



ICRC

independent competition and regulatory commission

Draft report

Standing offer prices for the supply of electricity to small customers

1 July 2014 to 30 June 2017

Report 1 of 2014

February 2014

The Independent Competition and Regulatory Commission is a Territory Authority established under the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act). The Commission is constituted under the ICRC Act by one or more standing commissioners and any associated commissioners appointed for particular purposes. Commissioners are statutory appointments and the current Commissioners are Senior Commissioner Malcolm Gray and Commissioner Mike Buckley. We, the Commissioners who constitute the Commission, take direct responsibility for delivery of the outcomes of the Commission.

We have responsibilities for a broad range of regulatory and utility administrative matters. We have responsibility under the ICRC Act for regulating and advising government about pricing and other matters for monopoly, near-monopoly and ministerially declared regulated industries, and providing advice on competitive neutrality complaints and government-regulated activities. We also have responsibility for arbitrating infrastructure access disputes under the ICRC Act. In discharging our objectives and functions, we provide independent robust analysis and advice.

Our objectives are set out in section 7 of the ICRC Act and section 3 of the Utilities Act.

Correspondence or other inquiries may be directed to the Commission at the following addresses:

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How to make a submission

The Commission is seeking comment on the draft report. The draft report provides an opportunity for stakeholders to inform the development of the final report. It will also ensure that relevant information and views are made public and brought to the Commission's attention.

Submissions may be mailed to the Commission at:

Independent Competition and Regulatory Commission
PO Box 161
Civic Square ACT 2608

Alternatively, submissions may be emailed to the Commission at icrc@act.gov.au. The Commission encourages stakeholders to make submissions in either Microsoft Word format or PDF (OCR readable text format – that is, they should be direct conversions from the word-processing program, rather than scanned copies in which the text cannot be searched).

For submissions received from individuals, all personal details (for example, home and email addresses, and telephone and fax numbers) will be removed for privacy reasons before the submissions are published on the website.

The Commission is guided by and believes strongly in the principles of openness, transparency, consistency and accountability. Public consultation is a crucial element of the Commission's processes. The Commission's preference that all submissions it receives be treated as public and be published on the Commission's website unless the author of the submission indicates clearly that all or part of the submission is confidential and not to be made available publicly. Where confidential material is claimed, the Commission prefers that this be under a separate cover and clearly marked 'In Confidence'. The Commission will assess the author's claim and discuss appropriate steps to ensure that confidential material is protected while maintaining the principles of openness, transparency, consistency and accountability.

We may be contacted at the above addresses, by telephone on (02) 6205 0799 or by fax on (02) 6207 5887. The Commission's website is at www.icrc.act.gov.au.

Submissions on the draft report are due with the Commission by **5 pm, 28 March 2014**.

Foreword

Since the Commission's last inquiry into regulated retail electricity prices in the ACT, energy market reform activity under the auspices of the Council of Australian Governments has proceeded apace. For those responsible for regulating retail electricity prices, this culminated in the release of the report: *Advice on best practice retail price methodology*, by the Australian Energy Market Commission (AEMC) in September of last year.

This report provides a comprehensive review of and advice on all aspects of the regulation of retail electricity prices. Importantly, it suggests that each jurisdiction needs to examine the case for introducing an element in pricing, termed a competition allowance, to stimulate the entry of new retailers to the market. In its current inquiry, the Commission has, therefore, undertaken a thorough review of all aspects of its methodology for determining regulated retail electricity prices against the principles and advice provided in the AEMC report. In particular, the Commission has analysed the likely consequences for the ACT community of introducing a competition allowance into that methodology. The Commission has concluded that such a move is not presently in the community's best interests, but that the situation should be kept under review.

In this inquiry, the Commission has also had to contemplate the possibility that the price on carbon will be removed early in the forthcoming regulatory period. It is important that customers enjoy the lower retail electricity prices that would flow from such a move as early as possible. There are, however, a number of obstacles that must be overcome to achieve this objective. This draft report proposes that specific flexibilities be provided within the price direction to allow the Commission to respond quickly to the passage of the relevant legislation through the Commonwealth parliament.

