
DEREGULATION AND REFORM OF THE ELECTRICITY INDUSTRY IN AUSTRALIA

LESSONS FOR JAPAN?

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Introduction

The Japanese Government began to reform the Japanese electricity market in 2016. The driving force for the new energy policy was the Fukushima nuclear incident of 2011 which highlighted the risk associated with being nuclear dependent. Japan had considered nuclear power cheap, reliable and safe but, in moving away from nuclear generation, the Japanese Government formed the view that the electricity sector did not provide sufficient generation security.¹

While generation security is the first objective of the reforms, the Government was also concerned with the cost of providing electricity and the price consumers were paying for it. This concern led to the second objective of the Japanese energy plan – introduce competition to the generation and retail components of the energy sector. By introducing competition to these areas, the government aimed to attract private investment into generation, thus putting pressure on generation cost.²

Retail competition provides additional pressure on generators to minimise costs and profit, benefiting customers by lowering prices. However, at the time of the energy plan, the only customers that had access to a retail market were large consumers. This meant small consumers, the biggest group being residential, did not have access to competitive prices. All small customers received a government set price, which is usually higher than a price set by a competitive market. This line of thinking was the reasoning behind the third objective of the energy strategic plan – expand choice to consumers regarding retail tariffs.³

All three of the objectives set by the Japanese Government have similarities to what Australia has set out to achieve over the last thirty years in energy policy. In 1990, Paul Keating, who was the Treasurer of Australia at that time, asked the Industry Commission to ‘explore the institutional, regulatory and other arrangements governments’ influence that may result in mishandling of resource use in the energy sector’.⁴ It was also asked to provide recommendations on ways to improve the economic performance of the energy sector. The focus was to be on the management and structure of the generation, transmission, and distribution components in the energy sector; interconnection of separate markets; alternative pricing policies; privatisation of generators; and interactions with other sectors, such as the environment and community services.⁵

¹ METI, Strategic Energy Plan, April 2014, p 4

² METI, Strategic Energy Plan, April 2014, p 5

³ METI, Electricity System Reform: Outline, viewed January 2018

⁴ Industry Commission, Energy Generation and Distribution, Volume 1, May 1991, – terms of reference

⁵ Industry Commission, Energy Generation and Distribution, Volume 1, May 1991, – terms of reference

The report from the Industry Commission was the beginning of the transformation of the Australian energy sector. A national interconnected electricity wholesale market was set up to encourage private investors to enter into the energy sector, with the aim of driving down the cost of supplying generation, diversifying the generation mix and spreading the demand burden (some States have big demand profiles but limited generation). Similarly, Japan is establishing its interconnected market between the separate provincial grids, and using a wholesale market to trade generation capacity.

Considering the maturity difference between the Australian and Japanese electricity markets, there are likely to be lessons that Japan can learn from the Australian experience.

Further to the development to the wholesale market, there was a gradual opening up of the retail market to competition and deregulation. Again, this was done for reasons similar to those in Japan, namely that retail competition should provide downward pressure on the retail price of electricity. Whether this actually occurred in Australia is discussed below.

This study consists of five sections apart from this introduction. The next section explores how Australia undertook the energy policy reform, including the objectives, major institutions involved, the responsibility and accountability, and the eventual structure adopted.

Although competition was enabled in the generation and retail sector, it was not introduced to the network. The third section discusses the institutions, rules and requirements put in place to oversee the network businesses, noting that the networks are a huge cost factor for consumers. It is necessary to have regulation in place to keep costs and profits at a suitable level, while maintaining the level of service. The section will discuss customer engagement, a tool which the regulators are using in an attempt to drive competitive behaviour in an uncompetitive market.

The fourth section examines the wholesale electricity market: what it is, how it works, and whether it has been successful.

The fifth section looks at how the deregulation of the electricity retail market has fared. It will explain how it works and how it came to be. It will analyse what aspects the retailers can compete on and what customers can expect to receive.

The final section will draw some conclusions. Broadly, we conclude that undertaking reform in the energy sector is complicated and is sensitive to political decisions. We also conclude that competition may lead to an efficient allocation of resources, but it does not necessarily lead to lower prices for consumers.

1. The history of reform and deregulation in Australia

Before deregulation, all utilities were owned and run by the State Governments. Generation, transmission, distribution and retail was all undertaken by the government. As government drivers are different to those of corporations, there was little pressure to keep costs down and prices low. If the utility decided something needed doing, the customers had no choice in the decision of the utility and no choice but to pay despite the cost. It was under these conditions that the Australian electricity sector was being operated prior to 1991.

The deregulation and reform discussion began in 1991 with the Council of Australian Governments responding to the Industry Commission report referred to earlier.⁶

The report discussed the benefits and risks associated with the corporatisation and privatisation of public utilities. It recommended administrative reform of public utilities and structural reform of the whole sector. It also noted the risks of governments and corporations optimising income rather than providing efficient pricing to consumers.⁷ Finally, it highlighted the gains to the economy if the government were to open up the sector.

The report concluded there were significant gross domestic product (GDP) increases to be gained by:⁸ restructuring the supply side of the energy sector by deconstructing the vertical setup of generation, transmission, distribution and retail; introducing competition into generation and retail by providing fair and non-discriminant access to the transmission and distribution networks; privatising publicly owned generation, transmission and distribution assets; and establishing (when economically viable), enhancing and extending the interconnections between the different States to form a national grid that allowed for cross boarder supply of electricity.

The Commission argued that these recommendations would allow for consumers to access the cheapest price of electricity and provide security of supply to all parties.⁹ With respect to the gas industry, the report recommended reforms to the pipeline networks that transported gas and how the prices are set. However, the gas sector is not a focus of this study.

⁶ The report was commissioned a year earlier by Paul Keating, the Treasurer of Australia at the time.

⁷ Industry Commission, Energy Generation and Distribution, Volume 1, May 1991, p 3

⁸ The estimated increase by the reform was 1.25%. As a comparison, a similar tax reform at the time only produced 0.5% GDP increase.

⁹ Industry Commission, energy generation and distribution, Volume 1, May 1991, p 12-13

To drive the reforms, the Council of Australian Governments established a National Grid Management Council to establish a competitive electricity market. The overarching objective of the Council was to encourage and co-ordinate the most cost efficient,¹⁰ economical¹¹ and environmentally sound¹² development of the interstate electricity supply industry having regard to key National and State policy objectives.¹³ This meant that in building an interconnected network one State could not be advantaged over another.

The National Grid Management Council set up its own objectives under those that the Council of Australian Governments had established. The sub-objectives were:¹⁴

- To develop a generation market which is initially between Grid Owners/Grid Operators and Generators. The Council would set up conditions for private investment to enter the market, to encourage competition
- To provide a framework for long-term investment to meet future power supply demands, including promoting the appropriate use of electricity demand management
- To ensure that benefits and costs of interconnection extensions are properly identified and accounted for
- To maintain and develop the technical, economic and environmental performance of the grid and/or utilisation of the power system
- To enable private generation and publicly owned generation to compete on equal terms
- To recognise commitments and reasonable expectations implicit in existing contractual arrangements, such as the Interconnection Operating Agreement,¹⁵ and ensure that parties to those arrangements are treated fairly.¹⁶

These objectives are trying to achieve similar outcomes to those intended by the Japanese Government. Both governments aim to drive down the cost of supplying electricity and ensure

¹⁰ Cost efficient means that if investment is done, it is done the cheapest way to achieve the desired outcome.

¹¹ The economical aim was to make sure that the benefit being achieved through the formation of the national market was greater than the cost. That is the interconnection only happened when the benefit was greater than the cost if it.

¹² The environmental impact of the interconnection and generation was taken into account and minimised as much as possible.

¹³ National Grid Management Council, National Grid Protocol First Issue – Chapter 1 National Grid Structure and Principles, December 1992, p 10

¹⁴ National Grid Management Council, National Grid Protocol First Issue, December 1992, p3

¹⁵ The Interconnection Operations Agreement, was the mechanism used to allow interstate generation trade. It was between NSW, South Australia and Victoria.

¹⁶ This was the outcome between South Australia and Victoria. South Australia had a large amount of market power as a single large market, while Victoria had a spread of different generators trying to sell to South Australia

energy security. Australia attempted to achieve this through opening its market to private investment, and by setting up a market where all suppliers faced the same participation rules.

Over the following five years the National Grid Management Council would establish a set of tools to reach its objectives. These were the National Grid Protocol, the National Electricity Code and the development of the wholesale electricity market.

State Contributions

The National Grid Management Council was not the only body that contributed to the reforms in the electricity sector. Deregulation and reforms had begun earlier in some States. New South Wales undertook a corporatisation of its electricity sector between 1991 and 1992. Firstly, it rebranded the Electricity Commission of NSW to Pacific Power and restructured itself into three generation businesses, a network business and a customer service business. Although it was not a full splitting of the vertical integrated sector, it was seeking to improve performance between the different elements by instituting commercial incentives.¹⁷ In this regard, the Industry Commission raised two concerns about publicly owned corporatised public utilities: first, that the policies of some governments will not capture the economic gains a private company would; and, the differences between government and private practices will lead to different investment decisions which had the potential to hinder the development of the national grid.¹⁸ These concerns are relevant for any publicly corporatisation of a utility.

