSW and Queensland. It highlights that across the five networks, there is congestion in just over 1 per cent of zone substations.

Table 1 Summary of spatial (zone substation) congestion

Zone substations	Ausgrid	Endeavour	Essential	Energex	Ergon	Total
Total count	161	155	235	234	198	983
100% firm capacity and 0.2% hours/pa (demand)	0	0	1	1	9	11

¹² See Evaluation of electricity distribution tariff structure proposals submitted by Ergon and Energex, a report prepared for CANEGROWERS, dated February 2017.

¹³ See *Evaluation of NSW 2016 revised electricity network tariff structure statements*, a report prepared for the NSW Public Interest Advocacy Centre, May 2017.

Zone substations	Ausgrid	Endeavour	Essential	Energex	Ergon	Total
Congested substations	0.0%	0.0%	0.4%	0.4%	4.5%	1.1%

Source: Sapere analysis of Distribution Annual Planning Report and supporting data provided by NSPs

Table 2 below compares maximum firm capacity with planning forecast non-coincident maximum demand. It highlights substantial spare capacity across the networks for the foreseeable future.

Table 2 Maximum demand as per centage of firm capacity

MVA	Ausgrid	Endeavour	Essential	Energex	Ergon	Total
Maximum firm ZS capacity summer	8976	5737	3791	7229	2977	28710
Maximum forecast non-coincident demand summer	5604	3621	1736	4900	1678	17539
Maximum demand	5604.0	3621.0	1736.0	4900.0	1678.0	17539.0
Non-coincident spare capacity summer	3372	2116	2055	2329	1299	11171

In the limited areas where congestion exists, this is not due to rising demand from existing customers but rather new demand from new customers, typically in urban and industrial areas. The network pricing principles imply the cost of increasing capacity for new customers should be funded from connection charges, not from general network tariffs. In other words, inefficient cost recovery is placing further upward pressure on network prices.

From a more limited analysis that does not estimate firm network capacity at zone substation level, there is reason to believe there may also be significant spare capacity in some parts of Victoria, South Australia and the ACT. Drawing on Regulatory Information Notice data provided by networks to the AER, in some networks, there appears to be significant excess capacity at a network wide level.

Excess network capacity has been attributed to unexpected changes in demand patterns. However, in broad terms this structural change was predictable and in fact was predicted in anticipation of carbon pricing and accompanying measures to encourage energy efficiency. Excess network capacity is more likely to be attributable to the fact that under the transition to the National Electricity Rules (NER) chapter 6 was amended to shift risk around demand and capacity from network companies to consumers. This was effected by moving from an optimised deprival value (ODV) method for setting the regulated asset base (RAB) to a roll-forward method.

Given the asset intensive nature of network businesses, the value attributed to the RAB is the principal influence on allowed costs, revenues and hence unit network prices. The RAB is the key determinant of two of the four major cost building blocks used to set allowed network revenues under the NER – regulatory depreciation (return of capital) and, along with the estimated weighted average cost of capital (WACC), the capital charge (return on capital).

Under an ODV approach, the value of the opening RAB is adjusted to remove any excess network capacity relative to forecast maximum demand (including adequate security margins for asset failures and losses, and using a 10 per cent probability of exceedance in any given year). This can either arise either as a result of changes in demand (demand risk) or due to inefficient capital expenditure (capex risk).

By contrast, under a RAB roll-forward approach, the opening RAB from the previous pricing determination is rolled forward to the end of the price control period to form the opening RAB value for the following period. There are adjustments for capital expenditure, depreciation, disposals and inflation (the last of which is then netted off to avoid over-compensating for inflation). There is, however, no optimisation for excess expenditure or excess capacity. There is no *ex post* review of the efficiency of capital expenditure.

We have not been able to identify a corresponding reduction in the allowed cost of capital to accompany risk transfer associated with the move to the RAB roll-forward method for setting the RAB at the start of the following price period. Consequently, it appears that network prices incorporate the double effect of excessive returns on an excessive asset base.

On 24 May 2017, the Federal Court of Australia handed down a decision that largely rejected an appeal by the AER to an earlier decision by the Australian Competition Tribunal requiring the AER to revise its final determinations with respect to NSW and ACT electricity and gas network prices for the period 2015-16 to 2018-19. This means the AER must now review the extent the Final Decision should be varied, in accordance with the National Electricity Law with regard to the:

- method for setting allowed operating expenditure
- return on debt; and
- estimated cost of corporate income tax .

This is expected to result in further increases in regulated network prices in NSW and the ACT, effective from 1 July 2019.

The COAG Energy Council is considering removal of the limited merits review mechanism that has to the requirement for the AER to revise its Final Decisions.¹⁴ We do not wish to comment on these moves other than to note that removal of limited merits review does not address the fundamental inefficiency with network prices due to the existence of excess capacity and excess returns. Without reform of the regulatory framework, not merely the review mechanism, these excess costs will continue to be permitted under the NER whatever changes are made to merits review.

3.2.2 Are network price discounts passed through to consumers?

The AER has approved a first round of network tariff reforms across the NEM, further to the AEMC's Power of Choice Review. These new network tariffs typically incorporate discounts for various time-of-use and maximum demand tariffs, relative to traditional "flat" or two part tariffs. It is, however, unclear whether network pricing benefits are fully passed through to consumers. There does not appear to be any regulatory monitoring or inquiry on this issue.

3.2.3 Wholesale costs and prices

Wholesale costs and prices have risen substantially in recent times and are in our view higher than they should be. For example, the average actual wholesale prices experienced over 2016/17 for NSW was \$81.22/MWh compared with \$51.60/MWh the previous year. This reflects a complex set of factors including reluctance by the private sector to invest in new thermal generation due to ongoing uncertainty over carbon emissions abatement policies.

High upstream gas costs are a further factor. The ACCC is already familiar with many of these issues from its recent inquiry into upstream gas markets¹⁵ and ongoing attention to gas markets.

It appears that domestic wholesale gas prices may now exceed export netback prices. While this has prompted a policy response in the form of a mechanism to divert supplies to domestic gas markets, the machinery to implement a policy response will not be in place until the start of 2018.

Following the withdrawal of significant coal plant, high gas prices are leading to a structural increase in wholesale electricity prices. Due to the wholesale market design, higher wholesale prices appear to be creating windfall gains for infra-marginal – coal – generators. Because all generators receive the marginal price for each price period/regional market, present average wholesale prices are likely to exceed actual generation costs, including an adequate margin for forward price risk. For example, in its half yearly report to 31 December 2017, AGL reported an increase in wholesale electricity EBITG of \$58 million or 8.1 per cent.¹⁶

¹⁴ The Australian government has announced this change, but if enacted through a change to the National Electricity Law, we understand it requires adoption by the full COAG Energy Council.

¹⁵ See <http://www.abc.net.au/news/2016-04-22/gas-supplier-monopoly-pricing-hits-domestic-users/7350338>

¹⁶ See Table 2.1.1 on page 12.

We acknowledge this state of affairs is relatively recent and follows the reduction in generation capacity, notably the closure of Hazelwood. Generator revenues, as recently as two years ago, were in many cases lower than total costs. For example, public reporting by Macquarie Generation during the first year of the carbon price was very clear that it was unable to recover its carbon tax liability from its spot energy and forward contract revenues.

3.2.4 Environmental related costs and prices

Reflecting ongoing policy uncertainty regarding future policy around pricing of carbon and obligations for low or zero emissions energy, in our view, environmental related costs and prices are higher than they should be. For example, over 2016 spot prices for Large Scale Renewable Energy Certificates were at or close to the post tax penalty cost of non-compliance with the Renewable Energy Target scheme for extended periods. These prices have recently fallen, reflecting increased investment in renewable energy, but it is likely a significant premium remains.

The broader problem with environmental costs is that electricity emissions reduction costs are largely being met by consumers, rather than by a combination of consumers and investors. In competitive markets, innovation and transformation related costs are substantially funded by investors. In competitive markets, investors also face the risk of losses from assets that are replaced and retired early.

This is evident in the light passenger vehicle industry. Here, investors are funding development of scale production of electric vehicles. Manufacturers reliant on internal combustion engines have seen very large losses in their asset values. Consumers have not borne the cost of the asset write downs, and so far are not bearing the cost of scaling production of electric vehicles.

3.2.5 Other electricity costs and services

Other electricity costs are likely to be higher than they should be. For example, NSW is the only jurisdiction which allows competition in the supply of network connection services. These services apply to new or renovated premises. The market is significant in urban areas, reflecting the large volume of new construction activity in some areas.

In a project for COAG Energy Council in 2011¹⁷, we concluded that, if the NSW approach were extended to other jurisdictions, there would be significant consumer benefits in the form of cost savings and improved services. These findings were not amenable to jurisdictions in the context of provisions for the mandated, monopoly deployment of smart meters both in Victoria and elsewhere (under the now repealed Smart Meters Act 2009).¹⁸

Regulation providing for monopoly deployment of smart meters has now been removed. However, regulatory frameworks that mean network new and modified network connections

¹⁷ See Competitive provision of electricity and gas network connection services – report to the Network Policy Working Group [reporting to the Senior Committee of Officials to the Ministerial Council for Energy], dated April 2011.

¹⁸ See [https://www.legislation.sa.gov.au/LZ/V/A/2009/NATIONAL%20ELECTRICITY%20\(SOUTH%20AUSTRALIA\)%20\(SMART%20METERS\)%20AMENDMENT%20ACT%202009_54/2009.54.UN.PDF](https://www.legislation.sa.gov.au/LZ/V/A/2009/NATIONAL%20ELECTRICITY%20(SOUTH%20AUSTRALIA)%20(SMART%20METERS)%20AMENDMENT%20ACT%202009_54/2009.54.UN.PDF)

are effectively monopolies or have only limited contestability continue to apply across the NEM with the exception of NSW.

3.2.6 Regulation and market monitoring

Consumers are for the most part no longer protected by economic regulation.

3.2.7 Retail margins and risk exposures

Following the removal of economic or price regulation for most of the larger markets in the NEM, retail margins are substantially higher than they should be. Retail prices now substantially exceed aggregate supply costs, plus efficient and prudent retailer operating and other costs.

In dollar terms, retail margins have increased faster than electricity supply costs. This is because retailers typically set retail prices (margins) with reference to a mark-up on total supply costs – say five per cent.

As supply costs have more than doubled, the mark ups have tended to scale accordingly. Working capital and perhaps bad debtor costs are, however, the only retailer costs that scale in proportion to increases in electricity supply costs. These costs are relatively modest compared with other retailer costs. Rising mark ups relative to the costs these mark ups recover means that, if competition is not constraining price increases, retailers have the opportunity to make windfall gains as supply costs increase.

Previous regulator estimates of efficient retail margins assumed significant retailer exposure to wholesale market risk.¹⁹ However, recent experience suggests that, at least for some retailers, such exposures may be limited, as increases in wholesale costs and risks can readily be passed on to consumers under the National Retail Energy Rules (NERR). The most recent available public reporting by major vertically integrated retailers suggests that structural increases in wholesale prices have not resulted in material reductions in actual retail margins.

On the other hand, a second tier retailer has publicly warned that, if wholesale prices remain elevated for a sustained period, then non-vertically integrated retailers may be required to exit retail markets.²⁰ This would result in a substantial reduction in competition and further reduce downward pressure on retail prices and margins (to the extent it exists).

3.2.8 Barriers to consumer participation and engagement

There are significant barriers to consumer empowerment and demand side participation. These are discussed in the following Section 5.

¹⁹ For example, in a series of pricing decisions, IPART included a volatility premium in its energy purchase cost allowance to reflect this exposure.

²⁰ See AFR June 7 2017 *Does Powershop's deal herald the end of standalone power retailers?*

3.2.9 Impact of higher wholesale prices on retail margins

In our interactions with regulators and governments around electricity retail market outcomes, we have often been told that excess retail margins are short term and self-correcting. More recently, a view has been expressed that higher wholesale prices have reduced retailer margins.

On reviewing the most recent publicly available evidence, there is no reason to believe that the retailer margins of the major, vertically and horizontally integrated retailer margins have been adversely affected by higher wholesale prices. We do accept, however, that margins for smaller retailers, without physical hedges in the form of generators, are likely to be experiencing substantial pressure on their margins. However, this affects only a minority of retail customer accounts.

Two of the three major energy retailers are publicly listed companies and provide extensive disclosure on financial performance. The most recently available public data is half year reporting for the period to 31 December 2016. While this data does not include the impact wholesale price spikes experienced during February 2017, and the full closure of the Hazelwood Power station at the end of March 2017, it does reflect the uplift in wholesale prices following the announcement of the closure of Hazelwood and after the system black event in South Australia in September 2017.