As a draft report, this document relies on provisional estimates of many elements, the value of which will not be finally known until later in the year. The prices proposed in this report should, therefore, be treated as indicative rather than definitive. Absent any change in the price on carbon, retail electricity prices in the ACT look set to rise on average by about 1.2 per cent, that is, to fall in real terms by just over 1 percent. This price rise will add about \$23 a year to the bill of an average ACT electricity customer or about 44 cents per week. The Commission estimates that the complete removal of the price on carbon, considered in isolation, would cause ACT retail electricity prices to fall by about 12 per cent.

Further detail on all these matters may be found in the body of this draft report and I commend it to you.

Malcolm Gray
Senior Commissioner
14 February 2014

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Executive summary

Introduction

The current price direction for the supply of electricity to customers on ActewAGL Retail's regulated tariffs expires on 30 June 2014. The Independent Competition and Regulatory Commission (the Commission) has been asked by the ACT Government to provide a price direction for the supply of electricity to customers on ActewAGL Retail's regulated retail tariff for the period commencing 1 July 2014 and ending 30 June 2017.

This is the Commission's first investigation of ActewAGL Retail's electricity prices following the introduction of the National Energy Customer Framework from 1 July 2012.

Recent developments have included a Council of Australian Governments (COAG) agreement that jurisdictions work towards effective competition in retail electricity markets where it does not exist. The Australian Energy Market Commission (AEMC) has recently provided advice to COAG on a consistent methodology for the determination of regulated retail prices where regulation remains in effect. One of the key recommendations made by the AEMC is that, should a jurisdiction decide to promote competition, a separate and transparent competition allowance should be included on top of the efficient cost of supplying retail electricity services. A key task for the Commission in this investigation is to determine whether to introduce a competition allowance in the ACT.

Carbon price policy

The terms of reference for this price investigation require the Commission to consider the impact on electricity costs associated with the Australian Government's carbon pricing mechanism and the pass-through of those costs to regulated prices. The Australian Government has announced its intention to repeal the price on carbon with effect from 1 July 2014.

The Commission's current cost-index model incorporates an adjustment to the wholesale energy purchase cost to account for the price on carbon set under the Australian Government's carbon pricing legislation, the *Clean Energy Act 2011* (Clean Energy Act).

In this draft report, as the repeal legislation is yet to be enacted, the Commission proposes a carbon-inclusive regulated retail price. A carbon-exclusive retail price is also presented for comparison purposes. Should the Clean Energy Act remain in force when the Commission makes its final determination in early June 2014, the Commission will determine a carbon-inclusive price to apply from 1 July 2014. To deal with any legislative change after 31 May 2014, the Commission proposes a range of adjustment mechanisms that depend on the timing of the legislative change.

Form of regulation

The ACT Government has set a three-year regulatory period from 1 July 2014 to 30 June 2017 in the terms of reference provided to the Commission. The Commission proposes to maintain its current approach to the form of regulation. This includes:

- controlling prices from one year to the next using a weighted average price cap;
- using a cost-index model to set a maximum for the average price change across ActewAGL Retail's basket of regulated tariffs; and
- proposing pass-through arrangements to provide for the treatment of unexpected events that occur after the price direction has been made.

Methodology for determining efficient cost – the cost-index model

In this draft report the Commission re-examines the cost-index model it has been applying since 2003. The Commission considers all of the submissions to the issues paper as well as the methodology recommended by the AEMC.

The energy purchase cost model

In its assessment of the energy purchase cost model, which forms a key part of the cost-index model, the Commission has paid particular attention to whether its approach to hedging costs remains appropriate. This is in response to stakeholder concerns that the model does not accurately account for the risks that electricity retailers face in the wholesale market.