To further the commercial incentive through corporatisation, NSW also established an internal wholesale electricity market.¹⁹ Similarly, Victoria started VicPool II in 1992.²⁰ VicPool was an internal wholesale power market that operated within Victoria. The NSW and Victorian wholesale markets provided some of the confidence used to persuade stakeholders to adopt what would eventually be the National Electricity Market.

While the National Grid Management Council developed the national market and rules (further discussed below), State jurisdictions were given responsibility to: restructure their State-owned electricity industry; conduct local trials of competitive markets (all of which were used to build and develop the National Electricity Market); set up an independent economic regulator; and agree to support the regulatory and legal changes needed to establish the national electricity market.²¹

¹⁷ Industry commission, Energy Generation and Distribution – Vol. 1, 1991, p3

¹⁸ Industry commission, Energy Generation and Distribution – Vol. 1, 1991, p3

¹⁹ AEMC, A case study in successful microeconomic reform, December 2013, p15

²⁰ Eventually a VicPool III would be developed. These State based markets would help with the design of the NEM

²¹ AEMC, A case study in successful microeconomic reform, December 2013, p 15

The common features of the reforms in each State were:

- The vertical separation of generation, transmission and distribution
- Separation of retail and distribution (or setup a ring-fencing²² framework)
- Ring-fencing transmission and power system control functions
- Corporatisation of electricity entities
- Minimising financial and reliability risks to generators, retailers and consumers in the transition to the National Energy Market framework
- Establishing transition units to minimise the risks associated with the reforms
- The establishment of economic regulators to enforce economic regulation to the various parts of the supply chain. This could be revenue determinations, service standard determinations and compliance regimes (for safety and price).

Each State set up a reform team with input from industry representatives and external experts. The State reform teams oversaw managing the reform process, including managing local changes to the corporatising or privatising generation, transmission, distribution and retail services. They were responsible for coordinating with other States to ensure reasonable consistency.²³

Further to having the reform teams coordinate and implement the policy change, there were clear accountabilities between government and industry. The government involved industry experts to develop economic and technical policy and legislation that would meet the State and the national objectives of opening up the sector to private investment and the market. Although there was some conflict with industry bodies,²⁴ they were necessary in making the reforms (they were the ones with real world experience). Further, by involving the industry early, it made it easier in the long run to implement the policy changes and get the private companies to participate in the market.

When designing and developing the jurisdictional and national reforms, all parties used an open consultation process and conducted analysis of the impact competition reforms would have on the different States. This ensured that customers, generators and distributors had a chance to

²² Ring-fencing is when a company separates the different businesses it might operate. For example, if a company owned both a generator and a part of the transmission network, it would need to separate those businesses to not take advantage of the market power it would have, and to prevent one arm of the business taking on the financial risk of the parent company. Ring-fencing is mainly done to protect consumers of monopoly goods.

²³ Productivity Commission, *The Electricity Industry In South Australia*, April 1995, p 63-67

²⁴ This was mainly because of the limitation of the monopoly rents.

provide input into the process. These consultation periods and studies were completed by 1996.²⁵

Part of the reason States were given these responsibilities was so that local specific issues could be effectively managed. Examples of local issues included providing power to different locations (geographic issues), dealing with legacy power supply contractions with large customers (such as smelters), and capturing community obligations the States may have.

Victoria provides a good example of the analysis and consultation undertaken by State governments. It examined the delivery of electricity in 21 areas. Each part of the analysis was examined by independent consultants and went through a public consultation phase. The approach allowed all parties to voice objections, and raise issues.²⁶

In addition to the States looking at the impact of competition in their areas, each State agreed to remove economic and technical regulation from government and establish independent jurisdictional economic and/or technical regulators. These regulators would set prices and service standard regimes for the non-competitive parts of the national electricity market (transmission and distribution). The regulators also licenced generators and, in the future, retailers. In some cases, governments retained responsibility for technical regulation.²⁷

Political support

During the energy sector reforms, there was strong bipartisan support from both federal Labour and Liberal governments. The Prime Minister, Treasurer and key Ministers from the 1983 to 1996 Labour Government began the reforms in 1990,²⁸ and John Howard, as opposition leader, supported the labour reforms and continued implementing them during his Prime Ministership (1996 to 2007).

State support for the reforms led to the formation of the Baxter Group, consisting of senior Australian Government and State officials. This group made sure the jurisdictional reforms were coordinated between the States and kept the Council of Australian Governments involved in the reform process. Although the Federal government was keen to reform the electricity market, it had no constitutional power to force the change; it needed the States to be willing to implement the reforms.²⁹ The States had the most to gain or lose from the reforms – without their support none of the electricity sector changes would have happened. Although it took time, the

²⁵ AEMC, A case study in successful microeconomic reform, December 2013, p 17

²⁶ AEMC, A case study in successful microeconomic reform, December 2013, p 17

²⁷ AEMC, A case study in successful microeconomic reform, December 2013, p 18

²⁸ The Industry Commission was sent the terms of reference in 1990 by Treasurer Paul Keating

²⁹ AEMC, A case study in successful microeconomic reform, December 2013, p 20

electricity sector reform in Australia only happened through political cooperation between the States and Federal government.

Competition policy

The 1991 report by the Industry Commission commenced the energy sector reforms. However, a major influence of the policies developed was the Hilmer Report,³⁰ which reviewed the Application of the Trade Practices Act 1974 with a focus to look at how improvements could be made to competition policy in Australia.³¹

The energy sector picked up and integrated some of the recommendations made in the Hilmer Report. One of the major recommendations was structural reform to public owned monopolies. This reinforced the objectives of the 1991 Industry Commission report, with the Hilmer Report proposing further principles to adopt to improve the competitive nature of the energy sector.³² These included principles to corporatise government owned businesses (such as electricity infrastructure); and to apply tax equivalent systems and ensure these corporations sought the same environmental and planning approvals as private businesses.³³ Further, the Hilmer Report recommended States implement non-discriminatory access to essential infrastructure. This point around access had not been recognised under the 1991 Industry Commission report but was essential to attract private investment (it meant the entry barriers were lower).

An outcome of the Hilmer Report was that the National Competition Council, an independent body, was setup to monitor and check that the recommendations of the report were implemented, including those regarding the energy sector.³⁴

The National Competition Council was an important institution because it was the body that recommended to the Commonwealth whether the jurisdictions had undertaken the reforms effectively. The assessment impacted the amount of payment the States would receive from the National Competition Payment Scheme. This financial incentive was to offset the loss of monopoly rents the States would no longer receive with the introduction of the reforms.³⁵ These payments helped to achieve the 'impossible'.³⁶

³⁰ Productivity Commission, The Electricity Industry In South Australia, April 1995, p 53

³¹ Independent Committee of Inquiry, Hilmer Report 1993, p V

³² Independent Committee of Inquiry, Hilmer Report 1993, p XXX

³³ Productivity Commission, The Electricity Industry In South Australia, April 1995, p 54

³⁴ AEMC, A case study in successful microeconomic reform, December 2013, p 20

³⁵ AEMC, A case study in successful microeconomic reform, December 2013, p 21

³⁶ *"many electricity reform participants have suggested that it was nearly an impossible task because of the various stakeholders who did not want to lose access to the existing monopoly rents (e.g. state governments and vertically integrated utilities"* – AEMC, A case study in successful microeconomic reform, p 20

The development of national institutions

As noted earlier, the National Grid Management Council was to develop the rules which market participants had to follow, and to design the competitive market mechanism.

Between 1991 and 1993, the Council produced several research and discussion papers around potential market design. The areas for consultation included:

- Options for network service pricing and capital valuation for generation and network assets
- Options on common trading arrangements for electricity as observed overseas
- Options for interstate connections at the transmission level
- Options for regulatory arrangements for a national market
- Any policy issues it came across that needed the government to work through to establish a generation wholesale market
- Demand management³⁷ options
- Options on the reduction of technical barriers for residential customers choosing a retailer (at the time customers only had a retailer choice if they consumed more than 10 MW per annum).

The national grid protocol was released in 1992. The protocol established the responsibilities and technical requirements for connecting to the national grid and entering the wholesale electricity market. This first draft setup the initial framework for the development of a single national market. It was initially restricted to generators and large consumers.

In 1993, National Grid Management Council received agreement from Council of Australian Governments to conduct a paper trial of a national electricity market.³⁸ It sought to undertake this with as many market participants as possible to gather sufficient data to assess the operation of the market. This approach also had the benefit of increasing participants' knowledge of the operational and financial implications of the competitive market approach without the risks associated with a live trial.³⁹

The trial ran from November 1993 to June 1994 with approximately 170 participants, including large customers, distributors and generators. Although the trial had limits (such as ancillary

³⁷ Demand management is used to plan for and limit demand shocks to the network. These shocks are called peaks. Demand management is used to smooth electricity consumption and thus not put the network under stress.

³⁸ The paper trial is where the market operated on paper only. It did not have binding consequences. It is a good way to test the market without applying it to the real world.

³⁹ AEMC, A case study in successful microeconomic reform, December 2013, p 24

services⁴⁰ not being included in the scheduling of generation), it provided enough insight to get all affected parties to agree on the benefit of having a national electricity market. The benefits included having access to a larger market and the ability to negotiate settlement prices.