In its Interim Report for the six months ending 31 December 2016, AGL reports that its customer underlying EBIT is unchanged from the equivalent period to 31 December 2015 at \$230m.²¹ Similarly, its gross electricity margin was unchanged at \$244m. This outcome reflected:

'Disciplined and effective price management across the Consumer Electricity portfolio was reflected in consumer price increases as a result of higher wholesale market prices. However, this was offset by a 7.8% decrease in customer sales volumes, higher wholesale electricity and LGC prices ... combined with greater discounting within a highly competitive market. Total consumer average consumption per customer decreased by 7.4%, with average residential consumption declining by 5.3% per customer and small business average consumption declining 11.5%.'

Net operating costs decreased relative to the corresponding period in 2015. This was sufficient to offset declines in gross margins for gas.

In other words, rising wholesale electricity costs and falling volumes were largely offset by changes to retail prices. We would expect similar outcomes for Origin, EnergyAustralia and Snowy Hydro.

Wholesale prices have been elevated over the first half of 2017, and forward prices are also elevated. Substantial retail price rises have been implemented across many parts of the NEM, effective from 1 July 2017. This includes an out of cycle increase in Victoria (price changes typically relate to calendar rather than financial years). These price changes suggest retailer exposure to changing wholesale market conditions is relatively modest and certainly not sufficient to explain or justify very high retail margins.

²¹ See Table 2.1.2 on page 12 and accompanying text from AGL's Interim Report.

3.3 Price deregulation and monitoring

3.3.1 Removal of price regulation

The ACCC's Issues Paper refers to the Grattan Institute's March 2017 report *Price Shock; Is the retail electricity market failing consumers?*, by Tony Wood and David Blowers. Its key conclusion is that the retail component of electricity bills in Victoria appears to be high relative to costs, to comparable retail electricity markets and to other retail activities. It notes that, while the estimates of profit margins are imperfect, the evidence they are high is compelling.

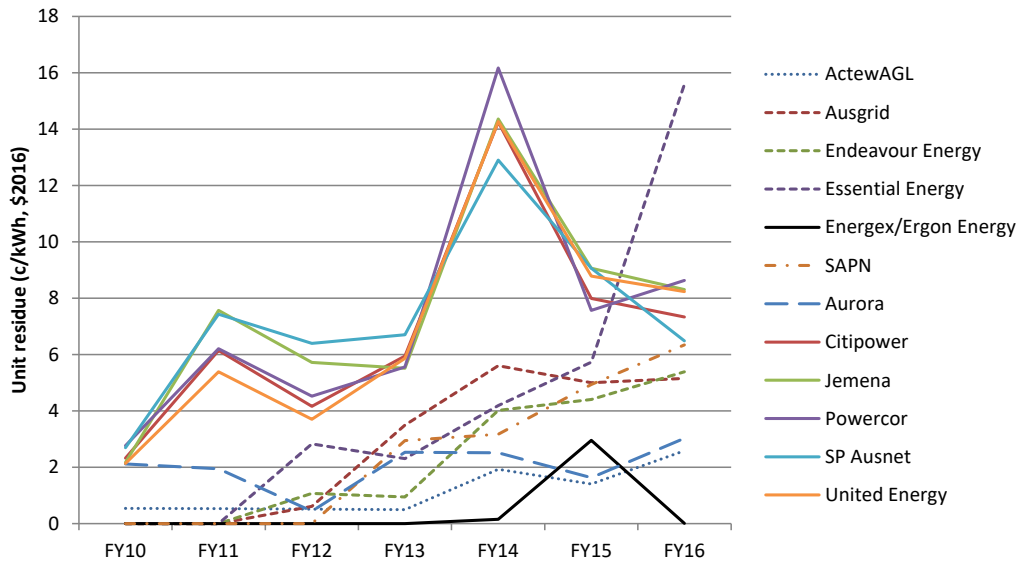
In a 2016 report for CANEGROWERS Quantification of excess costs in QCA draft electricity retail price determination for 2016-17,²² which was part-funded by Energy Consumers Australia, Sapere modelled "residues" or excess margins across the NEM. This report refers to earlier work both by ourselves and a number of other observers strongly suggests retail electricity prices significantly exceed efficient costs for the majority of electricity retail consumers, and that this is persistent rather than merely transitory.²³

Figure 1 below provides the results in c/kWh, converted to 2016 values. Key findings are that the excessive prices and profits have persisted for a number of years. It also shows that, with the removal of price regulation in NSW, excessive margins have begun to emerge in NSW, albeit at a lower rate than Victoria.

²² The report is available publicly at http://www.canegrowers.com.au/icms_docs/243259_Sapere_Research_Group_Quantification_of_excess_costs_in_QCA_draft_electricity_retail_price_determination_for_2016-17.pdf

²³ See Simon Orme, James Swansson, Quantification of excess costs in QCA draft electricity retail price determination for 2016-17, CANEGROWERS, 30 May 2016; St Vincent de Paul Society & Alvis Consulting, The National Energy Market – Still winging it, Observations from the Vinnies' Tariff-Tracking Project, St Vincent de Paul Society, Melbourne, September 2015; Carbon and Energy Markets, A critique of the Victorian retail electricity market. A report for the Brotherhood of St Laurence, June 2015; Carbon and Energy Markets, Australia's retail electricity markets: who is serving whom? A report prepared for GetUp!, August 2016; Essential Services Commission, Victoria, Electricity Retail Margins Discussion Paper. May 2013

Figure 1 Retail unit retailer "residue" (c/kWh, converted to 2016 values)

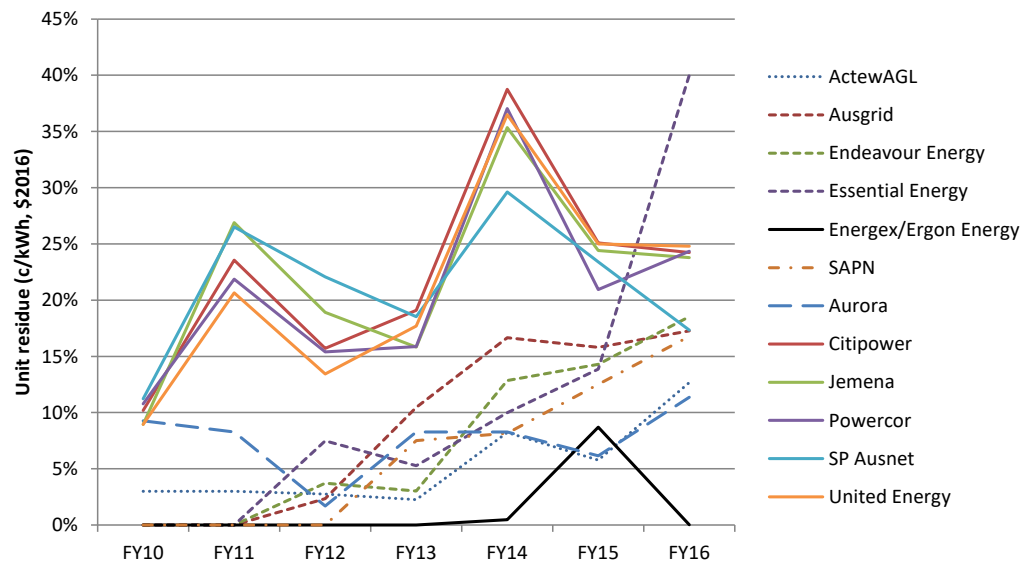


Source: Sapere research and analysis

As most NSW primary producers are likely to be in Essential Energy’s retail market, a significant concern for NSW irrigators and other agricultural producers is the substantial increase in the residue for Essential Energy’s retail market.

Figure 2 below shows the same data expressed in terms of the per centage of the typical retail bill. It highlights the substantial residues in Victoria and the growing residues in other parts of the NEM.

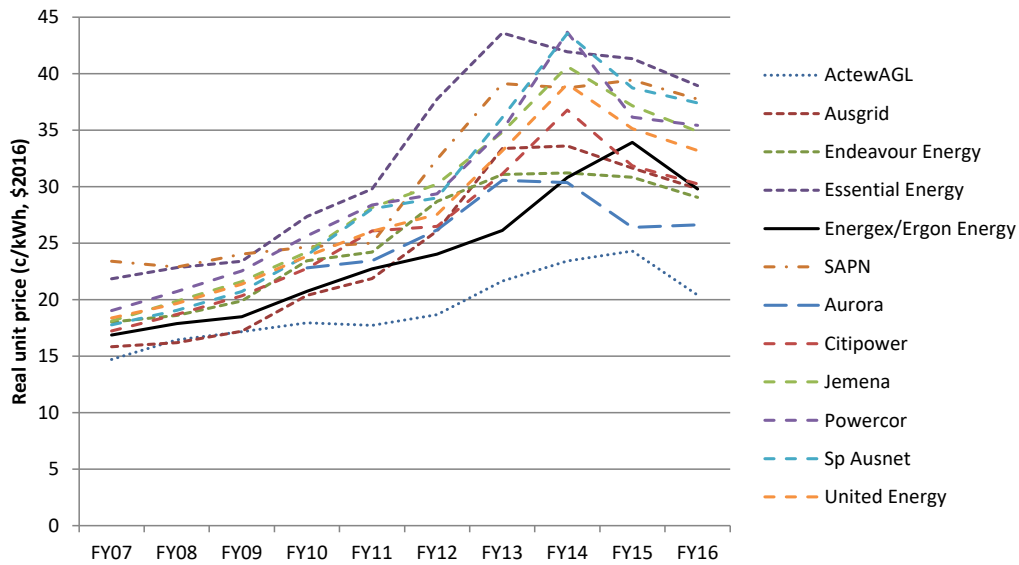
Figure 2 Per centage retailer residues



Source: Sapere research and analysis

Figure 3 below summarises changes to retail prices to early 2016. With a further round of price increases effective from 31 December 2016, we would expect that in many retail markets, retail prices could exceed the highs around 2014.

Figure 3 Retail unit price path



Source: Sapere research and analysis

This information is broadly consistent with Figure 1 in the ACCC’s Issues Paper. A significant difference, however, especially from the perspective of primary producers, is that Figure 3 provides the price paths for retail markets correspond to network areas, rather than state averages in the Issues Paper chart.. Retail markets are aligned with network areas because both because they incorporate network tariffs and where wholesale market settlement continues to use accumulation rather than interval meters, there are deemed wholesale profiles (and hence prices) for small business and residential consumers in each network area.

3.3.2 Measuring retailer profits

In a series of projects including for the Victorian and Western Australian governments, we have analysed electricity cost stacks across the NEM by network area, seeking to identify the relationship between total efficient supply and retailer cost to serve, on the one hand, and prevailing retail prices, on the other. The analysis consistently shows that, for a substantial portion of published retail prices, both standing and market, the price exceeds efficient costs.

The basic methodology used in these margins analysis is tractable and is effectively the same methodology that has been applied by economic regulators in setting regulated retail prices. The methodology has also been endorsed by the AEMC in a 2013 report.²⁴

²⁴ See 2013 AEMC report entitled *Advice on Best Practice Retail Price Regulation Methodology*

The retailer residues estimated in the previous section are after allowing for costs associated with wholesale energy trading risk, including costs that cannot be offset by purchases of forward contracts. The residues are also after allowing for costs associated with retailer customer acquisition and retention and costs to serve.

We acknowledge there is some uncertainty in modelling efficient supply costs. Most notably, this includes uncertainty over the extent of wholesale trading exposures held by retailers, and the prudent and efficient cost of these exposures. It also includes issues such as the correct treatment of customer acquisition and retention costs, which is sometimes referred to as “headroom” for facilitating competition.

A further source of uncertainty arises due to lack of data on the number of customers on different types of retail contract. Combined with substantial dispersion in retail prices across what otherwise appears to be similar if not identical products, the absence of data on customer numbers per contract means that while it is possible to estimate retailer margins for individual tariffs, there is greater uncertainty over the size of excess margins for each retailer or for retailers overall. Nevertheless, drawing on available market share information some assessment of overall excess retail margins is achievable.

Price dispersion provides a useful cross check of the modelling of per tariff retailer margins. In previous work analysing a standard retail contract type, we have compared our estimates of excess margins with observed price dispersion for similar retail contract types. The lowest observed prices in the range have broadly corresponded to our estimate of efficient costs.

This highlights that the gap between prices and efficient costs is not uniform between retailers. The gap appears to be greatest for the larger, vertically and horizontally integrated retailers.

While there is uncertainty over the extent of the excess, the size of the excess exceeds the uncertainty around the estimates. In addition, it is possible that actual retail margins are higher than indicated in analysis such as Grattan Institute’s report.

For example, there are significant cost efficiencies associated with dual fuel retailing. The nature of these efficiencies is set out in a 2011 Sapere report in the context of regulated price setting.²⁵ Although difficult to estimate, these cost efficiencies are likely to be significant. Absent downward pressure on retail prices and margins, dual fuel cost efficiencies increase retailers’ effective net margins.