ActewAGL Retail recommended that the Commission increase the forward price margin, a key component of the hedging approach. The Commission has reviewed this issue and come to the conclusion that the 5 per cent margin remains reasonable. The Commission remains confident that its current energy purchase model accurately reflects the costs, including hedging costs, which would be incurred by an efficient retailer in providing retail electricity services in the ACT.

Energy losses

The Commission proposes a number of technical changes to the way it estimates energy losses. The effect of these changes on retail electricity prices is not material.

Retail operating costs

The Commission has reviewed its methodology for calculating retail operating costs and determined an allowance of \$12.26 per megawatt hour (MWh) in 2014–15, a 7 per cent increase over the 2013–14 cost allowance of \$11.43 per MWh.

Retail margin

Drawing on research undertaken by IPART, the Commission proposes a retail margin of 5.7 per cent for the next regulatory period, up from the current 5.4 per cent.

Energy Efficiency Improvement Scheme

The terms of reference for this price investigation require the Commission to identify and report on the efficient costs associated with compliance with the ACT Government's Energy Efficiency Improvement Scheme (EEIS).

The Commission is proposing to apply a forward-looking assessment of the prudence and efficiency of ACTEW's forecast expenditure on the energy efficiency scheme for 2014–15 and subsequent years of the regulatory period. The Commission proposes an allowance of \$4.92 per MWh for 2014–15.

A competition allowance in the ACT

The Commission considers the introduction of a competition allowance in the ACT to be a high-risk strategy because there is a strong possibility that any benefits it may produce will be long delayed, and therefore of little present value, and a distinct possibility that it will not produce benefits even in the long term.

The Commission considers that all customers in the ACT, large and small, are well served by the retail electricity market as it has developed here. The Commission therefore proposes to continue its practice of not including such an allowance in the calculation of its cost-index model for the next regulatory period.

The Commission acknowledges that the National Electricity Market is in a continuing state of development and is of the view that monitoring of market developments should be maintained.

Retail electricity prices in 2014–15

The Commission's draft decision provides for an average nominal increase of 1.18 per cent in ActewAGL Retail's basket of regulated tariffs. This is equivalent to a real (adjusted for inflation) decrease in the regulated retail price of about 1 per cent.

Table ES.1 sets out the Commission's draft decision on the cost components used to determine the maximum average change in the regulated prices. Increases in the draft retail operating cost allowance, costs of the EEIS and the rise in the retail margin have been largely offset by a fall in the draft Large-scale Renewable Energy Target (LRET) and Small-scale Renewable Energy Scheme (SRES) costs.

Table ES.1 Draft composition of regulated retail electricity price adjustment for 2014–15

Components	2013–14 (\$/MWh)	2014–15 (\$/MWh)	% change
Energy purchase cost ^a	70.28	72.04	2.50
LRET and SRES costs	11.66	7.52	-35.46
Energy losses ^b	3.84	3.72	-3.15
Energy contracting cost	0.82	0.84	2.45
NEM fees	0.82	0.84	2.45
Total energy purchase cost	87.42	84.97	-2.81
Retail operating costs	11.43	12.26	7.26
ACT Energy Efficiency Scheme costs	3.75	4.92	31.09
Total retail costs	15.18	17.17	13.15
Network costs	88.29	90.45	2.45
Total energy + retail + network costs	190.89	192.59	0.89
Retail margin	10.31	10.98	6.50
Total costs	201.20	203.57	1.18

Notes: a The 2013–14 energy purchase cost amount has been recalculated from that contained in the 2013–14 price reset due to the adjustments to the forward price and carbon emissions intensity factor averaging periods and the Commission's desire to maintain comparability across years under the index approach.

b The 2013–14 energy losses amount has been recalculated from that contained in the 2013–14 price reset as a consequence of the proposed adjustments to the formula.

The draft price change reported above is based on a carbon-inclusive energy purchase cost. If the price on carbon were removed with effect from 1 July 2014, the Commission has estimated that this would result in a nominal fall in the regulated retail price of about 11 per cent in 2014–15.