From the trial, the Council proposed a set of principles for the national market to the Council of Australian Governments. The principles were:⁴¹

- The ability for customers to choose which supplier, including generators, retailers and traders, they will trade with
- Non-discriminatory access to the interconnected transmission and distribution network
- Non-discriminatory legislative or regulatory barriers to entry for new participants in generation or retail supply
- Non-discriminatory legislative or regulatory barriers to interstate and/or intrastate trade.

The Council of Australian Governments endorsed the suggested principles for the National Grid Management Council to incorporate into the national market. It was important that the principles were clear so that all the States understood the aim, and no unnecessary or counterproductive policies were put in place that would jeopardise the national electricity framework.

In 1994, the National Grid Management Council set up various working groups and steering committees to develop a National Electricity Code that would specify market governance arrangements, trading rules, system security rules, third party access arrangements and metering rules. This code would eventually become the National Electricity Rules.⁴²

Once the code had been developed, the Council undertook a major consultancy program to test it with various stakeholders, including State government departments, market suppliers (generators, network operators), customers and community advocate groups. The Council also sought a series of independent experts to review the code and wholesale market design against overseas markets (particularly the USA and UK).

The objective of the consultation was to refine the draft code so that it did not have any unintended or perverse rules.

By 1996, the Council had developed institutional and governance arrangements for the market, including the market operator (National Electricity Market Management Company), and a body

⁴⁰ Ancillary services are the group of suppliers that provide the service to maintain key technical aspects of the grid. These include maintaining frequency, voltage, network loading, and system restart processes.

⁴¹ AEMC, A case study in successful microeconomic reform, December 2013, p 25

⁴² AEMC, A case study in successful microeconomic reform, December 2013, p 30

to administer the code, the National Electricity Code Administrator. These were formed under the Corporations Act with an independent chair and State participants as members.⁴³ Initially, there was a reluctance from some States to relinquish control to the board and new companies. However, after a year, both National Electricity Code Administrator and the market operator had the full support of the States.⁴⁴ The National Grid Management Committee was disbanded in 1997 once it had established the National Electricity Code, the market, and the independent bodies to oversee the National Energy Market.

The role of National Electricity Code Administrator was to manage code changes, monitor compliance and prosecute for breaches through the National Electricity Tribunal. This body would eventually be replaced by the Australian Energy Market Commission and the Australian Energy Regulator.⁴⁵

The role of the market operator was to control the dispatch of generation supply across the National Energy Market, register code participants and perform pool settlements and undertake network planning to coordinate and plan system security. This body would eventually be replaced by the Australian Energy Market Operator.

The establishment of these bodies was vital as it transferred to national bodies much of the control State Governments had over the energy sector. The independence of these bodies was essential to attract private investment to the sector and mitigate against political interference.

Although it was difficult to get the States to relinquish power by signing up to the National Electricity Code Administrator and the market operator, it was harder to get them to harmonise electricity laws and regulations. It was essential all jurisdictions harmonised the laws and regulations governing the sector so that private investment did not have to deal with multiple regimes and so that market participants were treated equally. To reach this objective, Council of Australian Governments assigned South Australia to be the lead legislator for the National Electricity Law.

Each State signed a Legislation Agreement, where they agreed to adopt legislation identical to that of the lead legislator. This could not be changed or repealed without unanimous consent. The National Electricity Law requires all network service providers and wholesale market

⁴³ AEMC, A case study in successful microeconomic reform, December 2013, p 30

⁴⁴ AEMC, A case study in successful microeconomic reform, December 2013, p 30

⁴⁵ Australian Government Solicitor, Express law – Commencement of new national electricity legislation, July 2005

participants (generators and retailers) to register with the market operator under the national electricity code.⁴⁶

Transition to the National Energy Market

Once all the ground work had been laid and agreed upon, a transitional approach was implemented to avoid potential volatility, interruption to customers and teething problems:⁴⁷

- The NSW State Market joined the Victorian Market in 1997
- South Australia joined soon after as a separate trader
- Queensland joined and operated a separate market on the National Electricity Market until the interconnector was finished in 2001
- Tasmania joined 2005 and a cable was laid to join it to the Victorian Grid.

Initially, the wholesale market was only open to large customers (for example smelting companies). Residential customers continued to receive regulated prices.

The staged approach allowed for the generators and retailers to ensure that the market was working before introducing the residential load. It also meant that as the smaller markets entered the national market, there was a significant number of suppliers who knew how to operate in a market. This minimised the risk for the market but also for the individual businesses as they were already aware of the technical and commercial implications in the market.

Market Institutions as at 2017

As part of the electricity policy changes, the States agreed to set up independent bodies to oversee the markets. These bodies were either set up to be independent regulators who were given power to implement mechanisms to bring the reforms to fruition, or independent advice bodies.

The State economic regulators include:

- Independent Pricing and Regulatory Tribunal for New South Wales
- Queensland Competition Authority
- Essential Services Commission of South Australia
- Office of the Tasmanian Economic Regulator
- Essential Services Commission of Victoria.

⁴⁶National Electricity (South Australia) Act 1996, Division 1 Section 12, viewed November 2017,

⁴⁷ AEMC, A case study in successful microeconomic reform, p 4-5 & Chapter 3

Historically, the State regulators were responsible for the implementation of all the reforms and necessary regulation needed at all levels of the supply chain. This included setting price regulation and service standard regulation. However, over the last decade, a series of national bodies were formed to take over a lot of the State responsibilities. This was to create some consistency in how networks were being regulated across the Nation. The States retained the right to set service standards.⁴⁸ This was appropriate as the networks faced different geographic and network characteristics. For example, SA Power Networks, the South Australian distributor, delivers electricity to regional and remote communities as well as servicing a major city while Citipower (in Victoria) only services the Melbourne CBD and inner suburbs.

There are three main national bodies that regulate the electricity sector: the Australian Energy Market Commission, The Australian Energy Regulator and the Australian Energy Market Operator. These three bodies are in control of the national electricity rules, revenue regulation of network businesses and operate the national grid for security of supply and safety.

Australian Energy Market Commission

The Australian Energy Market Commission was established in 2005 to oversee the national energy markets. The Commission's role is to make rules that dictate how the different parts of the supply chain will be governed. This is done through the National Electricity Rules, National Gas Rules⁴⁹ and the National Energy Retail Rules.

- National Electricity Rules – these set the rights and responsibilities of transmission and distribution networks. It also direct the regulations to be put in place. The aim of the rules are to ensure the networks are funded appropriately to provide a sustainable operational grid at the lowest cost to consumers. In doing so, the focus of the rules are price, quality, safety, reliability and security of supply of electricity and the national electricity system. The rules are made under the National Electricity Law and have the force of law.
- National Energy Retail Rules – primarily relate to the sale and supply of energy to small customers (mainly residential and small businesses), and provide the detailed content of the consumer protection measures and contracts that govern the relationship between consumer, retailer and distributor.

⁴⁸ Service standards set out the reliability performance requirements and customer service requirements the network must meet. Transmission standards are normally set around restoration times and network planning to maintain levels of reliability. Distribution standards are normally set at allow duration and frequency of interruptions. They also cover standards around customer interactions, such as response times to phone calls or connections.

⁴⁹ This study does not explore the gas sector. It focuses on electricity.

The rules made for each of the areas referred to above impact on how companies can operate and participate in the competitive generation and retail sectors. They also govern the economic regulation of energy transmission and distribution networks (including gas pipelines). The Commission is the body that manages the rule change process.

The Commission also provides advice to the Council of Australian Governments on possible improvements to regulatory and market arrangements.

Australian Energy Market Operator

The Australian Energy Market Operator was established in 2009, by the Council of Australian Governments, to manage the electricity and gas markets. The Australian Energy Market Operator was created to draw together the responsibility for electricity and gas market functions, the national electricity market system operations, and national transmission planning under one operational framework. This was done to provide consistency for market participants and improve the whole of network security.

The Operator provides system planning, electricity load forecasting and power systems information, security advice and services to all regulators, generators and network operators. This information is important in setting service standards and revenue allowances, and deciding on the viability of investment on the grid.

Australian Energy Regulator

The Australian Energy Regulator regulates wholesale and retail energy markets, and energy networks.⁵⁰ It is part of the Australian Competition and Consumer Commission and was established in 2005. The Australian Energy Regulator has gradually absorbed many of the functions that had historically been undertaken by jurisdictional economic regulators. Currently, the regulator's responsibilities include:

- Setting revenue caps for electricity distribution and transmission network providers – this is done by examining and testing business proposals with regard to projected demand, age of infrastructure, operating and financial costs, and network standards (service and safety).
- Monitoring the electricity wholesale market – including weekly wholesale outcome reports, reports on prices outside of normal thresholds and quarterly reports on compliance monitoring activities.
- Monitoring and enforcement of compliance with the national electricity law, national electricity rules and national electricity regulations.

⁵⁰ The Australian Energy Regulator is enabled in doing this by the National Electricity Law and the National Electricity Law.

- Developing service standards for transmission and distribution providers.⁵¹
- Developing and setting ring-fencing guidelines.⁵²
- Assessing authorisation applications from businesses that want to become energy retailers, and exempting businesses from authorisation requirements (for example, nursing homes and caravan parks that on sell energy to tenants).
- Approving policies retailers develop to assist customer hardship.