As a further example, it is also possible that retailer exposure to wholesale prices over the duration of fixed term contracts may be limited due to a practice whereby retailers are able to change prices at any point during the term of a fixed term contract, subject to some procedural requirements. The current National Energy Retail Rules (NERR) do not regulate how often or by how much retailers can change their prices.

²⁵ See for example the discussion in section 6.4 of a Sapere report to the Essential Services Commission 2011 Review of the South Australia gas standing contract retail operating cost and retail operating margin, dated April 2011 available at: http://www.escosa.sa.gov.au/ArticleDocuments/734/110406-2011_ReviewGasOperatingCosts-Saper.pdf.aspx?Embed=Y

In a 2015 decision, the AEMC declined to endorse a proposal from consumer groups to prohibit retailers from changing prices during energy contracts that have a defined term. The basis for the decision was that *'If retailers were unable to change their prices to pass on unmanageable changes in their costs when they occur, prices would have been likely to increase.'* This conclusion may be reasonable, if it were the case that retail margins were efficient and not excessive. Conversely, if some retailers are able to maintain monopoly pricing, this conclusion allows those retailers to sustain excessive prices and profits. The decision appears to endorse behaviour whereby wholesale energy trading risk is transferred from retailers to consumers, but without a corresponding reduction in electricity retail margins.

Excess retailer margins are not limited to Victoria and South Australia. Following the removal of economic regulation in NSW, there are indications prices now exceed efficient costs for many NSW customers, especially those remaining on standing contracts. In addition, the excess retail margins across the NEM are now contributing to excessive regulated retail margins for regional Queensland under regulated tariffs set by the QCA.

In a 2016 decision, the QCA changed the methodology it used to set retailing costs for price setting purposes. In previous reviews, QCA sought to estimate efficient retailer operating costs. For its 2016 and 2017 reviews, the QCA adopted a new methodology that estimates benchmark total retailer cost (exclusive of prudential capital costs which are included in wholesale energy). This benchmark is based on the difference between retail electricity price observations from across the NEM for market and standing contracts, on the one hand, and estimated costs other than retailer costs, on the other. The difference is deemed to reflect retailer costs.

The resulting QCA estimates for retailer costs are excessive for two key reasons.

- The methodology does not provide a basis for estimating efficient retailer costs under conditions where a large portion of observed electricity prices incorporate substantial “residues”, or excess margins, over and above efficient retail costs. It amounts to incorporating non-existent costs in notified prices.
- The methodology includes significant competition costs (customer acquisition and retention costs) that are in fact not incurred by Ergon Retail, where retail competition is not viable and does not occur for <100MWh customers under the Queensland Uniform Tariff Policy.

The apparent emergence of retailer “residues” or excess margins following the removal of price regulation breaches the National Energy Objective. The opacity of retailer margins and the failure of competition to constrain electricity pricing raises questions about the effectiveness of retail market monitoring.

3.3.3 Current retail market monitoring

Safeguards to deter any exercise of market power – market monitoring – may be less effective than they could be. In the absence of direct price regulation, energy retail market monitoring is intended to be a safeguard to deter any firms or groups of firms with market power from exercising such power, including by way of monopoly pricing. Monopoly pricing occurs where prices incorporate profits in excess of those required to compensate capital providers, including a margin for risk.

This may reflect the fact that, under the Australian Energy Market Agreement (AEMA) 2004, the AEMC was charged with assessing whether Victoria's retail markets are effectively competitive.²⁶ The AEMC undertook its first review of retail competition in Victoria's energy markets in 2007/08.²⁷ That review found that competition was effective and recommended the removal of retail price regulation.

When retail price caps were removed, no systematic market monitoring arrangements were put in place. This contrasts with other markets following removal of price regulation, where market monitoring arrangements are put in place and where suppliers have legal obligations to supply data and information (disclosure requirements). Well known examples include fuel price and airport monitoring undertaken by the ACCC. Recently the ACCC effectively secured real-time fuel price for consumers, opening access to the public (via data applications) to the price data base used to share price data by the fuel companies themselves.

While the AEMC has undertaken a series of reviews on the effectiveness of retail competition, the AEMC assumes but does not test whether competition is effective. In its first national review of the effectiveness of retail competition, in 2014, the AEMC concluded that Victorian retail prices substantially exceeded prices in other markets, when normalised for differences observable in supply costs. While concluding that retail competition was effective, it did not entertain the possibility that retail prices incorporated excess cost recovery, reflecting the existence of market power on the part of retailers. In other words, its conclusion was not based on evidence.

As pointed out by the Chairperson of the Victorian Essential Services Commission (ESCV), the AEMC findings are not evidence based.²⁸ The AEMC evaluates five criteria of 'effective competition' that reveal signs of competition, not proof of it. It appears consistently to discount evidence regarding the fifth test, related to retailer outcomes, specifically retailer margins.

Against this background, the 2015 decision to retain rules that allow retailers to change prices during energy contracts does not appear to be evidence based. The proposal to restrict retailers from changing prices within the term of retail contracts may not result in higher prices but rather lower retailer margins and/or a better service levels than otherwise.

In its 2016 retail competition review, the AEMC no longer seeks to quantify retailer margins, but emphasises the complexity of estimating these with certainty and dependence on assumptions.²⁹ It maintains this position while providing advice on best practice retail price methodology which includes advice on robust methods for estimating efficient and prudent retailer margins.³⁰ While noting the growing separation between standing and market offers,

²⁶ See clause 14.11 of the AEMA, as amended in 2009.

²⁷ See the AEMC's *Review of the effectiveness of competition in the electricity and gas retail markets, Victoria*, February 2008.

²⁸ Dr Ron Ben-David, *If the retail energy market is competitive then is Lara Bingle a Russian cosmonaut?* Essential Services Commission, June 2015.

²⁹ AEMC, 2016 Retail Competition Review, Final Report, 30 June 2016, Sydney.

³⁰ AEMC 2013, Advice on best practice retail price methodology, Final Report, 27 September 2013, Sydney

the AEMC does not view this as inefficient, even while acknowledging that market offers up to 30 per cent lower than standing offers are being funded at least in part, by those on standing offers, may be inefficient. The AEMC concludes, instead, on the uncertainty inherent in estimates of retail margins based on external observables.

This raises the issue of gathering relevant information from retailers and the corresponding information gathering powers.

The AER has extensive information gathering powers under the national energy laws to enable wholesale and retail market monitoring. It publishes weekly monitoring reports of wholesale market outcomes, as well as reports whenever there are significant price events or prices breach \$5,000/MWh.³¹ In 2008 the AER prosecuted a generator for an alleged breach of the national electricity rules regarding what it alleged was excessive wholesale pricing.³² While Victoria remains outside the National Electricity Customer Framework (NECF), and associated NERR, the AER has no formal role in energy retail market monitoring for Victoria.³³

The AER undertakes retail market monitoring but this does not refer to the effectiveness of retail competition. Some limited retail market monitoring is undertaken by jurisdictional regulators but this is hampered by an unwillingness to exercise data gathering powers.

The ESCV is responsible for the monitoring and surveillance of retail markets and compliance with retail licence conditions.³⁴ The ESCV is able to request and obtain such information from the retailers as it may from time to time require.³⁵ The ESCV publishes regular market surveillance reports. Regular reporting tends to focus on compliance with licence conditions and price trends, rather than whether retail markets are operating effectively.³⁶ The ESCV's monitoring of retail markets has significantly improved with the publication in November 2016 of the first annual Victorian Energy Market Report (VEMR).

Following deregulation of the NSW retail electricity market in 2014, IPART has similar responsibilities monitoring the performance and competitiveness of the electricity retail market for small customers, and has delivered two reports to date.³⁷ IPART does assess retail price trends and underlying costs, using methods similar to those previously used in their role as a price regulator. With regard to retail margins IPART incorporates the findings of

³¹ See for example <http://www.aer.gov.au/node/451>

³² Australian Energy Regulator v Stanwell Corporation Limited, Federal Court.

³³ See <http://www.aer.gov.au/retail-markets>

³⁴ Section 39A of the Electricity Industry Act 2000 and Section 47 of the Gas Industry Act 2001 require the ESCV to report to the Minister for Energy and Resources on published standing and market offers and other features of the competitive market.

³⁵ See Section 18 of the electricity retail licence and condition 19 of the gas retail licence condition and see also information specifications for Victorian energy retailers, ESCV, May 2013, available at <http://www.esc.vic.gov.au/Energy/Review-of-Energy-Retail-Performance-Indicators/Energy-Retail-Performance-Indicators-2013-14>

³⁶ See for example the annual compliance reports – licensed retail energy businesses, available at: <http://www.esc.vic.gov.au/energy/compliance/publications>

³⁷ See for example <https://www.ipart.nsw.gov.au/Home/Industries/Energy/Reviews/Electricity/Retail-electricity-market-monitoring-2016?qDh=2>

the AEMC's retail competition review that retail margins are reasonable and are not inconsistent with a competitive market into its finding that competition in the electricity retail market is working well.

3.3.4 ACCC role in rigorous monitoring of retail electricity market efficiency

The Inquiry Issues Paper outlines a range of possible outcomes from the Inquiry. Beyond any behaviour raising concerns under the Competition and Consumer Act 2010, and the immediate term increased information about the retail electricity market, further action is passed to governments and industry.

There is, however, an opportunity for the ACCC to exercise its information gathering powers to institute a regular scheme for monitoring of the efficiency of retail electricity markets that deliver:

- *improved transparency for customers regarding electricity offers and pricing, and*
- *increased information about competition, pricing and other practices in the supply chain that may improve customer experiences in buying electricity services.*

Data requests for retailers

This section sets out some proposals on how the ACCC may most effectively exercise its information gathering powers for the purpose of independently assessing the efficient costs of retail supply in accordance with best practice retail price methodology.³⁸ With access to retailer customer and cost data that has not been available since the removal of economic price regulation in the major retail electricity markets, the ACCC has an opportunity to make substantial improvements to previous analyses of retailer profits and costs.³⁹ In particular, the ACCC has the opportunity to compare costs and prices and to distinguish between price diversity and price dispersion.

The data to be requested from retailers to support this analysis includes, for each network tariff and retail tariff, for each defined reporting period:

- total retail revenue
- total sales volume
- total customer numbers
- total billing days (assists normalise for entering/exiting customers)

³⁸ AEMC 2013, Advice on best practice retail price methodology, Final Report, 27 September 2013, Sydney

³⁹ Wood, T., Blowers, D., and Moran, G. (2017). Price shock: is the retail electricity market failing consumers?. Grattan Institute; Simon Orme, James Swansson, Quantification of excess costs in QCA draft electricity retail price determination for 2016-17, CANEGROWERS, 30 May 2016; St Vincent de Paul Society & Alvis Consulting, The National Energy Market – Still winging it, Observations from the Vinnies' Tariff-Tracking Project, St Vincent de Paul Society, Melbourne, September 2015; Carbon and Energy Markets, A critique of the Victorian retail electricity market. A report for the Brotherhood of St Laurence, June 2015; Carbon and Energy Markets, Australia's retail electricity markets: who is serving whom? A report prepared for GetUp!, August 2016; Essential Services Commission, Victoria, Electricity Retail Margins Discussion Paper. May 2013

- total network costs
- ‘meta-data’ identifying the network tariff and key characteristics (structure, rates), retail tariff(s) and key characteristics (structure, rates)

The acquired data is then applied to a number of simple calculations to derive: actual unit prices paid (inclusive and exclusive of the fixed component); average consumption per customer, and average cost per customer for each unit of analysis.

A significant feature of the form of this request is that it does not require any modification of retailers’ existing customer information systems (CIS). The central function of retailer revenue systems is to link metering data for each NMI/customer to the relevant retail tariffs in order to calculate customer bills, and verify obligations under the corresponding network tariff. Indeed, for internal retailer reporting purposes, these revenue systems should be capable of reporting revenue and other key data for many methods of segmenting their customer bases. This will be done, for example, to monitor customer segments at risk of being bad debtors or for targeted marketing.

The ACCC has the choice whether to ask retailers for the corresponding data for other elements of the costs stack, for example wholesale, environment and market costs, or to adopt accepted methods of estimating these costs.

As noted by Grattan Institute, the total wholesale costs are difficult to estimate, in part because these costs are related to the consumption behaviours of customer segments, and in part because ‘gentailers’ effectively ‘purchase’ their own generation so that it is difficult to allocate these costs. In the event the ACCC requests such data from retailers, there may be value in pursuing estimation methods to validate retailer data.

Together with wholesale energy costs, environmental costs, retailer cost to serve and customer acquisition and retention costs, this data provides the basis to assess the efficiency of retailer margins by customer categories and overall.