Impact on customers

The Commission has estimated that the annual impact on typical bills in 2014–15 due to the draft price change of 1.18 per cent ranges from \$13 for small residential customer to \$33 for a large residential customer. The impact on a typical bill ranges from \$35 for a small non-residential customer to \$124 for a large non-residential customer.

Should the price on carbon be removed, annual bills for all typical customers will fall in the order of 11 per cent.

Next steps

Stakeholder submissions on the draft report will inform the Commission's development of the final report and price direction scheduled for release in early June 2014. The Commission proposes to hold a public hearing on Thursday, 10 April 2014.

1 Introduction

1.1 Background to the investigation

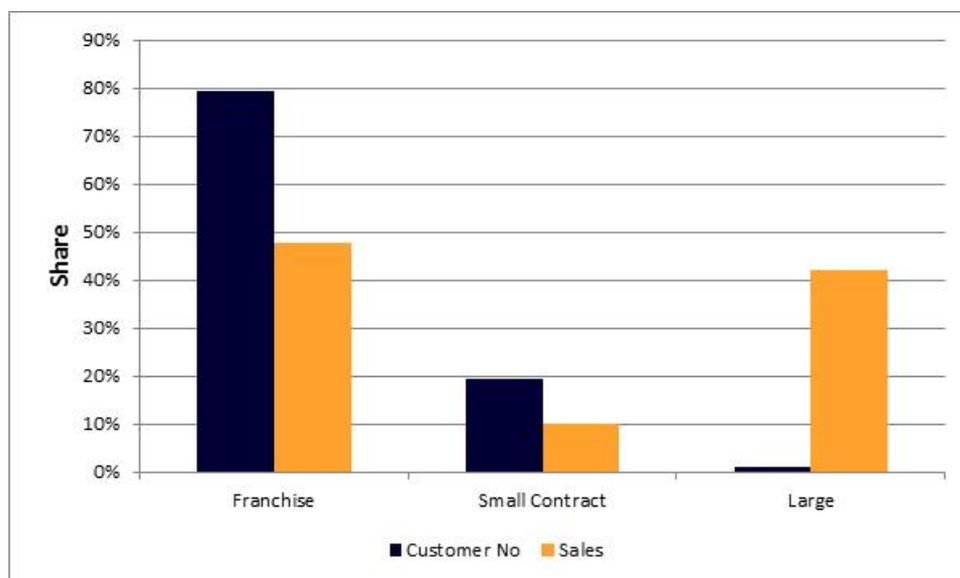
Retail competition for small electricity customers (small businesses and households) in the ACT was introduced on 1 July 2003. This followed the opening of the market in 1998 for customers consuming more than 160 megawatt hours (MWh) per year (mainly large businesses) and in 2001 for those consuming more than 100 MWh per year (mainly medium-sized businesses).

When the ACT Government decided to open the market to all customers, it also required that ActewAGL Retail offer customers consuming less than 100 MWh per year a non-negotiated standard customer contract under the *Utilities Act 2000* (the Utilities Act) incorporating a tariff approved by the Independent Competition and Regulatory Commission (the Commission). Customers on the standard contracts were subject to a suite of regulated tariffs. Standard customer contracts and the suite of tariffs were approved by the Commission on an annual basis. Alternatively, customers could choose to enter into negotiated contracts with ActewAGL Retail or other electricity retailers.

With the introduction of the National Energy Customer Framework (NECF) in the ACT from 1 July 2012, standard customer contracts under the Utilities Act have been replaced with standard retail contracts under the *National Energy Retail Law (ACT)*. Similarly, negotiated contracts were replaced with market retail contracts. Under the NECF arrangements, the Australian Energy Regulator (AER) is responsible for all retail electricity contracts. The Commission retains responsibility for setting the regulated retail electricity price and approving ActewAGL Retail's application of price adjustments in its suite of regulated tariffs. The ACT was among the first jurisdictions to adopt the NECF reforms.