2. Regulating the network operators

Transmission and distribution services exhibit the characteristics of a natural monopoly. This means that neither service is likely to face a competitor as it is uneconomical to duplicate the network and split the customer base. The cost of duplication and splitting the customer base would result in all customers paying more to access the grid.

Historically, the different networks were vertically integrated and owned and operated by the States. As part of the reform process, the States agreed to split and privatise (or turned into a publicly owned corporation) the transmission and distribution networks.

Part of the benefit for doing this is to drive down costs. In a commercial setting, the business will keep control of the cost of operating the business to increase profits. It must continue to deliver the service otherwise it will not be sustainable in the market. Governments, on the other hand, do not prioritise cost in delivering the service; ensuring the provision of the service and preventing interruptions is what matters. This can mean that the delivery of the service is likely to be done at a higher cost than by a private corporation.

However, private corporations needed to be regulated to prevent them from exploiting natural monopoly nature of the market, and they became subject to price and reliability regulation. There are two specific areas of regulating the networks that we address in this study. The first is consumer engagement and the second is security of supply.

The overarching aim of the regulators is to protect consumers' interests are being met and ensure a sustainable supply of electricity at the lowest cost. If the company is not providing what customers want then the customer has the option to change companies. Often, this customer pressure also leads to innovation and improvement of the service. By contrast, under a monopoly market, this is not an option. Regulators realise this pressure cannot be imitated by

⁵¹ These are only applicable if the State has not set any. Currently there are no jurisdictions that have adopted these standards

⁵² See footnote 22

regulation. To respond to this gap in assessing regulated businesses, regulators have enshrined customer engagement within company's decision making processes.

Consumer engagement, why is it important?

In a competitive market, consumers have the ability to choose the type of service and who is their service providers. They are likely to base this decision on price and type of service provided. Because of this, there is benefit in the service providers engaging with and understanding what customers value and what they are willing to pay to receive the service. This becomes a driving factor for a successful business, and it also drives down cost and, therefore, the price the customer pays. Further benefits arise as the information company's gather from customers directs where the company will benefit most from investment. That is, if the customer wants it and is willing to pay for it, the company can profit from it.

Generally, monopolies do not have this motivation as they are not competing against other companies to capture customers, and are able to recover costs regardless of whether the service is wanted or needed by the customer. This results in prices being higher than in a competitive market.

Regulators engage in these non-competitive markets (normally at the direction of a government) to prevent companies taking advantage of market power, which allows them to price above what a competitive market would. Although wording may differ, the main objective of economic regulators is to protect the long-term interests of consumers of regulated services. Regulators may do this by limiting what the company can charge customers and by setting required service standards.

Part of the regulatory process in setting prices and service standards is to guarantee service levels are needed and are what consumers want. Although the *need* part of this is possible to work out through technical expert and theoretical input (such as engineers for costing), the *want* part of the setting process is harder to achieve. In a competitive market, for example car manufacturing, the customer can pick and choose what attributes they want in a car. The car companies pay attention to the customers' preferences. Contemporary regulators undertake, or expect monopolies to undertake, customer engagement to incorporate customer preferences in the price setting process.

A further reason to have customer engagement is to limit the risk of the regulator being captured⁵³ by the regulated industry. Customer engagement is seen as an effective mechanism

⁵³ Regulatory capture is where the regulator makes decisions that favour the regulated entity over the benefit to customers

to provide the checks and balances to the relationship between the regulator and the regulated monopolies.⁵⁴

Customer Engagement, how is it done?

The idea of customer engagement has been in a long standing one. As mentioned above, the National Grid Management Councils' public consultation on the National Energy Code and the wholesale market development helped with what the national electricity market looked like and how it operated. However, there was a number of years before customer engagement would be used again in the energy sector.

The majority of regulatory processes and decisions have used the traditional form of customer engagement – public consultation. This approach involves allowing consumers, advocacy groups and interested parties (including governments and the regulated industry) to have the opportunity to comment on decision documents before final decisions are made by the regulator. There has been limited success with this approach in eliciting effective customer expectations. Some argue the subject matter is too difficult for customers to engage with due to its technical nature. Further, some customers that have participated in this approach became sceptical about the ability to influence the regulatory outcomes.⁵⁵

Given the reservations about public consultation, other forms of customer engagement have been attempted over the years by regulators and regulated entities. The forms include constructive engagement, willingness to pay studies and consumer panels.

Constructive engagement

Constructive engagement varies from informal discussions through workshops or meetings to formal negotiations where consumers actively participate in service negotiations with the regulated entity. Under this approach, the regulator acts as a facilitator and overseer of the decision. This process often involves educating customers and then asking them to comment on or decide on positions the regulated entity can undertake. In the essential service sector, it is the most modern method of customer engagement but has not successfully been conducted yet in Australia.

This approach has been promoted in the United States under their regulatory model, but historically has not been seen much in Australia. However, a form of constructive engagement is being used by the Australian Energy Regulator. In determining policy positions the regulator

⁵⁴ CEPA, Regulated Monopoly services providers and customer views, preferences and willingness to pay – A report for IPART, June 2011, p 12

⁵⁵ CEPA, Regulated Monopoly services providers and customer views, preferences and willingness to pay – A report for IPART, June 2011, p 13

undertakes a range of consultation, including the traditional model of consultation through submissions. Over the last few years it has started to undertake additional consultation through public forums and stakeholder workshops. An example is the recent work that has been undertaken in the review of its Demand Management Scheme⁵⁶.

In designing this scheme, the Australian Energy Regulator proactively ran a series of workshops where potential options were discussed with market participants such as generators, distributors, retailers and advocacy groups. This was done before the draft scheme and was aimed at getting early input and buy in from the industry. It hoped by doing this constructive engagement, the scheme would be robust. This would result in easier acceptance and implementation.⁵⁷

This workshop approach in the design period is becoming more common by the industry as well. The Essential Service Commission of South Australia commented that SA Power Networks is conducting engagement with consumers to understand their expectations, views and priorities to inform its next revenue proposal.⁵⁸ The workshops have provided consumer insights that the regulator will consider when determining what service standards SA Power Networks will have.

Willingness to pay

This quantitative/qualitative research provides useful insights on what the customer values. It is particularly useful for gauging how customers value service levels and the impact energy has on other sectors (such as environment or social).

Over the history of the national electricity market, a number of regulators have used willingness to pay methods. Two that displayed its strengths are the Essential Services Commission of South Australia and the Australian Energy Market Operator. Generally, the studies are used to determine the value customers put on having electricity (normally referred to the value of customer reliability).

The Essential Services Commission of South Australia has previously conducted two willingness to pay studies to help set and test service levels. It is currently conducting a third study that will be completed mid-2018. Its first study, conducted in 2002/03, was an in-depth survey to help determine the value customers put on the service they receive and if they were willing to pay for improvements. It found that customers were generally happy with the service they received

⁵⁶ Demand management is used to plan for and limit demand shocks to the network. These shocks are called peaks. Demand management is used to smooth electricity consumption and thus not put the network under stress.

⁵⁷ AER, Demand Management Incentive Scheme – Explanatory Statement, December 2017, p 8

⁵⁸ ESCoSA, SA Power Networks 2020 reliability Standard Review, December 2017, p 13

and were not willing to pay for an improvement.⁵⁹ A follow up survey was conducted in 2007/08. This study confirmed the initial results.

A review of customer engagement, conducted by the Independent Pricing and Regulatory Tribunal in 2012, distilled two lessons from these studies: the South Australian regulator was able to gather strong evidence to support its decision making in setting both prices and service standards for the distribution network; and, that these studies are achievable without being overly expensive.⁶⁰

A second example of willingness to pay was conducted by Australian Energy Market Operator. The Council of Australian Governments Energy Council requested the market operator to develop a national Value of Customer Reliability following a 2009 review of extreme weather events.⁶¹ The review aimed to improve the understanding of the level of reliability customers expect and the value they put on it. It was hoped the study would improve network planning across the electricity market.⁶²

Since it was finalised, the Value of Customer Reliability has been used in investment decisions in the transmission network, and in setting network service standards.⁶³ However, Australian Energy Market Operator acknowledge that it has limited merit when examining prolonged outages.⁶⁴

Consumer Panels

Customer panels are typically made up of customer representatives that represent a particular segment of the community. This process can improve engagement by promoting regular contact and set expectations on consultation. However, there is the risk that long-standing members can become complacent and not be as representative of their interest group. As such, the panels generally have periodic changes to members

In 2013, the Australian Energy Regulator set up the Consumer Challenge Panel as part of the Better Regulation reforms. This panel is to assist the regulator to make better regulatory determinations when setting revenue caps for the energy sector.

⁵⁹ KPMG, Consumer Preferences for Electricity Service Standards, September 2003, Section 10

⁶⁰ CEPA, Regulated Monopoly services providers and customer views, preferences and willingness to pay – A report for IPART, June 2011, p 38

⁶¹ AEMO, Value Of Customer Reliability Review, final, November 2014, p 6

⁶² AEMO, Value of Customer Reliability Review – final report, September 2014, p 6

⁶³ For example, AEMO was requested to test whether service standards needed to change in South Australia in the 2015 Electricity Transmission Code Review. It found that in the current environment the standards were appropriate and no new investment was needed to improve reliability for a change in network demand.