We acknowledge that each component of the cost stack provides a source of uncertainty, qualifying the conclusions of the cost stack methodology overall. However we also acknowledge that there are well established methods for quantifying the degree of each uncertainty, and hence the precision in determining any “residue” in excess of a best practice retail price methodology that accounts for expected retail costs and margins. It is by the application of these methods that we know that, for our own estimates, the size of the excess exceeds the statistical uncertainty around the estimates.

Collecting the proposed data would significantly reduce the uncertainty associated with two of the components of the cost stack – the retail price paid for electricity and the cost of network services. Rather than obtaining the inputs to retailer billing engines (tariff rates) and making assumptions about customer consumption and behaviour (e.g. regarding conditional discounts); information obtained on the outputs of those billing engines will correspond with what customers actually pay.

Importantly, prices could be normalised for differences in consumption volume between segments (and potentially for individual customers within segments). In analysing retailer costs for price setting purposes, determining the consumption volumes for each tariff is a central issue in the pricing decision. With falling average consumption volumes per

customer observed in recent years, reference to actual consumption volume data would greatly improve the accuracy and value of retail market monitoring.

These outputs would enable comparisons of final offers, both between final offer types and within final offer types. This difference is important and relates to the distinction between price diversity and price dispersion.

Price diversity between final offer types is likely to be efficient as it reflects real differences in supply or (efficient) retailer cost to serve.⁴⁰ For example, dual fuel offers may reduce retailer costs (as well as customer costs), and time of use offers may reduce supply costs, including risk costs.

Price dispersion, on the other hand, refers to price differences between customers that are not attributable to difference in supply cost or retailer cost to serve. Price dispersion represents inefficiency and possible market frictions. Price dispersion (sometimes referred to as ‘price discrimination’), if sustained, could be indicative of the exercise of market power and/or disengaged consumers.

Caution would be required in drawing any conclusions regarding price dispersion. This is because price dispersion could reflect differences in customer or demand characteristics that have not been addressed in the analysis. Apparent price dispersion may nevertheless be useful in identifying areas of the market or market behaviour that may warrant further investigation.

3.4 Concluding remarks

This section reviews ample evidence that actual electricity costs, profits and typical retail prices across the NEM substantially exceed economically efficient levels. In the following Sections 4 and 5 this report sets out a host of regulatory and market issues that inhibit workably effective competition in retail electricity markets across most of the NEM. Viewed individually, each matter or issue may appear relatively innocuous. We would stress that the ACCC needs to view these issues collectively, noting that many are interactive and mutually-reinforcing.

By exercising its data gathering powers, the ACCC may significantly reduce the uncertainties associated with estimating costs and profits, and offer a more robust set of conclusions regarding whether prices are consistent with the existence of workably competitive markets and effective economic regulation. Being able to conclude that there are market and regulatory failures, the ACCC may then be able to test hypotheses on the origins of these failures and begin to identify remedies. It is suggested that the ACCC acquire data from retailers necessary to arrive at robust findings regarding:

1. Structural, competitive or behavioural issues in the industry;
2. Identification of any behaviour that raises concerns under the Competition and Consumer Act 2010;

⁴⁰ For clarity, differences in supply costs arise from differences in demand characteristics (e.g. location, demand profile). Differences in retailer costs arise from difference in customer characteristics (e.g. credit risk, payment channel). Differences in supply cost for individual customers do not significantly vary between retailers.

3. Improved transparency regarding electricity offers and pricing;
4. Increased information about competition, pricing and other practices in the supply chain that may improve customer experiences in buying electricity services; and
 - (a) For the reasons set out earlier, the ACCC Inquiry should also review the regulated components of the supply chain.

Depending on its findings, we would also suggest the ACCC could consider and make recommendations on options for establishing a framework for effective ongoing regulatory monitoring of electricity and gas retail markets. This reflects our observation there is no such monitoring at present. Precedents in the airports and petrol retail sector may be useful in this regard.

4. Market structure and nature of competition

4.1 Introduction

The ACCC seeks feedback from all interested parties on:

- 5. The ways that electricity retailers currently compete.*
- 6. The level of competition between electricity retailers in each NEM area and distribution area within each NEM area.*
- 7. Any impediments to competition between electricity retailers.*

The ACCC notes that questions 5 and 6 are targeted at all industry participants. Question 7 is targeted at existing electricity retailers and those that are interested in entering the retail electricity market.

This section sets out a series of interconnecting hypotheses on how regulatory, market and other factors can have the combined effect of limiting the effectiveness of competition. Effective markets require both demand and supply sides to be efficient and effective. The focus of this section is the supply side. Section five then turns to the demand side.

The remainder of Section 4 seeks to explain the outcomes discussed in section 3 regarding prices, profits and costs. While the focus is on electricity retail markets more generally, rather than the impact on agricultural producers, the evidence set out in section 3.3 above suggests that weaknesses in retail electricity markets may be greater in non-metropolitan areas, and hence are more likely to have adverse effects for agricultural producers. This is evident in the increase in estimated excess costs in the Essential Energy retail market, following the removal of price regulation in NSW, set out in section 3.3.

In a 2015 report prepared for the Victorian government entitled *Impact of market and regulatory arrangements on retail competition in Victoria's electricity and gas markets*, we considered whether regulatory and market barriers to competition may constrain competition for different consumer segments. Given there were at the time 24 active retailers in Victoria, including a number that had recently entered, the focus was on barriers to expansion by smaller retailers and incentives for rivalry for larger, vertically integrated retailers.

4.2 Barriers to expansion by smaller retailers

In combination, regulatory and market barriers have the effect that any smaller retailer seeking to expand is likely to face higher risks and costs than the major retailers with which it is competing. These barriers make it difficult for smaller retailers to capture market share from the larger retailers. As a result, smaller retailers may acquire customers based on offering lower prices compared with large retailers.

Collectively, smaller retailers seem unable to create a dynamic under which broad retail prices converge toward costs. This reflects an interconnecting series of market and regulatory barriers.

A key barrier to expansion by smaller retailers is customer acquisition. This reflects:

- persistence of government competition restrictions in the form of mandated requirements to offer standing or default retail contracts;
- existence of retail market frictions –or customer stickiness – associated with search costs;
- likely customer preference for dual fuel services, leading to a requirement to operate in gas and electricity markets;
- continuing information access privileges for ‘first tier’ retailers under retail market settlement arrangements;
- the possibility of win-backs and saves by incumbent retailers under the current switching rules;
- inability to access capital markets;
- the requirement to provide additional capital to remain within AEMO credit limits; and
- the risk of vertical foreclosure by integrated generator retailers.

4.2.1 Access to customers

To expand, a retailer must identify a segment of potential new retail customers to target for acquisition. This can be difficult if many customers are not active in the retail electricity market as they have not researched other offers or switched.

Disengaged customers

Where a large group of customers is disengaged or passive, expanding retailers would face higher average costs of acquisition, lower conversion rates and a poorer return on their investment in growing their market share. It is very challenging for expanding retailers to identify which customers are active, and therefore better prospects for acquisition, rather than passive and less likely to respond to sales campaigns.

Large retailers face a similar hurdle when acquiring, but as they already have the bulk of customers, and good information about these customers, they are in a better position to save or win these customers back. Incumbents sit on a good supply of existing and often passive customers who provide ready cash for acquisition or retention while entrants battle with few existing customers and challenges in acquiring new ones.

The level of switching is high in Victoria with the highest ever rates recorded in 2013–14 (31 per cent of electricity customers although inflated by between 3 and 5 per cent by the transfer of APG customers to AGL Energy in April and May 2014).⁴¹ However, if there are

⁴¹ See page 129 of the 2014 *State of the energy market* report by the AER.

a high number of disengaged or passive customers this high switching rate may also act as a disincentive to expanding retailers.

This is because the switching rate in the active segments is likely to be much higher. It is the active customers that expanding retailers are likely to acquire. Active customers may be switching more frequently – churning. This means that expanding retailers may be less likely to recover their costs of acquisition before these customers switch again. The active part of the market may be very competitive but the passive part may be almost static with standing contracts providing a form of regulated price discrimination.

Dual fuel

In Victoria 71 per cent of electricity customers also have mains gas accounts. Electricity and gas are substitutable for many applications, notably water and space heating and cooking.

In energy equivalent terms, for the majority of Victorian customers, gas is substantially lower cost than electricity. If wholesale gas prices rise in future, the current favourable differential may be reduced.⁴²

Where customers have gas accounts alongside electricity, annual gas expenditure is lower than annual electricity expenditure. Accordingly, in economic terms, gas retail markets are subsidiary to electricity retail markets.⁴³ On the other hand, dual fuel customers purchase lower quantities of electricity. This is a key reason Victoria has lower average electricity consumption than other major NEM markets.

From a customer perspective, there are significant advantages in being able to purchase gas and electricity under a single contract. Customers avoid the inconvenience of dealing with two energy retailers and will typically receive dual fuel price discounts or other benefits. This is a key driver of convergence between gas and retail electricity markets, alongside supply side efficiencies.

There is no published whole of market data on the extent of the market that is dual fuel. However, partial information published by major retailers suggests the proportion may be substantial.

For example, AGL reports that it has 1.97m dual accounts across the NEM out of a total number of accounts of 3.7 m.⁴⁴ This indicates that 53 per cent of its accounts are dual fuel.

Similarly, Origin reports that in mid-2014 it had 1.2m dual fuel accounts out of 3.9m accounts. This indicates that 31 per cent of its accounts are dual fuel.⁴⁵

⁴² Note this conclusion may be less clear in other jurisdictions with lower average gas volumes per customer, resulting in significantly higher unit prices compared with Victoria. See for example <http://www.ata.org.au/news/is-gas-a-good-energy-option-for-households>, but also Table 5.5 on page 137 of the AER 2014 State of the Energy Market report.

⁴³ See ACIL-Tasman report for ESCOSA, 2011, A review of the economic principles underpinning aspects of the draft price determination for the standing contract price of gas, available at: <http://www.escosa.sa.gov.au/library/110630-ACILTasmanFinalReport-Public.pdf>

⁴⁴ See page 39 of AGL Energy FY17 Interim Results; Half year ended 31 December 2016, 9 February 2017.

⁴⁵ See page 21 of Origin's Annual Report for 2014.

A key advantage of dual fuel is that acquisition costs may be recovered over the combined value of the electricity and gas accounts belonging to a single customer. In effect, this substantially reduces acquisition costs per account.

Win-backs and saves

Win-backs, to the extent they occur, may represent a significant barrier to expansion. A win-back arises where the incumbent retailer, on learning from MSATS that a customer intends to switch to a competitor, makes a counter-offer.

This may occur both during and after the mandatory cooling off period. This may involve price matching. Win-backs and saves could enable major retailers to discount from published rates, where customers have initiated or undertaken switching.

One effect of win-backs and saves could be to raise the average cost of customer acquisition significantly for any would be expanding retailers. This includes a higher risk of losing customers shortly after the cooling off period is completed, and where no termination charges were included in the relevant retail contract. In addition to unrecoverable customer acquisition costs, large scale win-backs could also adversely affect a retailer's wholesale trading position, and potentially result in un-recoverable wholesale costs.

Concerns over the potential competitive impacts of win-backs and saves led the New Zealand Electricity Authority to consider imposing restrictions on win-backs to support retail competition.⁴⁶ The outcome was an amendment to the New Zealand electricity rules (The Code) allowing energy traders to elect to have switch protection.

The authors are not aware of any similar regulatory scrutiny in Australia. Annual reporting by major Australian energy retailers highlights the success of retention programs, including discounting. They also highlight that retention is more significant than acquisition in terms of customer account numbers.

In a report to the AEMC as part of its 2014 retail competition review, it was noted that major and larger second tier retailers were engaging in more sophisticated retention strategies. This includes '*Contacting customers that have indicated they intend to switch (either directly or through a Business-to-Business (B2B) notification) and offering them a higher discount to stay ('save calls')*'.⁴⁷ In its Final Report, the AEMC notes save calls are occurring but does not comment on their potential for adverse competition effects.⁴⁸

⁴⁶ See *Competition effects of saves and win-backs, decisions and reasons*, Electricity Authority (New Zealand), October 2014 available at: <https://www.ea.govt.nz/development/work-programme/retail/winbacks-and-saves/development/decisions-and-reasons-published/>

⁴⁷ See K Lowe Consulting and Farrier Swier Consulting, *2014 Retail Competition Review: Retailer Interviews*, report for the AEMC, June 2014, page 61.

⁴⁸ See AEMC, *2014 Retail Competition Review, Final Report*, page 36.

4.2.2 Customer platforms

Customer service costs

The major retailers have invested heavily in scalable retail enterprise resource planning (ERP) platforms offering dual fuel capabilities. These systems provide an integrated platform encompassing most or all of the company's data bases and business processes, including the Customer Information System (CIS), billing and debtor management systems, and many others.