The ACT retail electricity market is small relative to other retail markets in the National Electricity Market (NEM). In 2011–12 the ACT consumed 2,892,562 MWh of electricity. As shown in Figure 1.1, as at 30 June 2012 the market had 162,944 small customers and 1,995 large customers. Most small customers (84 per cent) were on a standard contract with terms approved by the Commission. Small customers on standard contracts consumed 42 per cent of the ACT load. Customers on negotiated contracts, including large customers, consumed 58 per cent of the ACT electricity load.

Figure 1.1 ACT retail electricity market, 2011–12: Percentage shares of total customer numbers and electricity sales by customer category



Source: Licensed ACT Electricity Retailers' 2011–12 compliance and performance reports to the ICRC.

The current price direction for the supply of electricity to customers on the regulated tariff determined prices for the period from 1 July 2012 to 30 June 2104. The Commission's most recent decision under this price direction was to determine a real (inflation-adjusted) increase in the regulated retail price of 1.68 per cent for 2013–14. This is equivalent to a nominal increase of 3.47 per cent, which translates to annual bill increases of between \$36 and \$90 for typical residential customers and between \$98 and \$354 for non-residential customers.¹

On 20 September 2013 the Treasurer signed terms of reference under the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act) for a price direction for the supply of electricity to customers on the regulated retail tariff for the period commencing 1 July 2014. This was replaced by a revised terms of reference signed by the Acting Treasurer on 2 February 2014. The revised terms of reference change certain terminology to ensure consistency with the NECF and prescribe a three-year period for the price direction rather than leaving this decision to the Commission.²

The Commission released an issues paper on 4 October 2013 as the first step in the consultation process to determine retail electricity prices from 1 July 2014. The Commission received eight submissions on the issues paper which are available on the Commission's website.³ A summary of the submissions is provided in Appendix 2.

¹ ICRC, 2013e: 14–15.

² See Appendix 1 for a full copy of the revised terms of reference.

³ www.icrc.act.gov.au.

The Commission has considered key issues raised in the submissions in the relevant chapters of the draft report.

The publication of the draft report and proposed price direction is the second step in the Commission's consultation process for this investigation.⁴ Stakeholder submissions on the draft report will inform the Commission's development of the final report and price direction scheduled for release in early June 2014.

1.2 Scope of the terms of reference

The Commission has been asked by the ACT Government to provide a price direction for the supply of electricity to customers on ActewAGL Retail's regulated retail tariff for the period commencing 1 July 2014 and ending 30 June 2017.

The terms of reference require the Commission to consider the following matters in its investigation:

- The impact on direct electricity costs of changes in government policies and pass through of those costs to regulated prices including, but not restricted to:
 - the Commonwealth Government's carbon pricing mechanism;
 - Commonwealth and ACT retailer obligation energy efficiency schemes;
 - the Commonwealth Government's Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme; and
 - any other schemes implemented to address climate change relevant to electricity pricing.
- The efficient and prudent cost of managing risk in purchasing electricity.

The Commission is also required by the terms of reference to identify and report on:

- the cost allowance for the ACT Feed-in Tariffs (small and large scale) for the year(s) or period for which its determination is being made; and
- the efficient costs of complying with the *Energy Efficiency (Cost of Living) Improvement Act 2012*.

The Commission must produce its final report in sufficient time to allow ActewAGL Retail to make any necessary changes to its billing system and provide information on the new tariff to customers for implementation effective 1 July 2014.

⁴ The proposed price direction is published separately and is available on the Commission's website.

1.3 The ICRC Act

In addition to being instructed by the terms of reference, in making a price direction the Commission is also subject to the provisions of the ICRC Act.

In carrying out its functions under the ICRC Act, the Commission has the following objectives set out in section 7:

- to promote effective competition in the interests of consumers;
- to facilitate an appropriate balance between efficiency and environmental and social considerations;
- to ensure non-discriminatory access to monopoly and near-monopoly infrastructure.