⁶⁴ AEMO, Value of Customer Reliability Review – final report, September 2014, p 37

The objective of the panel is to advise the Australian Energy Regulator on whether it considers the network business proposals are in the long term interest of consumers, as well as critique whether the customer engagement carried out by the regulated companies was robust enough to be informative in developing the business proposal.

The Panel consists of community experts that are appointed for a three year period. The members are then appointed to sub-panels based on their sub-panel nominations, skills, expertise and conflicts of interest. The regulated entities are assigned a challenge panel and actively engage with them to demonstrate how consumer views have been incorporated into the planning process. The panel then provides advice to the Australian Energy Regulator on whether it has incorporated consumer views.

Although the regulated company does not need the approval of the consumer panel to get the revenue cap at the level it wants, the Australian Energy Regulator considers the advice and a positive review from the panel does make things easier.

Besides the use of customer panels to determine revenue caps by the Australian Energy Regulator, most regulated entities and regulators have customer advocate panels to discuss ongoing policy and energy positions. These bodies are used to test positions and attain the views of the different interest parties.

Security of supply

Energy security is about meeting the energy needs of consumers both in the short-term and the long-term. It is aimed to minimise blackouts, brownouts and shortages of the fuels needed for energy production.

Regulators set up regimes to ensure the distribution and transmission companies do not put the network at risk. This is done by ensuring the network providers are able to recover enough revenue to maintain or improve infrastructure to minimise the likelihood of an interruption, and if one does occur, restore electricity as soon as possible. This is done by revenue determinations undertaken by the Australian Energy Regulator, and services standards (which include reliability standards) through State service standard codes.⁶⁵

Further to these regulatory bodies, governments have implemented policies to promote private investment in the generation sector. Renewable energy technology has been given a boost with policies such as the clean energy target, potential government support through grants or loans,

⁶⁵ Although under the National Electricity Rules, the Australian Energy Regulator must have a reliability standard regime in place, the jurisdictions have the power to set their own reliability and security standards under the NEO agreement. At the present, all jurisdictions have retained that power.

photovoltaic subsidisation and high feed-in tariffs. This has resulted in a high uptake of largescale generation and household generation.⁶⁶

3. The wholesale electricity generating market

The national electricity generation wholesale market began operating in 1998. The wholesale market currently connects five regional markets – Queensland, New South Wales (including the Australian Capital Territory), Victoria, Tasmania and South Australia. Although Western Australia and Northern Territory are not connected to the National Electricity Market, they are in the process of signing up to agreements that construct the same rules as the national market. Currently, there are over 100 generators participating in the wholesale market.⁶⁷

This section describes how the market works, how wholesalers are licenced through registration, and finally how wholesale prices have behaved since deregulation.

How it works

The market uses an auctioning mechanism that allows generators to offer certain amounts of supply for a set price. Bids occur until the market has cleared and demand is met.

Historically, electricity has not easily been able to be stored (recently, large scale batteries are beginning to be setup in the network).⁶⁸ The transportation of energy from generators to end users is facilitated through a ‘pool’, or spot market. All generation is aggregated and scheduled at thirty-minute intervals, although recently, there has been a rule change to five-minute intervals.

The Australian Energy Market Operator manages the pool in line with the National Electricity Rules and National Electricity Law. The market operator sends signals to generators instructing them how much energy to produce for each interval, so that production is matched to consumer requirements instantaneously in real time through the coordinated dispatch process (spare capacity is kept ready for emergencies).⁶⁹ Generators offer to supply the market with an

⁶⁶ For example, 1 in 4 households have solar in South Australia. However, this has resulted in technical issues of power flowing in a two directional flow counter to what networks were designed for. This problem is a major system security issue for the South Australian distribution network.

⁶⁷ AEMO, Fact Sheet – The National Electricity Market, viewed December 2017

⁶⁸ The exception here is hydro power. Hydro power stores water to run turbines when needed.

⁶⁹ AEMO, Fact Sheet – The National Electricity Market, viewed December 2017

amount of energy at a specified price for a set time (the intervals between settlements). These can be resubmitted at five minute intervals during the 30 minute trading period. The Market Operator then decides which generators will be able to enter the market, with the cheapest generation entering first. This is designed to meet electricity demand in the least expensive way. Once electricity supply is matched with consumption, the market price is then calculated as the bid that meets demand. By definition, this price is the most expensive bid which is accepted. All generators get this price until the next auction. This approach incentivises cheaper generation as it is more likely to be used and it will have the biggest profit margins. As old generators are decommissioned, and new generators are installed, the settlement price should decrease.

The spot price is determined on a half hour basis for each region. The Market Operator then uses the spot price to settle the financial transactions for the supply traded in the National Electricity Market. The spot price however, is capped at \$14,200 per megawatt hour (this is adjusted for inflation). The Australian Energy Market Commission's reliability panel reviews the price cap and floor settings every four years to ensure they align with the national electricity market reliability standard.⁷⁰

Generators that may wish to sell large quantities of electricity are limited by how much power they can supply to the national electricity market by the capacity limitations of the transmission network it is connected to.⁷¹ This can influence where and how much a generator may invest to gain access to the market. This also has the unintended consequence of generation concentration in particular parts of the network, or limit a generator's willingness to continue investing in new generation at the end of the generator's life.

Customers do not directly participate in the National Electricity Market. Rather, they contract this responsibility to retailers. Retailers must manage the risk of wholesale price fluctuations that can occur (in Australia this is particularly during summer high-heat periods). This risk is managed by contracting firm prices with generators.⁷² Such an approach allows for the flexibility of generators to respond to fluctuating demand and keeps the cost of generation low while also smoothing prices for customers.

Licensing and registration of all generators on the national market is intended to assist reliable supply. This is done through jurisdictional licensing regimes and by Australian Energy Market Operator as the market operator.

⁷⁰ AEMC Reliability Panel 2014, Reliability Standard and Reliability Settings Review 2018, Issues Paper, June 2017 p 1

⁷¹ AEMO, Fact Sheet – The National Electricity Market, viewed December 2017

⁷² AEMO, Fact Sheet – The National Electricity Market, viewed December 2017

Licensing and registration

A generator must be registered by the Australian Energy Market Operator to operate in the National Electricity Market.⁷³ To become registered it must apply under a particular category depending on its generation capacity and whether it is participating in the wholesale market (market capacity) or is operating in a non-market capacity (such as ancillary services or network support for transmission reliability). Market capacity is when the generator participates in the wholesale spot price market; non-market capacity means the generator has contracted all its capacity to a retailer or customer and does not participate in the spot price market.⁷⁴

To be registered, the generator must provide information proving it is compliant with all jurisdictional regulatory requirements, such as providing a licence or licence approval, or evidence of an exemption. It must also provide evidence on financial viability, organisational capability (including staff and IT systems to participate on the National Electricity Market), and other technical requirements.⁷⁵ The reason for the registration process is to make sure that only suitable and appropriate generation operates and it will not compromise or endanger the entire system.

This registration system allows the Market Operator to monitor what generation capacity is on the grid and who is able to operate. This mitigates against instability and promotes reliable supply.

In addition to national registration, State licences are needed to operate a generator. Generally, the States examine the suitability and appropriateness of the person/corporate body that wishes to generate. Criteria include Corporate and legal details (including whether the licensee has a criminal record), technical and human resource capacity, and financial and prudential information to demonstrate the body's ability to participate in the market on an ongoing basis.

Some States impose more stringent technical barriers. For example, South Australia has recently implemented additional technical requirements for all new generation applications. This was in response to the risk to the system of intermittent electricity generators.⁷⁶ As such, the technical

⁷³ It is a legal requirement under Section 11 of the National Electricity Law to be registered. For every day it is unregistered it receives a fine