Notable ERP upgrade projects include:

- AGL's project Phoenix. This was a multi-year SAP rollout intended to replace multiple legacy retail platforms. AGL did not acquire any of the three NSW retailer platforms, and therefore did not need to consider any further structural changes to its retail platform.
- Origin's retail transformation project. This is an ongoing multi-year SAP rollout to replace multiple legacy retail platforms. This was complicated by Origin's purchase of an additional 1.6 million Integral and Country Energy customers in NSW.
- EnergyAustralia's C1 project. This includes the EnergyAustralia Integration Program designed to merge the SAP system operated by Ausgrid for 1.6 million NSW customers under a Transitional Services Agreement, with the Oracle system developed under the former TruEnergy.

A stand out feature of all three of these programs is they highlight the extensive project and financial risks around modernising and enlarging retail platforms. While two out of the three platforms use SAP, it appears these risks may be intrinsic to the nature of retail platforms in the NEM, rather than the particular enterprise resource planning (ERP) system being used.

Each ERP system needs to be custom designed for the NEM/NGM. This reflects the unique and highly complex institutional arrangements, alongside the need for retailers to exchange high volumes of data with multiple external databases, in real or near to real time.

A key aspect of two out of three of these platform projects is outsourcing. AGL has outsourced to Tata consulting services and IBM. Origin has outsourced to Wipro Technologies.

AGL informed its shareholders that Project Phoenix suffered extensive project completion delays and cost over-runs.⁴⁹ Project Phoenix has subsequently led to identification of costs that were previously unrecovered.⁵⁰ Subsequently, shareholder reporting suggests AGL has reduced some operating costs and provided greater flexibility in terms of its product design cycle and execution of sales campaigns.

Origin Energy also informed its shareholders that its retail transformation project had incurred extensive delays and cost overruns.⁵¹ This may also have included higher payments

⁴⁹ See AGL Annual Reports and other information for investors over the period from around 2009 to 2013.

⁵⁰ See <http://www.theaustralian.com.au/business/latest/trouble-looms-as-agl-powers-on-project-phoenix/story-e6frg90f-1225764548847>

⁵¹ See Origin Annual Reports for the 2013/14 and earlier periods.

under its Transitional Services Agreements with Endeavour and Essential Energy. During cutover to the new system it is reported that 180,000 late energy bills were issued to customers in September 2012. As a direct result, bad and doubtful debt increased by \$43m.⁵² It is also likely that working capital costs would have been much higher due to an increase in average debtor days.

EnergyAustralia's C1 incurred extensive implementation problems including delayed billing, registration and credit management issues. This included 100,000 unbilled accounts over 20 days.⁵³ This is likely to have resulted in higher bad debts and higher working capital costs. It may also have led to higher payments under its Transitional Service Agreement with Ausgrid.

Smaller retailers may seek to outsource aspects of their retail platform, use higher cost/less flexible legacy platforms, or use simpler but more labour intensive processes. It seems likely that smaller platforms are less efficient and possibly also less flexible. This a key driver for the major retail upgrade programs described above.

The recent round of platform upgrades were undertaken despite widespread industry experience around retail platform risks. Notable examples arose under previous retail platform upgrade programs associated with the introduction of retail competition, notably Integral Energy, and the formation of Country Energy from North Power, Advance and Great Southern Energy. In addition, Synergy experienced significant cost over runs and billing problems in its billing system.⁵⁴

Single platform across the NEM

A notable feature of modern retail energy platforms is that, while some features may be jurisdiction specific, a single platform is used for all customers across the NEM for all the major retailing functions. Jurisdiction specific features may increase the overall cost of the platform.

Once in place, the platform cost is recovered from across the customer base. As a result, any differences in internal retailer costs between jurisdictions – leaving aside differences attributable to the level of consumer switching – are likely to be modest. This is also reflected in the fact that retailer financial reporting systems do not track internal retail costs depending on whether a customer is located in Victoria or elsewhere.⁵⁵

In order for a retailer to expand it must own or have access to a scalable retail platform. These platforms integrate retail activities and enable retailers to serve customers including billing and debtor management.

⁵² See <http://www.itnews.com.au/News/355572,origin-energy-lifts-itself-out-of-sap-doldrums.aspx>

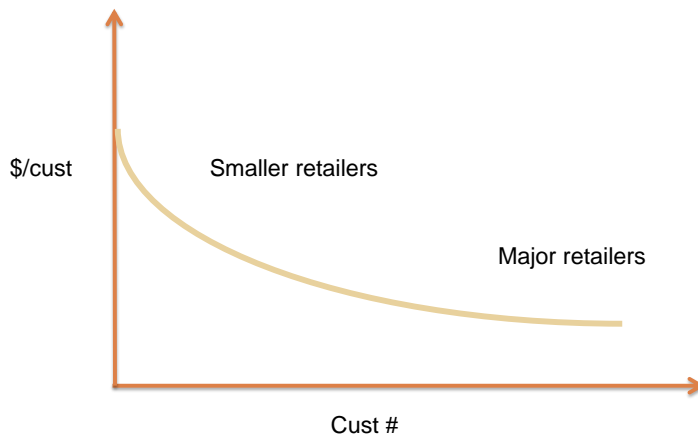
⁵³ See page 62 of CLP Holdings 2013 Annual Report.

⁵⁴ See for example:
<http://www.parliament.wa.gov.au/parliament/pquest.nsf/0/1e8e94f04798ab75c825765b001afe89?OpenDocument>

⁵⁵ See for example page 4 of *2011 Review of the South Australia gas standing contract retail operating cost and retail operating margin: Report to the Essential Services Commission of South Australia*, Sapere Research Group, available at http://www.escosa.sa.gov.au/library/110406-2011_ReviewGasOperatingCosts-SapereConsultantReport.pdf

If the platform is scalable, then as the customer base expands, the unit cost to serve per customer should decrease. This reflects the high proportion of retail platforms that are fixed and do not vary in proportion to customer numbers. An objective of reducing per account costs, and thereby improving competitiveness, may form a key driver for a retailer's expansion program. The idea of economy of scale and a retailer cost curve is illustrated in Figure 4 below.

Figure 4 Illustration of economies of scale



Source: Sapere

AGL reports that its core cost to serve per account, excluding customer acquisition and retention costs, is \$52 per account.⁵⁶ This increase related to a bad debt from an acquisition that had been identified in the acquisition due diligence process.

4.2.3 Wholesale market risk

Management of wholesale market risk is an essential requirement for retailer expansion. In the first place this requires the estimation of a forward internal transfer price (ITP) (for either or both gas and electricity) for the purpose of setting retail prices for each product/retail supply market/customer segment, to apply for the sales and marketing campaign. The ITP is the wholesale price set between the group responsible for wholesale purchases and the group responsible for retail sales within an integrated retailer.

The ITP needs to be set so that it reflects prevailing wholesale market conditions, not prevailing retail market conditions. This is formalised by the existence of a middle office to provide an independent check of the formation of the ITP and its actual application.

During a sales campaign, a prudent retailer is likely to purchase some options or hedges. The forward contract portfolio would be modified over the course of the sales campaign in response to changing retail and wholesale market conditions. This is to avoid or minimise

⁵⁶ See AGL, Op. Cit. page 14.

the risk of financial losses following a significant rise in wholesale prices compared with the assumptions on which the ITP was formed.

Falling wholesale electricity prices create opportunities for expansion by smaller retailers. This is because smaller retailers are less likely to be exposed to forward contracts that have been rendered 'out of the money', or to the costs of writing off or mothballing generation capacity.

In effect, smaller retailers hold relatively short duration forward positions. This is advantageous where prices are falling because the wholesale price reduction will flow through to a lower ITP than otherwise.

The major retailers, by contrast, hold relatively long duration trading positions, including via vertical integration with generation. This is disadvantageous when prices are falling because a retailer with a longer duration trading position will have a higher ITP than otherwise.

In theory, smaller retailers could offer potential customers with the major retailers lower retail prices while fully recovering their internal retailer, ITP and other supply cost components. Over a period of time, this could result in some reappportioning of aggregate market shares in favour of smaller retailers. Whether this is feasible in practice depends crucially on liquidity in forward contracts markets (or hedges).

Rising wholesale gas and electricity prices, on the other hand, represent a barrier to expansion by smaller retailers. This is because longer duration forward trading positions held by major retailers are likely to be set at much lower prices than prevailing wholesale prices.

As discussed earlier, any electricity only retailer can be expected to consider the feasibility of expanding into gas retailing, in order to offer dual fuel. However, current volatility in electricity and gas wholesale markets, with rising future prices, and limited liquidity, make such an expansion highly challenging.

Wholesale market liquidity

A key concern for any expanding retailer is the liquidity of forward hedge markets. Wholesale hedges reduce uncertainty over future wholesale purchase prices for retailers. Hedges may take a variety of forms, including swaps, options and caps.

The requirement to put in place a forward hedge portfolio arises in part due to the likelihood that customer acquisition costs will be capitalised and then recouped over a number of years. A three year amortisation period is not untypical. In this case, a retailer will need to hedge some portion of its forecast sales for three or more years into the future.

The requirement to hedge also arises because of the need to minimise the cost of credit guarantees. An expanding retailer is likely to need to procure a larger credit guarantee. This is because prudential settings scale with customer numbers and sales volumes.

Under AEMO prudential settings, the size of the credit guarantees required may be reduced by way of offsetting bilateral and other hedge arrangements registered with AEMO – known as reallocations.

In retailer interviews for the 2014 AEMC retail competition review, retailers noted that limited forward electricity wholesale market liquidity represented a barrier to expansion.

One retailer interviewed expressed concern the duration was too short, the product mix was problematic and the minimum transaction level too high.⁵⁷

A key challenge for a non-vertically integrated retailer is obtaining sufficient forward hedges (such as caps) to protect against extreme wholesale market price volatility for the entire duration of the period required to recoup the cost of customer acquisition (say three years), at a competitive price. Caps may be available for part of this period, but not for the full period. If caps are not available for the latter half of the period, then the retailer is exposed to the risk that the cost of caps substantially increases relative to the cost assumed when offering three year pricing contracts.

This risk may be managed in part by changing retail prices, as is allowed under multi-year retail contracts. There is, however, a risk a price rise may result in customers switching away before amortisation of customer acquisition is complete.

A retailer's portfolio of forward hedges needs to be formed so that it matches the retailer's forecast aggregate demand profile for each half hourly trading interval for each wholesale market region (or fuel) it is retailing in. To the extent there are mismatches between the hedge portfolio and the actual consumption of its customers in any given trading period, the retailer is exposed to wholesale spot price risk.

In the NEM, this risk is greatest during spikes in wholesale prices. These price spikes are strongly correlated with demand spikes leading to generation congestion, as well as transmission congestion limiting transfers from other regions.⁵⁸ So during such an event, a retailer is likely to be both increasing its quantity of wholesale spot purchases and potentially being liable for substantially higher prices for each unit.

If a retailer has insufficient hedges in place, it will be exposed to spot prices. The outcome may be that actual wholesale purchase costs are substantially higher than assumed in the ITP for a given customer segment on which contracted retail prices were set.

In this case, the retailer would be selling energy for less than it cost to the retailer, and the retailer could make substantial financial losses on these sales. These losses may not be recoverable from customers and hence would need to be recovered from shareholder funds. The risk of such losses, and inability to hedge perfectly, is one of the reasons prudent retailers require a mark-up (margin) over their cost of sales and own costs.

This may be illustrated by reference to an extreme weather event. While the average wholesale price for NSW for the whole of 2017-17 was \$81.22/MWh, the price may be 400 times this amount during price spikes. Price spikes are strongly correlated with high coincident system demand. Average small customer demand profiles are notable for being strongly associated with peak system demand and price spikes.

⁵⁷ See K Lowe and Farrier Swier Consulting, Op. Cit., page 35.

⁵⁸ See *Implications of extreme weather for the Australian National Electricity Market: historical analysis and heatwave scenario* by Sapere, dated August 2014.

During an extreme heatwave in NSW and Queensland on 10 February 2017, wholesale prices went to \$12, 221/MWh in Queensland and to \$14,000/MWh in NSW.⁵⁹

Price spikes and the more “peaky” demand profile of small customers mean that a mass market retailer’s exposure to spot market prices is significantly leveraged. If a retailer acquires 10,000 new customers with an average annual demand of 6MWh, its annual liability for energy is in the order of \$2,400,000 (volume times an historical average spot price of say \$40/MWh) or \$6,700 per day. However, as price spikes may contribute about a third of the average price, the retailer may be liable to \$200,000-400,000 for these customers in a single afternoon. This could be sufficient to breach the AEMO Maximum Credit Limit.