In making a price direction, the Commission is required to have regard to the provisions set out in section 20(2):

- (a) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level or structure of prices for services) and standard of regulated services; and
- (b) standards of quality, reliability and safety of the regulated services; and
- (c) the need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers; and
- (d) an appropriate rate of return on any investment in the regulated industry; and
- (e) the cost of providing the regulated services; and
- (f) the principles of ecologically sustainable development mentioned in subsection (5);
- (g) the social impacts of the decision; and
- (h) considerations of demand management and least cost planning; and
- (i) the borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry; and
- (j) the effect on general price inflation over the medium term; and
- (k) any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person.

The above requirements guide the Commission's analysis and intermediate decisions on each element of the proposed price direction from consideration of the form of

regulation through to the individual components of the price-setting methodology. Chapter 7 provides a summary of the Commission’s compliance with the terms of reference and the ICRC Act.

ActewAGL Retail became an authorised retailer under the National Energy Retail Law (NERL) on 1 July 2012, and is no longer licensed under the *Utilities Act 2000*. However, ActewAGL Retail is still subject to the price regulation provisions of the ICRC Act – as well as other relevant sections. The following is a summary of the provisions and definitions set out in the ICRC Act with respect to the application of the terms of reference and the Commission’s price direction to ActewAGL Retail.

Sections 15 and 16 of the ICRC Act provide for the referring authority to issue an industry reference in the form of terms of reference for the Commission to determine a price for regulated services. Regulated services are defined in the ICRC Act as ‘services provided in a regulated industry’. The dictionary further defines a regulated industry as ‘an industry engaged in the provision in the ACT of a utility service’. A utility service is defined as ‘the activity of selling energy to small customers within the meaning of the National Energy Retail Law (ACT)’. Furthermore, a utility is defined in the ICRC Act as a utility within the meaning of the Utilities Act or a NERL retailer.

In relation to the price direction applying specifically to ActewAGL Retail, section 15(4) of the ICRC Act states that ‘an industry reference that authorises the Commission to make a price direction about maximum prices for the sale of energy to small customers (however prescribed) may state the NERL retailer to whom the direction applies’. The Commission notes clause 3(4) of the terms of reference, where the Minister has made reference to ActewAGL Retail pursuant to section 15(4), and clauses 1 and 2 where small customer has been defined.

1.4 Context of the draft report

The shape and content of this draft report have been strongly influenced by the context in which it is being released. There have been significant developments in energy markets driven by the Council of Australian Governments (COAG) energy market reforms, which were described in the COAG Energy Market Reform Implementation Plan released in December 2012.⁵ The developments that have a direct impact on this investigation include ensuring consistent national frameworks (key issue 7 in the plan) and deregulation of retail prices (key issue 8 in the plan).

To achieve key issue 7, the Standing Council on Energy and Resources (SCER) introduced the NECF to standardise non-price regulation such as licensing and standard customer contracts, thus ensuring a consistent national regulatory framework. The NECF applies generally to the relationship between energy retailers and their customers. The majority of the NECF package changes relate to standard retail contract

⁵ COAG (2012).

terms and conditions and matters associated with such contracts (e.g. billing). One outcome of the NECF for ACT energy consumers can be seen with the retail energy price comparator available on the www.energymadeeasy.gov.au website.

Implementation of the NECF also resulted in changes to the Commission's regulatory responsibilities. The Commission no longer licenses energy retailers. Administration of complaints about energy retailers through the ACT Civil and Administrative Tribunal (ACAT) also transitioned to the national regime. The power to regulate retail pricing for small electricity consumers did not move to the national regulator. This power was retained by states and territories.

There are seven key recommendations made under key issue 8 in the COAG Implementation Plan, of which two are germane to this investigation. The first is the recommendation that jurisdictions work towards effective competition where it does not exist. The implication of this recommendation on the Commission's approach to regulating retail electricity prices is indirect, as the extent to which competition is actively fostered in the Territory is a matter of ACT Government policy. It is worth noting that the terms of reference do not require the Commission to consider the state of competition in determining regulated retail prices.