⁷⁴ AEMO, NEM generation guideline, August 2016, p 10-11

⁷⁵ AEMO, NEM generation guideline, August 2016, section 3.2

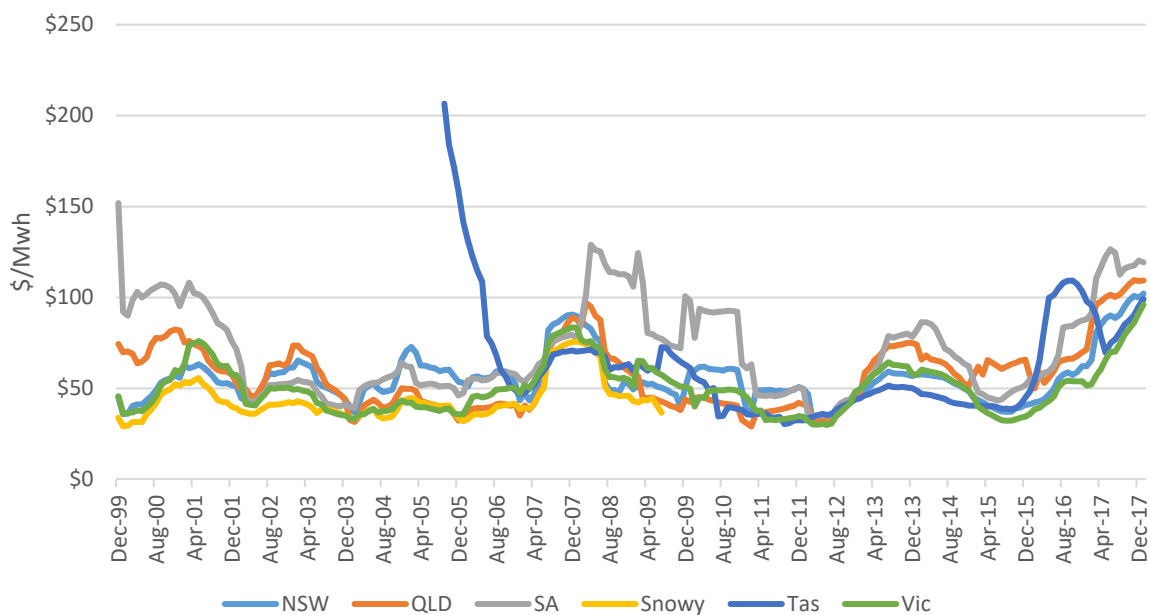
⁷⁶ ESCOSA, Inquiry into the licensing arrangements for generators in South Australia, August 2017, p6

requirements around ‘ride-through’ capability,⁷⁷ voltage control, system restoration, and system strength were added to the conditions in the licence.⁷⁸

Has the Wholesale market reduced prices?

The introduction of the national wholesale market was intended to reduce the price consumers pay for electricity. The Australian Energy Market Operator has recorded every 30 minute settlement since December 1998. Unfortunately, we have been unable to find wholesale electricity prices before 1998.

Figure 1: rolling average of wholesale electricity prices since 1998. (in Dec17\$, Mwh)



Source 1: prices are calculated using AEMO wholesale settlement data, and ABS CPI

The graph above shows an annual rolling average wholesale price of electricity from December 1998 to January 2018.⁷⁹ The large opening prices from South Australia in 1998-99 and from Tasmania in 2005 are explained by teething problems. The data indicated that there were a number of auctions where the price spiked for no apparent reason.

What is interesting is the cyclical behaviour occurring consistently across the States. The peaks in the average price coincide with environmental policy changes. The December 2007 increase in wholesale price was in response to the Australian Government signing up to the Kyoto

⁷⁷ ‘Ride-through’ capability is the generators ability to operate through an interruption, or multiple momentary interruptions.

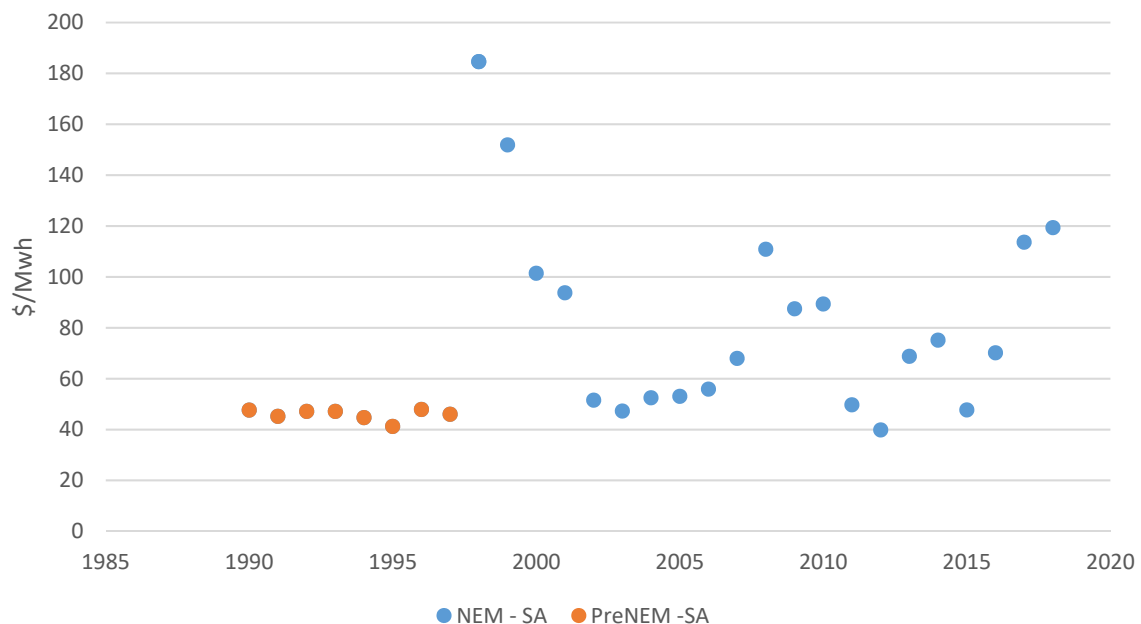
⁷⁸ ESCOSA, Inquiry into the licensing arrangements for generators in South Australia, August 2017, p3-4

⁷⁹ A 12 month rolling average was down to smooth the volatility that is seen from the 30-minute data.

Protocol which limited the amount of emissions that could be released.⁸⁰ In 2012 a price on carbon emission was introduced to lower the emissions. The graph shows that this increased the price of electricity. This is because at the time the majority of electricity generated in Australia was through non-renewable generation such as coal and gas. The carbon price was repealed in 2014. As it can be seen, the repeal led to a small reduction of price. However, during this period, Australia began to have a shortage of gas supply. By this time, gas was the main fuel needed to generate enough electricity to supply Australia (coal generators were reaching end of life and being shut down). The shortage of gas was due to domestic production being tied up in international contracts and several of the State governments putting moratoriums on gas exploration and extraction.

Looking at the way prices have moved over the last years, it is difficult to say if the implementation of the National Electricity Market has been successful in reducing wholesale prices. Although the rules and market design seem to work, changes to environmental and energy policy have meant it has been hard to see the benefits. We do not know how prices would have moved in the absence of the competitive wholesale market and we do not have data for the period prior to deregulation. On this latter point, however, we are able to examine the price of electricity for South Australia before 1998.

Figure 2: South Australian wholesale electricity market (\$/Mwh)



Source 2: pre-1998 data from the Productivity Commission into the South Australian energy sector, 1998-2018 data from AEMO settlement data. all prices have been converted to Dec 2017 prices

⁸⁰ Department of the Environment and Energy, Climate Change, Viewed January 2018

Although this is just one of the States that make up the national market, it does indicate that the deregulation and introduction of competition for generation has had an impact on the price of electricity. The initial spike is when South Australia had just entered the national wholesale market. Before joining the national market South Australia used long-term contracts with generators to provide electricity. These began to wind down by 2002 after the initial spike in the immediate deregulation period (1998 – 2001). Between 2002 and 2006 the price was relatively flat and similar to prices before 1998. As mentioned above, the price increase in the wholesale market occurred in 2007 when the Kyoto protocol was signed. Following the signing of this protocol, Australia experienced three changes in environmental policy. This created policy uncertainty for generators. Generators determined that the energy market had become more riskier and more costly, and this is reflected in the price volatility of the last ten years. As well as that, over the last five years, a series of large generators reached the end of their life. As they have exited the market, the remaining generators have been trying to fill the gap. Our judgement is that deregulation of the wholesale market, in itself, did not have a huge impact on the wholesale price (teething issues aside). But that increase and volatility post 2007 are largely associated with environmental policy changes. It is interesting to note that over the period 1990 – 2020, the lowest annual price was 2012, well after deregulation occurred.

4. Retailing to customers

This section looks at how the retail market works, licencing and consumer protection arrangements, the extent of competition and, lastly, how retail prices have moved since deregulation.

How does the retail sector work

The retail sector is the interaction between the customer and the electricity market. A retailer will be contracted by the customer to gain access to the network and purchase electricity. Retailers must manage the risk of wholesale price fluctuations that can occur (particularly in summer during heat periods), noting that retail prices are fixed for the period of the contract (usually one year).⁸¹ This is done by contracting a large proportion of the demand to generation that operates outside of the wholesale market.

Retailers offer contracts to customers. The contract is made up of a number of charges. These include the cost of accessing the network, the price of electricity, a pay on time discount, and

⁸¹ Although some retailers have price tiers tied into how much energy is consumed. The more consumed the higher the price tier.

more recently the price the retailer is willing to pay for a customer's solar generation (if the customer has solar panels).

Although a large proportion of cost is fixed, the retailers have learnt to compete with the pay on time discount and price for home solar. These two things are the easiest understood components of the retail contract.

However, the national bodies in charge of overseeing the retail market have put in place policies that retailers must follow to operate in the electricity market.

Licensing and consumer protection

The introduction of retail competition was complex because of the need to develop technical and legal requirements. Before the national market there was no retail model operating in Australia that could be adopted. As table 1 shows, it took a number of years after the national electricity market started before the retail market became competitive.

The original market operator, National Electricity Market Management Company, led the development of the market procedures and IT system to support retail competition.

The major issue that needed to be addressed before the States would allow the private sector to compete was the need to protect customers from abuse of market power. At first, States set consumer protection regimes in place. A standard contract was used to spell out what the retailer could do and what redress the consumer had. This included disconnection conditions, dispute resolution access and bill hardship policies.