If a retailer has acquired significant new customers over a period before a major price spike event, this could trigger a substantial increase in the retailer’s prudential requirement with the AEMO. A similar outcome is also possible due to a steep increase in wholesale prices, as occurred in 2007/08 as a result of extended drought constraining generation output.

The Rules permit AEMO to change a participant’s prudential settings at any time with one day’s business notice. Any changes that result from the prudential settings require the retailer to increase its credit support by no later than 11am on the effective date. If the retailer fails to provide this increased support by the relevant time, this constitutes a default event.

The risk of being exposed to a default, together with limitations around the liquidity of forward hedge cover against price spikes, are likely to represent significant barriers to expansion for smaller retailers. This barrier could apply even to vertically integrated retailers with substantial generation, due to the likelihood of network congestion during the periods when exposure to spot prices is likely to be most significant.

Similar observations apply to gas, albeit gas market volatility is much lower than electricity. Integrated energy companies operating gas generation and with significant upstream gas investments may have a significant competitive advantage in sourcing competitive wholesale gas supplies. This is even more so, where companies are able to manage a portfolio of sales, with winter gas sold for heating and summer gas used for peaking generation. Such a portfolio would significantly reduce average upstream and transmission costs compared with a gas only retailer. This partly explains why there are no gas only retailers outside Tasmania.

A key advantage for major retailers with well-matched generation portfolios is they are less likely to be exposed to liquidity shortfalls. In effect, a vertically integrated internal retailer holds an option over the portion of future related party generation capacity that has not already been committed to external retailers.

This opens the opportunity for integrated generators to act strategically in considering how far into the future to offer forward wholesale contracts to external retailers. The incentive for acting strategically is limited if competition in retail markets is effective and retail margins are no more than as is required for retailers to recover their costs.

⁵⁹ See page 5, Electricity spot prices above \$5,000/MWh, New South Wales & Queensland, 19 February 2017, published by the AER on 5 May 2017.

This may, however, change under conditions where retail markets are not effectively competitive and supra-normal margins are available. Under these conditions, it could be profit maximising for the related party generator to favour the internal retailer. Even if the internal retailer pays the same average hedge price as external retailers, the internal retailer could be advantaged in other ways, including by way of a long forward duration, or a load shape that more closely matches the relevant demand profile. Relatively small differentials in duration and/or half hourly profile may create a significant cost advantage for the internal retailer, once risk and uncertainty are taken into account.

Incentives for vertical foreclosure

A possible further set of barriers to expansion by smaller retailers may arise to the extent retail markets are not workably competitive. As noted in Section 3.2.7 above, if retail competition is not fully effective, and super normal retail profit margins are available, then vertically integrated retailers would have clear profit maximisation incentives to restrict liquidity in forward contracts, or otherwise favour the internal retailer. Such restrictions could be relatively subtle, for instance by limiting the forward duration to shorter time periods, or by offering generation profiles that leave external retailers exposed to wholesale price spikes.

There is no clear evidence that vertical foreclosure occurs in the NEM. No suggestion that there is vertical foreclosure is being made here. Vertical foreclosure could represent the misuse of market power, which is prohibited under Section 46(1) of the Competition and Consumer Act 2010 (Cwth.).

Nevertheless, Snowy's reluctance to participate in some retail market segments suggests that Snowy is not confident there is sufficient forward wholesale market liquidity in the NEM, even for relatively flat profiles. If so, it is even less likely there is sufficient liquidity for more challenging demand profiles, typical of smaller business and residential customer bases. The fact Snowy underpinned its expansion into NSW with a purchase of further peaking generation in the form of the Colongra gas power station lends further support to this view.

4.2.4 Differential regulation

There is just a small set of matters where retailers are treated differently depending on whether they are major, vertically and horizontally integrated retailers. Two of these are a legacy of the transition to markets with multiple retailers (standing contracts and the closely related Local Retailer role).

Standing contracts

By its very nature, the regulatory requirement for retailers to offer standing contracts represents a restriction on competition, in the sense used in the COAG Competition Principles Agreement.⁶⁰ Under the Agreement, competition restrictions should not be imposed (or continue to be imposed) unless it can be demonstrated that:

- the benefits of the restriction to the community as a whole outweigh the costs; and

⁶⁰ See COAG *Competition Principles Agreement* – 11 April 1995 (As amended to 13 April 2007), available at <https://www.coag.gov.au/node/52>

- the objectives of the legislation can only be achieved by restricting competition.⁶¹

Standing contracts are inimical to competition to the extent they represent a barrier to expansion by retailers and exacerbate existing retail energy market frictions. While customers on default contracts are contestable, they are not engaging in the competitive retail market.

According to the AER, a quarter of Victorian customers remain on standing contracts, despite the market being contestable since 2002.⁶² While some of these customers may now be served by retailers other than each Local Retailer, it seems likely a majority of customers may remain with each Local Retailer. This is because a retailer other than Local Retailers would gain customers on standing contracts only where three conditions are satisfied:

- a new customer moves into a residence currently served by another retailer (the retailer is already the financially responsible market participant (FRMP)); and
- when a new customer requests a new connection from a retailer, the customer is able to identify and make a request to the existing FRMP, not the Local Retailer or one of the many other retailers available; and
- the customer requests the default retail contract rather than the – most likely lower priced including prompt payment discounts – market contract option.

Local retailer, FRMP distinction

The distinction between the Local Retailer and the FRMP in the Rules may favour Local Retailers, competitively. This risk arises from an information access asymmetry.

Rule 7.7 (a) of the NER governs entitlement to metering data and access to metering installations. Rule 7.7 (a) states that, among the *persons entitled to access energy data (metering data, NMI Standing Data, settlements ready data or data from metering register for a metering installation are:*

- (1) *'Registered Participants with a financial interest in the metering installation or the energy measured by that metering installation;'* and ...
- (3) *financially responsible market participants [retailer]...*

Due to settlement by difference, each local retailer has a financial interest in the energy measured by a metering installation, since this affects their retail market settlement liability. Where a customer remains with the local retailer, Rule 7.7 (a)(1) serves no function.

This suggests the Rule is intended to apply where a customer is served by a second tier retailer. As a result, this aspect of the NER appears to give Local Retailers (and hence the three major retailers) privileged access to electricity consumption and standing data.

Second tier retailers are only able to obtain consumption and standing data from a given metering installation (or retail customer) if they are the current FRMP, or if they are a customer authorised representative (Rule 7.7 (a)(7(ii))), or potential future FRMP. By

⁶¹ See also the Victorian Guide to regulation, available at <http://www.dtf.vic.gov.au/publications/victoria-economy-publications/victorian-guide-to-regulation>

⁶² The ESCV estimate is less than half of this estimate.

contrast, it appears that first tier retailers are able to obtain consumption and standing data for all customers in their supply area, whether they are the FRMP or a second tier retailer is the FRMP.

Privileged data access by Local Retailers within major retailers may reduce average customer acquisition costs for major retailers, compared with other retailers, with respect to the areas where major retailers are Local Retailers. This becomes more significant in markets, such as Victoria, which are settled using interval market data.

This advantage has been reduced but not eliminated by the AEMC's 2014 Rule change allowing other authorised parties to gain access to historical energy consumption data.⁶³ The remaining advantage is that the Local Retailer may not need to incur the cost of contacting a given customer and obtaining their explicit informed consent before accessing their historical consumption (and standing) data.

Prudential requirements

Prudential requirements have the effect of treating vertically integrated electricity retailers differently from non-vertically integrated retailers. This is because prudential settings are reduced to the extent a retailer has offsetting generation output for the given region and trading intervals. As a result, a vertically integrated retailer will face much reduced requirements in terms of credit guarantees (ignoring the much higher likelihood a vertically integrated retailer would meet the AEMO's credit criteria).

A similar outcome arises for vertically integrated gas retailer with a wholesale trading arm that is injecting gas at bulk injection points, and possibly also holds upstream interests in gas basins. In this case, it is because the calculation of prudential settings will be set in recognition of the extent of net liabilities and these will be reduced where related parties are injecting wholesale gas.

Retailer of last resort (ROLR)

Retailer of last resort arrangements are incorporated into retail licence conditions. Victoria's RoLR arrangements treat the three major retailers differently from smaller retailers. Under the present arrangements for Victoria, RoLR obligations were assigned to the three major retailers. Under the current market structure, this means that the three major retailers are RoLR.

In the event of a RoLR event, the three major retailers could incur significant costs, including a requirement to increase their wholesale prudential guarantees and possibly also their distribution credit support. In recognition of this, the AEMC undertook a review of RoLR arrangements under the NECF as part of broader inquiry into NEM financial market resilience.⁶⁴

⁶³ AEMC, Final Rule determination, National Electricity Amendment (Customer access to information about their energy consumption); National Energy Retail Amendment (Customer access to information about their energy consumption) Rule 2014, 6 November 2014.

⁶⁴ See <http://www.aemc.gov.au/Markets-Reviews-Advice/NEM-financial-market-resilience>

While a RoLR event would pose short term challenges even to major retailers, the possibility of these events also represents an option for expansion while avoiding direct customer acquisition costs. To the extent this is the case, it is possible that RoLR arrangements, overall, could be beneficial for major retailers.

The AER has expressed concern in a submission to the AER about effects on retail competition through changes to market structure if the RoLR scheme transferred a large retailer's customers to other large retailers.⁶⁵ The AER saw merit in exploring arrangements to support or supplant the RoLR processes in the event of a large retailer failure.

4.2.5 Access to capital markets

The competitive advantages of vertical integration in terms of access to lower financing costs are discussed in a recent report prepared by AGL.⁶⁶ This argues that, under conditions that occur in the NEM, pure play retailers and generators are unable to sustain investment grade credit metrics.

The three major gentailers and the two government owned gentailers are all investment grade. The government owned gentailers are able to access capital markets indirectly and pay debt guarantee fees. It is also possible that subsidiaries of other large energy companies, such as Simply Energy may be able to access capital markets indirectly via their owner.

It is unclear how many smaller energy retailers in Victoria meet investment grade criteria. For such retailers, NEM prudential costs, and financing costs generally, are likely to be significantly higher than for investment grade firms, or their subsidiaries.

Recent Annual reports issued by Origin and AGL indicate the importance of maintaining investment grade rating. They also indicate the benefits; average debt financing costs for 2013-14 were below 5 per cent in nominal terms.⁶⁷

4.2.6 Combined effect of barriers to expansion

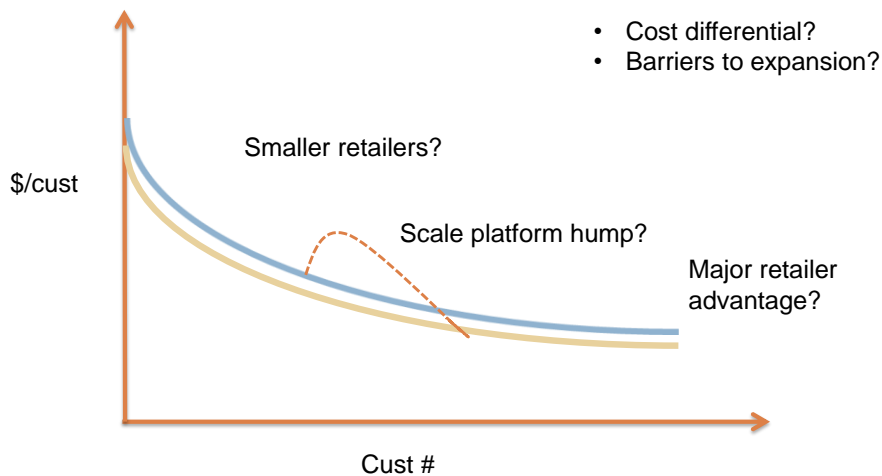
The overall effect of NEM and NGM prudential settings, alongside gas and electricity network access arrangements is they appear to contribute toward a significant competitive advantage for major retailers. This is partly a product of the fact that major retailers are both vertically and horizontally integrated. Financing costs are also likely to be substantially higher for smaller retailers. In combination, these factors mean any smaller retailer seeking to expand is likely to face higher risks and costs than the major retailers with which it is competing. This overall conclusion is illustrated in Figure 5 below.

⁶⁵ See page 25 of the AEMC *second interim report, NEM financial market resilience*, August 2014.

⁶⁶ See *Merchant firm boundaries in energy-only markets: Who gets a credit rating – Pure Play vs. Vertical?* by Paul Simshauser, Yuan Tian and Patrick Whish-Wilson, August 2014.

⁶⁷ 2014 AGL and Origin Annual Reports, Op. Cit.

Figure 5 Illustration of possible barriers to small retailer expansion



The analysis of regulatory and market constraints on barriers to expansion suggests there may be a structural difference in the cost curves for major retailers and smaller retailers, indicated by the blue (smaller retailer) and brown (major retailer) lines. Not only is the blue curve higher than the brown curve, smaller retailers are situated to the left of the curve, while major retailers, especially Origin and AGL, are down at the far right or lowest part of the brown curve.