Before the release of the COAG implementation plan there have been ongoing reviews on a jurisdiction-by-jurisdiction basis of the effectiveness of competition in retail electricity market. For example, the ACT market was reviewed in 2010–11 by the Australian Energy Market Commission (AEMC), which found that the ACT market was not effectively competitive. The AEMC nonetheless recommended in March 2011 that the regulated price be removed.⁶ This advice has not been accepted by the ACT Government. In its July 2013 advice to SCER on the steps the ACT is taking towards a deregulated market, the ACT Government said that it would continue to monitor the state of competition in the retail electricity market. In the ACT Government's assessment, once a positive and sustained development in the level of competition is observed, the ACT will consider deregulating retail electricity price controls.⁷

Other jurisdictions have also been reviewed, the most recent being New South Wales. The AEMC reported in October 2013 that the level of competition in New South Wales retail gas and electricity markets was sufficient to protect the interest of consumers and that price regulation could be removed. The New South Wales Independent Pricing and Regulatory Tribunal (IPART) has endorsed the recommendation, but the New South Wales Government has yet to respond. The Queensland Government has announced its intention to remove price regulation in South East Queensland from 1 July 2015 subject to certain competition and administrative preconditions being satisfied at that

⁶ AEMC, 2011: i.

⁷ ACT Government, 2013d: 2.

time.⁸ Victoria and South Australia have already removed all price regulation in 2009 and 2012, respectively.⁹

The second key recommendation under key issue 8 that is germane to this investigation is that COAG through SCER tasked the AEMC to develop a consistent methodology for the determination of regulated retail prices. This review was initiated by SCER in May 2013 with the AEMC’s final report released in September 2013. This was a wide-ranging review covering all aspects of retail price regulation. To motivate best practice price regulation, the AEMC proposed an objective for retail price regulation. This objective noted the balance between reflecting efficient costs and facilitating competition. The AEMC advice provides guidance on how all of the individual cost components that make up the efficient cost of providing regulated retail electricity services should be evaluated. It then recommends that should a jurisdiction wish to promote competition, a separate and transparent competition allowance should be included on top of efficient cost. In its final report the AEMC stated:

For competitive prices to develop, regulated retail prices must not create barriers to retailers efficiently entering the market and competing for customers. Accordingly, where jurisdictions consider competition to be feasible, a form of “headroom” should be included to facilitate competition.¹⁰

The AEMC went on to conclude that:

The Commission considers that a competition allowance is the most appropriate method to provide headroom in the regulated retail price.¹¹

The overall impact of the AEMC’s recommendations is that the determination of the cost base against which regulated retail prices are to be set should be done in two stages. The first stage is the determination of efficient costs for an incumbent retailer. The second stage is deciding whether a competition allowance should be included and, if necessary, determining its size. The advice of the AEMC is that the competition allowance should encompass all the elements that may previously have been included to facilitate competition, such as customer acquisition and retention costs, adjustment of the retail margin or the calculation of cost estimates based on a hypothetical new entrant.

⁸ Preconditions include there being sufficient competition to benefit customers, implementing appropriate support mechanisms, improving customer engagement in the market and the establishment of clear regulatory responsibilities for retailers and a viable methodology to determine regulated retail prices in regional Queensland (Queensland Government, 2013: 8).

⁹ Tasmania has only recently announced that it will introduce, as of 1 July 2014, full retail competition. Due to the particular nature of the market in Tasmania, it is not comparable to the ACT or other mainland jurisdictions.

¹⁰ AEMC, 2013: iv

¹¹ AEMC, 2013: 79.

The Commission has not in the past included any form of competition allowance or explicit customer acquisition and retention costs in its build-up of efficient costs, nor has it based costs on a hypothetical new entrant retailer. It is worth noting that the ACT Government in its submission to the Commission’s current investigation recommended not including a competition allowance. To address this issue the Commission has undertaken a first-principles evaluation of the costs and benefits of including a competition allowance in the determination of regulated retail prices in the ACT. The Commission has also taken account of the AEMC’s advice on best practice regulation on all other matters in this investigation.