In order to achieve consistency a National Energy Consumer Framework was developed. This framework consists of the National Energy Retail Law and the National Energy Retail Rules. It aimed to create a single set of regulatory requirements in an attempt to reduce the cost of competing regimes and to ensure consumers had appropriate protections.⁸²

The Framework regulates the connection, supply and sale of energy to National Electricity Market residential and small business customers. This has been adopted by all States except Victoria which uses the Victorian Retail Code (this has been harmonised with the National Energy Consumer Framework).

⁸² ESCOSA, Review of the Operation of the National Energy Customer Framework in South Australia – Issues Paper, 2015, p 2

The National Energy Consumer Framework ensures that customers receive the same level of protections, regardless of where they live and their social economic status. The protections include:⁸³

- guaranteed connection and offer of supply for all small customers
- mandatory minimum terms and conditions all retailers must have
- a cooling off period for market contracts
- rules around information customers must receive before signing into a supply contract
- rules around how the retailers must present the information in factsheets
- rules around how billing is calculated and the minimum information the bills must have
- a rule that requires retailers to obtain explicit informed consent when a customer signs up with them
- limitations on disconnections, including making it prohibited to disconnect those with life support customers
- requirements around hardship policies and the offer of payment plans to customers who are struggling to pay bills
- free access to a dispute resolution (this is done through Jurisdictional energy ombudsman schemes)
- requirements regarding how retailers can advertise and sign up customers.

The framework is administered and enforced by the Australian Energy Regulator. It is a complement to a set of broader protections a customer has under the Australian Consumer Law which provides protections in areas such as unfair contract terms, product safety, misleading information, marketing, quality guarantees and product liability.⁸⁴

Prior to deregulation a number of States had instituted partial deregulation. This meant that the States allowed new entrants but still regulated prices.⁸⁵ Any retailer could participate in that part of the market, but they would have to offer a regulated price. This approach assured customers they were receiving a fixed price but did not help competition. The majority of States have now deregulated prices, although a standard contract is still established as a default contract.

Under the National Energy Retail Law, a person must hold a retailer authorisation prior to engaging in the selling of energy. The Australian Energy Regulator is in charge of this scheme

⁸³ Department of the Environment and Energy, National Energy Consumer Framework, viewed January 2018

⁸⁴ Australian Consumer Law, viewed January 2018

⁸⁵ This meant any retailer could enter the market, but the prices they were allowed to offer still received a level of regulation from the economic regulators.

and the authorisation of retail providers.⁸⁶ Under section 90 of this law, the entry criteria are set out:⁸⁷

- organisational and technical capacity – the applicant must have the necessary organisational and technical capacity to meet the obligations of a retailer
- appropriate financial resources – the applicant must have resources or access to resources so that it will have the financial viability and financial capacity to meet the obligations of a retailer
- suitability – the applicant must be a suitable person to hold a retailer authorisation.

The Australian Energy Regulator authorisation guidelines set out how it will assess each criterion and what information must be provided to satisfy the Australian Energy Regulator.⁸⁸ Exemptions are given where a seller is selling energy incidentally, or where the cost of authorisation outweighs the benefits to customers, or where the amount of energy being sold is insignificant. Examples include:

- Retirement villages where an owner or manager buys electricity from an authorised retailer, then ‘onsells’ it to residents
- Caravan parks (or manufactured homes parks) where an owner or manager buys electricity from an authorised retailer, then ‘onsells’ it to residents
- Bodies corporate/owners’ corporations who buy electricity from an authorised retailer, then ‘onsell’ it to tenants or residents.

In case a retailer wishes to leave the market the authorisation must be surrendered (or transferred).

To surrender authorisation, the retailer must apply to the Australian Energy Regulator which has to approve the surrender. Approval is given only after conditions have been met for the transfer of customers to another retailer.⁸⁹ Although customer consent is not required, the Australian Energy Regulator does impose transfer requirements so that customers do not experience a disruption to service.

A retailer may be expelled from the market (authorisation revocation) if the regulator has determined the retailer has not behaved accordingly to its legal requirements when purchasing

⁸⁶ AER, retailer market authorisation, viewed January 2018

⁸⁷ Nation Energy Retail Law (South Australia) Act 2011, Section 90, viewed January 2018

⁸⁸ AER, AER Retailer Authorisation Guideline – Version 2, December 2014

⁸⁹ This must be done within six months of the application

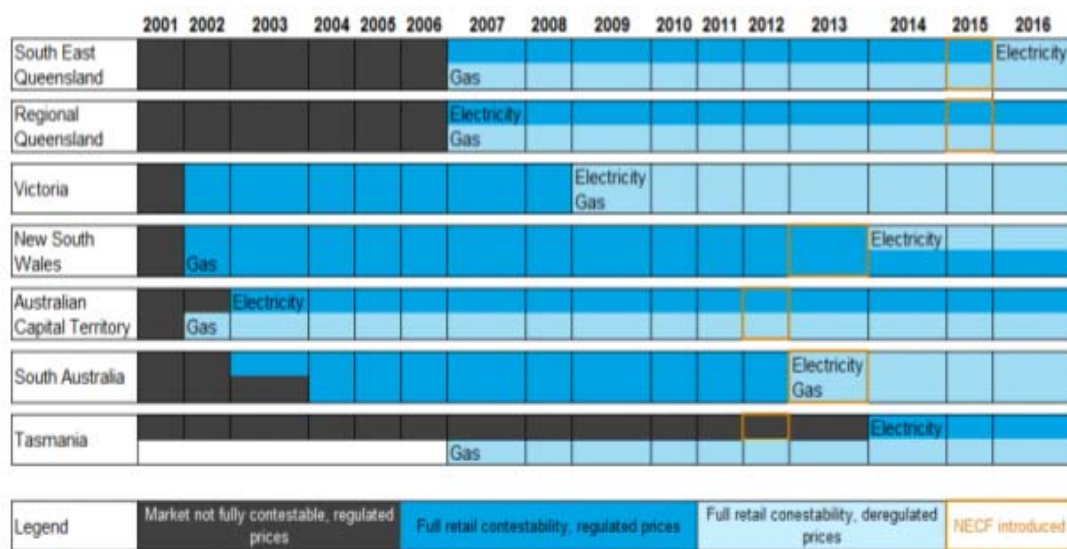
electricity.⁹⁰ Poor behaviour could be signing up residential customers without their consent or selling the customer to another retailer.

Competition in the Retail Sector

Retail competition is an important element to create competitive pressure in the wholesale market. It was gradually introduced across the National Electricity Market. Victoria and NSW were the first to establish it in 2002, with the other States gradually following.

Below is the timeline of when the deregulation occurred and the retail sector was opened to competition.

Table 1: timeline of deregulation of the retail sector by State



source: AEMC, Retail Energy Competition Review 2017

With the full deregulation of the retail sector, Australia has seen the number of competitors increase from one (the government) to 25 in some parts of Australia.⁹¹ However, despite the increase in the number of participants, there is disparity between the market share the retailers have. For example, in NSW where there are 25 retailers, 90 percent of customers are captured by three retailers.⁹²

Understanding there is the potential for abuse of the market power, regulators (both State and the Australian Energy Regulator) have set up monitoring regimes. These regimes look at the number of offers in the market and what an average customer would be charged. Some of the more comprehensive monitoring regimes are undertaken by both the Australian Energy

⁹⁰ Section 88 (2)(a) or (2)(b) of the National Energy Retail Law. No retailer has yet to be expelled.

⁹¹ AER, State of the Energy Market 2017, p 137

⁹² AER, State of the Energy Market 2017, p 137

Regulator and the Australian Energy Market Commission. Both these entities report annually on the retail sector and how competitive it is.

In assessing whether competition is working the Australian Energy Market Commission does not look at the price of electricity that consumers receive. It believes that due to the make-up of the electricity price, it is hard to assess whether the retail market (not including wholesale, network and government parts of the price) is competitive.⁹³

Instead the report examines indicators such as:

- consumer satisfaction with level of service, value for money and number of complaints against retailers
- retail profit margins
- customer switching rates
- new products/ services being offered to consumers

The 2017 report on retail competition by Australian Energy Market Commission stated that consumer satisfaction has remained constant regarding the overall service received. It also noted that customers still believe they get value for money when purchasing electricity from retailers. However, it did comment that over the last few years there has been an increase in complaints against retailers, but a reduction in the number of complaints that were escalated to the energy ombudsman.⁹⁴

Retailer margins, and changes over time, can provide an insight into the effectiveness of competition in the retail sector. However, the Australian Energy Market Commission does not think they have been very useful to determine levels of competition. This is because the margins vary significantly between States and years.⁹⁵ This could mean that retailers use their profit margins to respond to different levels of risk between the States (such as changes in market conditions or access to differing levels of generation on the wholesale market) or to pay for generation investment.