A further suggestion is the possible existence of a hurdle represented by the very high risk and cost of designing and implementing a scale retail platform. A separate but related set of hurdles also apply to expansion into generation, from retail electricity to retail gas, and from retail gas into upstream gas markets.

Even vertically integrated retailers such as Snowy (Lumo and Red Energy) and Hydro Tasmania (Momentum) may face significant wholesale market risks and challenges. In the first place, they arise from the risk of transmission congestion. If congestion occurs, then Snowy and Hydro Tasmania may face significant wholesale market risks.

As noted by the CEO of Snowy, Paul Broad: *'We don't want to get big and go broke.'*⁶⁸ In the same article it was noted that 'Snowy will not be chasing growth for the sake of it and does not expect to challenge the dominance of the big three suppliers...' The article indicated that Snowy considered that in *'...big base loads, we're not that competitive...'* The article also noted that 'the pressure is on to prove the worth of the energy supplier's \$834 million acquisition spree.... [Acquisitions] have almost tripled government owned Snowy's debt to about \$1.2 billion. Its BBB+ rating is unchanged.'

⁶⁸ See *Pressure is on for Snowy* Hydro, Australian Financial Review, 11th February 2015

4.3 Incentives for larger retailers

4.3.1 Do major retailers have an incentive to expand?

Statements by two of the three major retailers indicate their objective is to maximise their share of customer value, rather than increase market share. The fourth largest retailer, Snowy, has also expressed similar views.⁶⁹ It appears that AGL and Origin (and Snowy) are seeking to minimise acquisition while maximising retention.

This raises the question whether the major retailers have strong incentives to expand in Victoria. They may prefer instead to maintain market share. In this case, competition between the major retailers would be limited to retaining rather than gaining customers.

Retention is far lower cost than acquisition. But in addition, retention offers greater opportunities for incumbent retailers to segment customers and thereby limit the scope of retail price discounting. Instead of discounting from prevailing retail prices (via discounted published prices), to gain customers from rivals, discounting may be targeted to selected customers at risk of switching, or who may have initiated but not completed a switch.

Origin's shareholder presentation accompanying its 2014 Annual report emphasises '*margin management*', '*reducing operational costs*' and '*limiting capital investment*' (in retail).⁷⁰ The report also refers to the '*success of retention programs reducing churn*'. Origin observes that 'the market has seen reduced churn driven by the withdrawal from door-to-door by Tier 1 retailers. In addition, Origin has focused on '*greater use of internal sales channels, lowering cost to serve*'.

Similarly, AGL's Annual Report emphasise that its objective is to '*grow retail margins and market share of customer value*'. In other words, AGL is seeking to maximise margins and its share of aggregate retail margins, not sales volume.

4.3.2 Possible tacit coordination

Without explicit coordination, where certain conditions apply, each retailer can independently arrive at a decision to set prices in such a way as to maximise its profits. Tacit coordination may arise under conditions where, if one major retailer decreases its price, in order to acquire customers from the other major retailers, it can expect other retailers to follow suit. This would decrease the profits of all major retailers and hence is not in their interest, individually or collectively.

As a result of anticipating pricing decisions by their major rivals, each retailer can maximise its individual profit by setting prices significantly above its costs. Under these conditions, retail prices reflect profits or margins significantly in excess of efficient profits/margins. Even though each participant is making independent decisions, the outcome may be the same or similar to the outcome that would occur if there were explicit coordination in pricing decisions.

The necessary pre-conditions for such outcomes include:

⁶⁹ See section 4.2 above.

⁷⁰ See 2014 *Full Year Results Announcement, Financial year ended 30 June 2014*, Grant King, Karen Moses, 21 August 2014.

- Prices are transparent – retailers can readily compare their prices with those of their competitors;
- The firms are broadly symmetrical in terms of scale, footprint and capability; and
- There is sufficient spare capacity or other conditions that enable competing firms to respond, in the event one firm decides to break the tacit profit maximisation agreement.

All of these conditions appear to hold in the parts of Victoria’s electricity markets where customers have opted to remain under standing contracts, or with major retailers at higher prices rather than with smaller retailers offering lower prices (normalising for supply and service quality). Prices are transparent, by regulation. All three major retailers are broadly symmetrical, including being Local Retailers in some retail supply areas. They all have readily scalable retail platforms and an ability to generate or procure additional wholesale supply (especially given excess generation capacity across the NEM).

In addition, incentives to avoid monopoly pricing behaviour may be reduced by the absence of regular and effective regulatory monitoring of retail markets, as discussed in Section 4.1.3 above. Moreover, no evidence from formal retail market monitoring contradicts the proposition that some retailers are engaging in monopoly pricing behaviour.

4.3.3 Contrast with NSW post-privatisation

The current situation in Victoria is unlike the situation that existed for a period in NSW following privatisation of the three NSW government owned retailers. In this case, there was an important asymmetry between the three major retailers.

The major retailer in gas markets was a second tier retailer in NSW electricity markets, whereas its competitors had become Local Retailers, by acquisition. In response, the major first tier gas retailer, AGL, undertook an active electricity customer acquisition strategy.

AGL’s acquisition strategy resulted in a large transfer of customers from EnergyAustralia to AGL. In volume terms, customer switching in NSW substantially exceeded switching in Victoria.

For a period, this rivalry may have placed downward pressure on margins across most of NSW, especially under broader conditions of flat or falling demand, and excess generation capacity. This largely excluded the Essential Energy area, where retail competition is far more muted.

4.3.4 Implications of a 2014 merger Authorisation

Concerns over the possibility of vertical foreclosure by generators are part of the reason the ACCC has opposed two generation acquisitions by AGL. In 2014, the ACCC opposed AGL’s purchase of Macquarie Generation.

In June 2014, the Australian Competition Tribunal overturned an earlier ACCC decision not to grant conditional authorisation to AGL’s proposed purchase of Macquarie Generation.⁷¹

⁷¹ See <http://www.accc.gov.au/media-release/accc-disappointed-by-tribunal-decision-authorising-agl-to-acquire-macquarie-generation>

This was subject to an obligation for AGL to offer a minimum quantity of forward hedge contracts to smaller retailers for a period of seven years.

The ACCC's principal concern about the Proposed Acquisition was that it would increase barriers to entry and expansion in the retail supply of electricity in NSW by:

1. significantly reducing liquidity in the supply of hedge contracts since AGL's retail load would be supported with a natural hedge; and
2. increasing AGL's ability and incentive to withhold competitively priced and customised hedge contracts to independent retailers.

The Tribunal found that:⁷²

- It is clear that the market for the generation and supply of electricity is a national market.⁷³⁷⁴
- The Tribunal has found that the relevant retail market for electricity is a NSW one.⁷⁵

The Tribunal's finding that the market for generation and supply of electricity is a national market contradicts the suggestion made by the AEMC in its 2014 retail competition review that the explanation for higher observed retail margins in Victoria may be attributable to higher wholesale costs (see discussion in Section 4.1.3).

The Tribunal's finding focused on supply of hedge contracts and did not address whether vertically integrated generator retailers have an incentive to price competitively or use other means to seek to shut out smaller retailers through strategic pricing of hedge contracts.

In addition, the Tribunal considered that Victoria's retail markets were competitive.⁷⁶ This implies it considered there were no sustained supra-normal retail margins available.

This meant the profit incentive for vertical foreclosure may not have been fully addressed in the Tribunal's considerations. Accordingly, some parts of the findings around the risks of vertical integration for competition may be less relevant where a retail market is not effectively competitive, and there are supra-normal retail profits. As a result, the Tribunal's findings do not contradict the proposition that vertical foreclosure could occur and affect retail competition.

The Tribunal's conclusions also highlight a further problem with the absence of effective retail market competition. It may contribute to unfounded assumptions being made in merger decisions.

⁷² See <http://www.judgments.fedcourt.gov.au/judgments/Judgments/tribunals/acompt/2014/2014acompt0001>

⁷³ Paragraph 280, Op. Cit.

⁷⁴ Note that this is supported by analysis of forward contracts *for DPI* in *Sapere Research Group, Comparative analysis of household energy bills 2013*.

⁷⁵ Paragraph 294, Op. Cit.

⁷⁶ See for example paragraphs 344, 359 and 361, Op. Cit.

4.4 Concluding remarks

This section sets out evidence and considerations as to how, despite contestability of wholesale and retail electricity markets, actual costs, profits and margins are higher than efficient costs, profits and margins, as discussed in Section 3 above. On the supply side, key issues include barriers to expansion by smaller retailers and weak incentives for rivalry by larger retailers.

In combination, retail prices are constrained only in limited pockets where highly engaged consumers are able successfully to exert downward pressure on retail prices. From the available evidence, these pockets do not appear to overlap with agricultural producers. This suggests that agricultural producers are among the majority of smaller customers where actual power prices are well in excess of actual power prices. The extent to which there are downward pressures on retail prices appears to be strongly related to the nature of customer interaction with retail markets. This is discussed in the following section.

5. Customers and their interaction with the market

5.1 Introduction

This section focuses on demand side frictions that contribute to and complete a possible explanation as to why retail market outcomes do not appear to be consistent with workably effective competition. This includes a section on the limited evidence around irrigation customers and their interaction with competitive markets.

Along with the various supply side issues set out in the previous section, there are significant demand side issues that impede competition and together with supply side issues appear to result in pricing and other outcomes that are inconsistent with the existence of workably effective competition in Australia's deregulated electricity markets.

The ACCC is interested in exploring:

- *the extent to which customers are currently able to make informed choices about electricity, including the ability of customers to understand and compare electricity offers*
- *differences between and within different customer groups*
- *any impediments to informed decision making (such as low energy literacy)*
- *ways that customer decision making and outcomes could be improved*
- *how electricity usage data is, and can be, provided to and used by customers to enable them to better engage with the retail electricity market*
- *practices of retailers that affect customers' ability to participate in the market from confusing or misleading marketing to impediments to switch*
- *the ways that customer experience may impact on competitive outcomes.*

The ACCC seeks feedback from all interested parties on:

8. *Any impediments that customers face in choosing a retail electricity service and any differences between customer types and NEM areas.*
9. *How customers' ability to make informed choices about electricity can be improved.*

While this section of the paper focuses on household and small business customers, the ACCC welcomes views on issues that other customer types face. All interested parties are welcome to respond to these questions, however, they are targeted at customers and customer groups.

5.2 Retail market frictions

Retail market frictions principally take the form of high search costs for consumers (the Diamond Paradox). This means that competition is only effective in constraining prices in some smaller market segments. Market frictions such as search and switching costs, regulation and the interaction between these can exacerbate these market dynamics. The key frictions are search costs and switching costs, with search costs generally agreed as being the most important. Search costs have been shown to have significant impacts on market efficiency.

One example of this is the Diamond paradox.⁷⁷ This occurs when, despite there being multiple firms, they can charge monopoly prices. If there are material search costs, and consumers think that firms are all charging at the same level, consumers may not be bothered searching for better prices but simply choose a firm at random (or where default contracts are available, make no choice at all). The profit maximising response for firms is to charge a monopoly (significantly higher than efficient cost) price for these consumers.

It is also possible that regulation is playing a role. Customers remaining on standing contracts are less likely to switch retailers. They have had the option to enter the competitive part of the market in NSW, ACT and Victoria since 2002, and for more than a decade in both SA and Queensland but have chosen not to choose.

Standing or deemed contracts are a restriction on competition designed to assist in the transition to a competitive retail market but they have become a default option for disengaged or passive customers. In some jurisdictions, all retailers are obliged to offer standing offers. In other jurisdictions, Local Retailers are obliged to offer deemed contracts.

Passive consumers do not constrain firm pricing decisions to the same extent as active consumers. This reduction in price sensitivity by passive customers can translate into a lessening of the intensity of competition and, as a result, higher prices for consumers.

In the United Kingdom, a 2005 study of consumer choice gas and electricity retail markets found that most consumers were unlikely to switch their provider even though most knew they could switch.⁷⁸ This study concluded that search costs and perceptions of search and switching costs were important market frictions and that choice alone was not sufficient as consumers had to be prepared to exercise that choice if deregulation was to yield benefits. A subsequent 2010 study used a model of search costs to estimate a search cost distribution. It found that observed price patterns in the GB retail electricity market fitted with the view that search costs there were relatively high and the model supported that most consumers would not search or switch.⁷⁹

⁷⁷ See a brief explanation here: <http://economix.blogs.nytimes.com/2010/10/11/the-work-behind-the-nobel-prize/? r=0>

⁷⁸ *'Consumer Choice and Competition Policy'*: A study of UK energy markets, Giuletta, Monica., Waddams-Price, Catherine., Waterson, Michael., Economic Journal. Oct 2005, Vol. 115 Issue 506, p949-968. 20p

⁷⁹ Estimation of Search Frictions in the British Electricity Market, Monica Giuletta, Michael Waterson and Matthijs R.Wildenbeest. Warwick University Research Papers, Number 940, 2010.