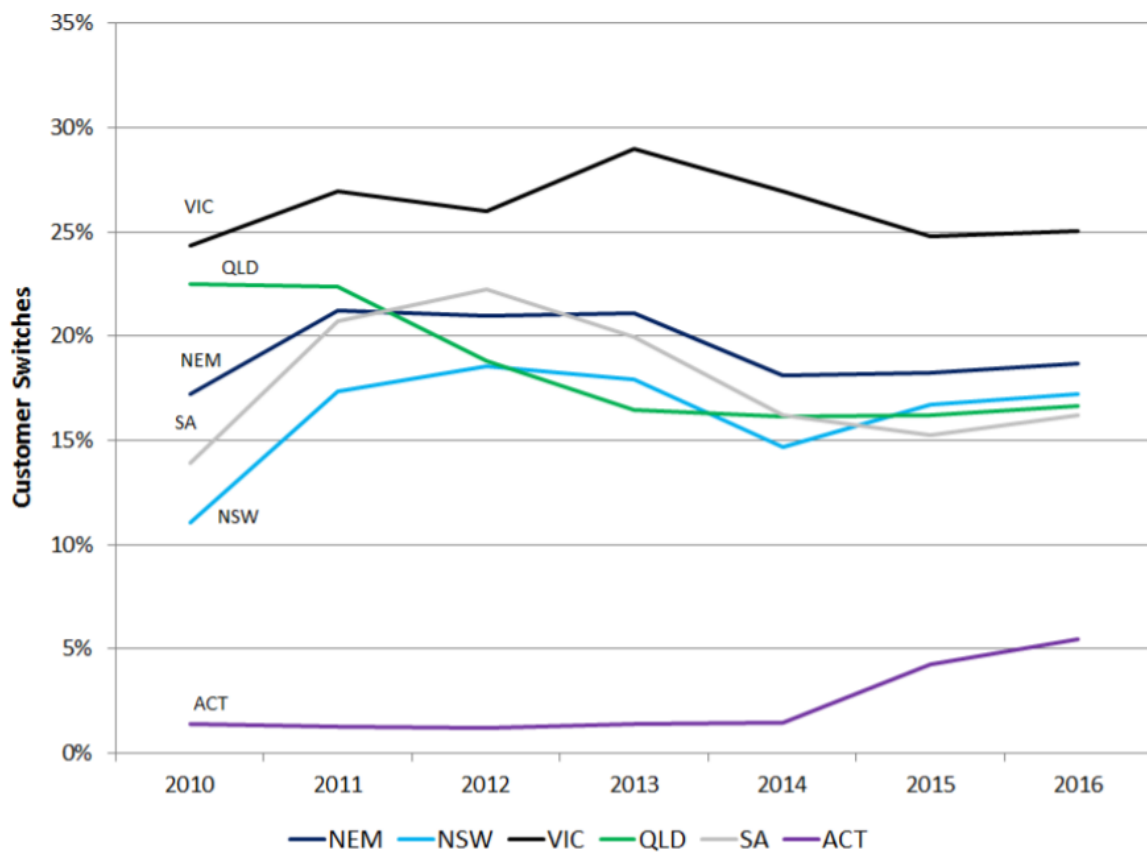
If there is a competitive market, there should be significant customer movement between retailers (that is customers switching between retailers). However, due to the technical nature of the available contracts, Australia records low switching rates. As displayed below, around 20 per cent of customers have changed retailers across the National Electricity Market on an annual basis.

⁹³ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p i

⁹⁴ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p 31

⁹⁵ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p 31

Figure 3: percentage of customers that have switched retailers in 2017



Source: AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, Sydney, p 85

The Australian Energy Market Commission commented that the main reasons for switching are the size of the discount rate⁹⁶ and the estimated annual bill the alternative contract offered. The third most important was the service on offer.⁹⁷

For the majority of the last twenty years, there have been limited elements retailers could compete on, because the major component of cost was the cost to access the network and the cost of generation. Both of these costs were fixed from the retailers' perspective. However, technology advances have seen the development of new products and services. This include the ability to purchase solar panels from retailers, receive lower prices from 'time-of-use' pricing,⁹⁸ or virtual trading networks that act as a mini wholesale market.⁹⁹

⁹⁶ The discount rate is the reduction in bill the customer will need to pay if it meets particular conditions, such as paying on time or paying via direct debit.

⁹⁷ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p 91

⁹⁸ 'Time-of-use' pricing is where the consumer changes their consumption over the day to reflect the price in the whole sale market. That is, when the price is high, the consumer reduces the amount of energy they consume, and when the price is low they undertake high usage activities (such as washing clothes).

⁹⁹ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p 130

The competition in new services and products has been led by smaller new retailers. In an attempt to gain market share, new entrants to the retail market offered a different type of service. The services generally were aimed to make energy more affordable (through payment plans to receive solar) or to allow customers to gain access to products that were not yet available in Australia (such as virtual power networks and smart meters). This competitive pressure from the smaller retailers has provided enough competition for the large incumbent retailers to also begin to offer these services.¹⁰⁰

The Australian Energy Regulator found evidence that supported the Australian Energy Market Commission's conclusion that competition was occurring in the retail market. It notes similar indicators of competition exist in the retail market:¹⁰¹

- customer switching rates between retailers
- retailer activity in the market (such as advertising)
- product differentiation
- competitive pricing.

The Australian Energy Regulator's evidence noted that the smaller retailers are beginning to gain customers due to the products they offer. Similar to the Australian Energy Market Commission finding, the Australian Energy Regulator commented on the larger retailers responding to this competition by improving the services and products on offer.¹⁰²

The Australian Energy Regulator also found that there is a range of different prices available in the market but the main competitive feature remains the discount rate available.¹⁰³

[The price of electricity for consumers](#)

Although there has been an increase in the number of retailers over the years and a variety of products being offered to customers, it is difficult to assess whether the deregulation and increase in choice between market offers has been beneficial for customers.

The Australian Bureau of Statistics provides an index on the change of price in electricity over time. We examine how electricity prices have changed compared with the consumer price index (Figure 4). The base year has been set as 1998.

¹⁰⁰ AEMC, 2017 AEMC Retail Energy Competition Review, FINAL, 25 July 2017, p 131

¹⁰¹ AER, State of the energy market, May 2017, p 142

¹⁰² AER, State of the energy market, May 2017, p 146

¹⁰³ AER, State of the energy market, May 2017, p 144

Figure 4: electricity price growth from 1980 to 2017



Source: ABS Catalogue 6401.0

The data shows that electricity prices have been growing at the same rate as the consumer price index from 1980 to 2007. This is interesting as when the competitive market began to operate in 1998, there was no price change for nine years (compared to CPI). But in 2007, there was a big price hike for electricity across the nation. There are two possible reasons for this: the change in national environmental policy, and the need to recoup investment in the network. As mentioned above, Australia signed the Kyoto Protocol in 2007. Once this was signed Australia has implemented various environmental policies in the energy sector.¹⁰⁴ The frequency of the policy changes, and the need to meet its international environmental obligations, has meant that

¹⁰⁴ There has been three major environmental policy changes that have happened in Australia since 2007.

energy suppliers experienced higher costs and riskier investment environments. If we compare figure 1 and 4 we see that retail prices have increased much faster than wholesale prices, suggesting that retail margins are very sensitive to changes in environmental policies. The retailers have increased the return on risk which has been passed on to consumers.

Although this price hike is seen across the national electricity market, it has varying movement. For example, Sydney, Adelaide and Hobart all experienced a slight slowdown around the 2012-13 period. Melbourne and Brisbane, on the other hand, saw a levelling off in price growth rates.

The conclusion to be drawn from this is that the price of electricity to consumers has gone up significantly. Therefore, one cannot conclude that opening up the retail sector to competition and providing consumers with choice will result in price reductions to consumers.

Conclusion

Australia has gone through over twenty years of its electricity reforms. We draw five lessons to be learned from the Australian experience.

The first lesson is that energy markets are complicated because of the mix of the monopolistic transmission and distribution networks on the one hand, and competitive markets in the generation and retail sectors on the other hand. This complexity underpins the need for careful regulation of the industry; in this industry, deregulation does not mean no regulation. Indeed, the regulatory framework in Australia is very strong.

The second lesson is, in a federal system, the politics are difficult. To achieve successful reforms there needs to be a transitional path to dampen price shocks and reduce financial risk to governments and private companies. In addition, consultation arrangements are essential to ensure the decisions that affect private investors, customers and governments are well thought out. Rules need to be put in place to minimise the risk to security to the system.

The third lesson from the Australian experience showed that there is plenty of interest in the private sector to invest in the energy sector. The generation market has changed from the State owned generators to over 100 generators participating in the market. Similarly, large numbers of players have been enticed into the retail market.

The fourth lesson is that price volatility must be expected. It is clear that political uncertainty and changes in environmental policy have a substantial impact on prices, both wholesale and retail. Moreover, retail prices have increased more than wholesale prices.

The last lesson learnt from the Australian experience is customers may well experience a price increase. Ultimately, the competitive market assigns resources more efficiently. However, this does not necessarily mean lower prices. If the prices before the market do not reflect the actual costs of supplying electricity (through subsidies for example), then prices will adjust when the market is deregulated.

Before deregulation, Governments could achieve stable prices administratively, irrespective of whether the true cost is being recovered from customers. In addition, there is no mechanism in a regulated market to encourage optimal capital investment levels. Deregulation addresses both of these issues, but the Australian experience shows that consumers may end up paying more. One caveat to this is that environmental policies have played an important role in Australia.

Deregulation makes economic sense, but it does not insulate electricity consumers from price shocks associated with changes to economic and environmental policy.

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