A report for the AEMC's 2014 retail competition review found that interest in looking for a better deal was relatively high, but many are simply disinterested.⁸⁰ Around 13 per cent of residential customers said they were currently looking for a better deal. However, 46 per cent were interested but not currently looking and 37 per cent were not interested. This implies that six out of ten customers were passive. When residential customers were asked about their likelihood of switching energy company or plan in the next 12 months 46 per cent were not interested⁸¹ while 28 per cent were fairly interested⁸².

This is comparable to the results found by Ofgem in its study of United Kingdom consumers in 2011⁸³ where a range of 10 per cent to 20 per cent were found to be active as they were likely to have switched provider or tariff within the last year either through their own searching or by contact with a sales agent.

Entrant retailers face a restricted pool of potentially interested consumers and acquisition costs are significantly higher. This may be exacerbated by standing offers which allow no engagement in the market. Overall, these market frictions reduce competitive pressure and consumer welfare.

Search costs also include complex retail tariffs and limited usefulness and complexity of price comparators. There appear to be ongoing difficulties with timely and efficient consumer access to energy consumption data.

Other barriers include a lack of transparency over the split between network and other costs in retail bills. In addition, it appears there remain significant barriers to customers obtaining their own energy consumption data. While reforms proposed in a 2012 report prepared by the present authors were adopted in part in the AEMC's 2015 Power of Choice decision⁸⁴, the Finkel Review suggests further improvements could be made.

Significant discounts relative to standing and market contracts are available for customers who are prepared to switch retailers. While some customer segments appear to be able to take advantage of these discounts, the available evidence suggests that most customer segments are not able to take advantage of discounts and end up paying higher prices than are otherwise available.

The available customer switching data suggests that consumers outside cities – possibly including irrigators – may be less likely to switch retailers.

5.3 (Lack of) retail innovation

Section 2.1 observed that, while a diverse group, agricultural producers pumping water as a key input to production possess general characteristics that have, historically, made it feasible to purchase electricity under specially designed, price regulated irrigator tariffs. The design of

⁸⁰ See a report prepared for the AEMC '*Consumer research for nationwide review of competition in energy retail markets; qualitative and quantitative research*', Newgate Research, June 2014.

⁸¹ A rating of 0 to 3 on the 10 point scale.

⁸² A rating of 4 to 6 on the 10 point scale.

⁸³ Ofgem The Retail Market Review - Findings and initial proposals, 21 March 2011, Supplementary appendices, page 5

⁸⁴ See

these tariffs recognised both that irrigators may use significant volumes of electricity, including schemes pooling farm demand, and that irrigator demand profiles are relatively flat.

As retail electricity markets have been opened to competition, regulated irrigation tariffs have largely been replaced by business tariffs. Irrigation tariffs remain in regional Queensland but are in the process of being phased out under regulated pricing decisions set by the Queensland Competition Authority.

As explained in section 2.1, irrigators and agricultural producers have attractive load profiles and significant volumes compared with other users. In addition, some irrigators and agricultural producers may have the ability and willingness to modify their demand during the very limited time periods when network and generation capacity is congested and retailer supply costs are correspondingly extremely high.⁸⁵

In workably competitive markets, we could expect to see retailers develop products that are at least broadly comparable to the old regulated irrigator tariffs. Indeed, with the falling price of ICT, innovative tariff designs could be expected.

Under such tariff structures, irrigators could be rewarded for reducing consumption during extreme peak demand and price periods. Such tariffs would reduce retailer supply costs because they would:

- Transfer volume/price risk during brief periods of wholesale market congestion from retailers to irrigation consumers;
- Reduce retailer's wholesale market spot purchase and hedging costs; and
- Increase the potential benefits to retailers from switching customers to time of use or maximum demand related network tariffs with significant discounts in network prices.

However such tariffs are so far not forthcoming in contestable markets.

Energy Consumers Australia has recently agreed to fund the NIC Energy Task Force to undertake primary research into irrigator engagement in retail energy markets. Pending this work, there are indications that:

- NSW irrigators may be paying relatively high prices due to weaker retail competition in the Essential Energy retail market.
- All irrigators may be paying higher prices than may be available due to the search cost problem identified.
- Irrigators in Queensland are paying higher prices than otherwise, due to the QCA's over-estimation of retail costs.
- There is also evidence that electricity prices are higher than otherwise because they require irrigators to contribute to cross subsidies in favour of consumers with high cooling loads.

⁸⁵ We strongly recommend the ACCC avoid falling into the common error of focusing on misleading daily demand profiles. Daily profiles reduce half hourly annual demand profile data to 48 daily or perhaps 192 seasonal profiles, but are of little value in understanding electricity supply costs or efficient pricing. This is explained in section 3 of a 2016 report by the present authors: *Errors in Australian Energy Regulator's Draft Decision on Ergon Energy's 2016 Tariff Structure Statement*.

5.4 Demand response to excessive prices

Up until the last decade, electricity demand was considered to be relatively inelastic – demand would not respond to increases or decreases in price. The substantial run up in retail prices as described in Figure 1 of the ACCC Issues Paper is, however, contributing to a substantial demand response. Coincident with the increase in prices across the NEM, aggregate demand has been decreasing.

According to the AEMO's 2017 Electricity Forecasting Insights report, this is expected to continue. Indeed, compared with its 2016 National Electricity Forecast Report, forecast demand for the next decade is now forecast to be lower.

Demand from the grid, however, is forecast to stay flat, as consumers increasingly control their own use and costs, reducing their demand for grid supply by:

- *Generating their own electricity behind the meter (through rooftop PV, cogeneration, and other small-scale generation technologies on their own premises).*
- *Using more energy-efficient appliances, buildings, and machinery.*
- *Changing their behaviour to reduce electricity use where possible.*

The case studies set out in Section 2 show that agricultural producers have responded to higher electricity prices by

- reducing demand for network provided electricity by reducing production
- reducing demand for network provided electricity through increasing energy efficiency;
- substituting demand for network provided electricity with distributed generation; and
- collaborating with other energy users to strengthen bargaining power in electricity markets.

Demand response to efficient prices is economically efficient and desirable. However, as established in the preceding sections, current costs, profits and prices across the NEM supply chain are well above efficient prices.

Demand response to inefficient prices is not economically efficient or desirable. The result is that resource misallocation within the electricity sector is transmitted into other sectors of the economy. As documented in the case studies in Appendix, resource misallocations are now arising in the food and fibre sector.

Of even greater concern is there are further substantial increases in prices and costs that are already in train. These include the retail price increases effective from 1 July 2017 and the network price increases due to take place in NSW and the ACT from 1 July 2018.

There is no evidence that rising network and wholesale costs are leading to a substantial moderation in public retail prices offered by the major vertically and horizontally integrated retailers. However, there are indications that rising wholesale costs, and reduced liquidity, could further weaken the pockets retail markets where competition is effective in constraining prices.

5.5 Concluding remarks

This section has set out how features of the demand side of electricity markets are contributing to and interacting with the supply side issues set out in Section 4. Together, supply and demand issues help to explain the inefficient pricing outcomes set out in Section 3 (excluding problems with network regulation discussed in Section 3.2.1).

The available data suggest that demand side issues are adversely affecting agricultural producers. Most notably, it appears that in regional NSW, for example, there is weaker competitive pressure constraining retail prices and margins.

Because of the network boundaries, NSW has the clearest distinction between regional and metropolitan retail electricity markets. The Ergon boundary is less useful because retail competition is not feasible due to the Queensland government's Uniform Tariff Policy. In other jurisdictions, network boundaries tend to overlap regional and metropolitan areas.

We would encourage the ACCC to exercise its information gathering powers, to the extent possible, to identify those parts of the market where competition is more or less successful in constraining retail prices. In particular, the ACCC could seek more detailed retailer data on the size and characteristics of customers who are currently accessing the most competitive (lowest) retail prices (or least competitive retail prices). Ideally, if this data were sorted by post code or similar geographical categories, it may be possible to draw robust conclusions on whether regional customer groups are perhaps more likely to be paying more for their electricity than comparable customers elsewhere (after accounting for likely higher distribution and electrical loss costs in regional areas).

Appendix 1 About the authors

Simon Orme is an economist who provides expert advice and management in complex, high-stakes issues in energy, infrastructure, utilities and public policy. He advises industry and government clients in infrastructure access regulation and pricing in the energy, water, and telecommunications sectors.

James Swansson is a managing consultant in Melbourne who specialises in the development of evidenced-based solutions to complex problems, particularly through the design and application of analyses in data rich contexts. He has worked on a wide range of projects in Sapere's energy, transport and health practices, providing economic data analysis and modelling of complex data sets.

Simon is one of Australia's leading experts on energy retail competition. This was acknowledged by his selection by the WA Public Utilities Office (PUO) to lead a review of electricity retail costs, prices and margins across Australia for the WA Electricity Retail Market Review. In addition, Simon led a separate project for the WA PUO on the design of a legislative scheme for best practice energy retail regulation for WA. This project required consideration of the effectiveness of existing and previous regulation schemes, changes in retail energy markets relevant regulatory and economic theory and international developments.

Simon and James have undertaken several projects for the Energy Division of the Victorian government (through many machinery changes) assessing energy retail prices and margins. Most notably, in 2015 Simon led a report analysing regulatory and market barriers to effective competition in Victoria's retail energy markets. They have previously undertaken a series of projects measuring energy retail margins and prices in Victoria and other jurisdictions.

Simon has extensive experience around assessing wholesale energy trading risk, in the context of considering prudent and efficient retail margins. This included several projects for energy retailers on measuring and managing energy risk, and advising on energy risk in the context of regulated price setting both for regulators and regulated entities.

- Contributions to *Peer review of standard charges for airport access* (aeronautical charges) for Auckland International Airport (2017)
- *Errors in Australian Energy Regulator's Draft Decision on Ergon Energy's 2016 Tariff Structure Statement*, prepared for CANEGROWERS (2016)
- *Review of Queensland Competition Authority (QCA) Draft Decision on "R" component of Draft Determination, regulated Electricity Retail prices for 2016 – 2017*, dated March 2016, for CANEGROWERS, part-funded by Energy Consumers Australia
- *Design of a retail electricity and gas price regulation statutory scheme*, for Public Utilities Office, Department of Finance, Government of Western Australia (2015)
- *Impact of market and regulatory arrangements on Victoria's electricity and gas markets*, for Government of Victoria (DEDJTR) (2015)
- 2014 report prepared by the present authors for the Australian Government entitled *Implications of extreme weather for the Australian National Electricity Market: historical analysis and 2019 extreme heatwave scenario*.

- Workshops on retail price regulation for the Pakistan National Electricity Retailer (2015), for US AID (US government).
- Contributions to expert testimony presented to ACCC vs AGL Energy, regarding AGL Energy's acquisition of Macquarie Generation, 2014.
- Advice on options for improving consumer access to tariff data, for Electricity Authority of New Zealand (2014)
- *Cost-benefit analysis on options for reform of transmission pricing methodology*, Electricity Authority of New Zealand (2013)
- *Advice on tariff information in consumer search decisions*, for Electricity Authority of New Zealand, 2014
- *WA Electricity Market Review: components of retail tariffs* (2014), for Public Utilities Office
- *Scoping study for consumer energy access data system (CEData)*, Department of Industry, 2013.
- *Quantifying price cross subsidisation between electricity consumers in Victoria* (2014) for Department of State Development, Business and Innovation (Victoria)
- *Identifying the sources of the WA retail price/cost gap* (2013), for WA Independent Market Operator
- *Comparative analysis of household energy bills in the NEM* (2013), for Department of State Development, Business and Innovation (Victoria)
- *Future electricity networks* (2013), for Department of State Development, Business and Innovation (Victoria)
- *Electricity retailer cost of supply curve – analysis of interval metering data and customer characteristics* (2013), for Department of State Development, Business and Innovation (Victoria)
- Regulatory Impact Statement on the extension of the Energy Efficiency Opportunities program to electricity and gas distribution and transmission, Department of Industry, 2013.
- *Comparative analysis of household energy bills* (2012), for Department of Primary Industries (Victoria)
- Review of Philippine price regulation scheme for distribution and transmission, for National Grid Corporation of the Philippines – 2007-2016
- *Competitive provision of electricity and gas network connection services* – report to the Network Policy Working Group [reporting to the Senior Committee of Officials to the Ministerial Council for Energy], dated April 2011.
- *Impact of smart metering on vulnerable consumers report to MCE, 2009* – member of Energy Market Consultants team.