1.5 Structure of the draft report

The remainder of the draft report is structured as follows:

- Chapter 2 sets out the Commission’s proposed high-level methodology or form of regulation for the next regulatory period. This includes a summary of the proposed means of controlling prices over the regulatory period, the Commission’s cost-index model and pass-through arrangements.
- Chapter 3 provides a detailed description and analysis of the Commission’s retail electricity cost-index model and its components. The cost-index model is the means by which the Commission proposes to determine the efficient costs for an incumbent retailer.
- Chapter 4 examines the case for including a retail competition allowance in the ACT.
- Chapter 5 provides an estimate of the efficient costs of supplying electricity to customers on the regulated tariff in 2014–15.
- Chapter 6 describes the proposed procedure for setting the regulated retail price in 2015–16 and 2016–17 through the annual recalibration process and sets out the detail of the proposed pass-through arrangements.
- Chapter 7 summarises the Commission’s compliance with the terms of reference and the ICRC Act.
- Appendix 1 reproduces the revised terms of reference.
- Appendix 2 contains a summary of submissions to the issues paper.
- Appendix 3 presents the equations describing the calculations in the Commission’s energy purchase cost model.
- Appendix 4 presents the equations describing the derivation of costs of hedging.
- Appendix 5 discusses the California energy crisis.

1.6 Investigation timeline

The Commission proposes to adopt the timeline set out in Table 1.1 for the remainder of the price investigation.

Table 1.1 Indicative timeline for the retail electricity price investigation

Task	Date
Terms of reference signed	20 September 2013
Release of issues paper	4 October 2013
Submissions on issues paper close	15 November 2013
Revised terms of reference signed	2 February 2014
Release of draft report and proposed price direction	14 February 2014
Submissions on draft report close	28 March 2014
Public hearing	10 April 2014
Release of final report and price direction	6 June 2014

2 Form of regulation

2.1 Introduction

The Commission has over time developed a methodology for determining the regulated retail electricity price in the ACT. The main elements of this methodology or form of regulation comprise the means of controlling prices over the regulatory period, the cost-index model and pass-through arrangements.

The price control mechanism sets out how and when a price change can be applied to ActewAGL Retail's regulated retail electricity tariffs. The cost-index model is used by the Commission to determine the maximum allowable price change across the basket of regulated tariffs from one year to the next. The pass-through arrangements provide for the treatment of unexpected events that occur after the price direction has been made.

The Commission's power under the ICRC Act to set prices for services offered in a regulated industry is triggered by a terms of reference issued by the ACT Treasurer requiring the Commission to undertake a price direction.

The revised terms of reference require the Commission to set prices over a three-year period from 1 July 2014 to 30 June 2017.¹²

However, apart from providing guidance on a number of other specific matters to be considered, the price direction leaves the Commission with discretion as to the form of regulation it wishes to apply. Consequently, this chapter explores a number of key issues around the form of regulation that is appropriate for the coming regulatory period.

2.2 Retail electricity price control

2.2.1 Form of price control

There are two standard approaches that regulators use to control the actual prices that a retailer charges its standard retail contract customers:

¹² The terms of reference were revised in February 2014. The revisions included a specific period for the price direction, whereas the original terms of reference gave the Commission discretion to set the length of the regulatory period.

- setting each and every price offered by the retailer in its suite of regulated tariffs, which can include the regulator determining the fixed (supply charge) and variable (usage charge) components of the price; or
- setting the maximum allowable average percentage increase that the retailer can apply to its suite of regulated tariffs, which leaves the retailer free to adjust individual prices as it wishes subject to what is termed ‘the weighted average price cap’.

The Commission currently applies a weighted average price cap method, which ActewAGL Retail then applies to the suite of tariffs it offers to customers on standard retail contracts. ActewAGL Retail is able to rebalance the individual tariffs offered to its standard contract customers as long as the adjustment in the weighted average price does not exceed the allowed percentage change determined using the cost-index model.

Recent regulatory decisions

Regulators have applied both weighted average price caps and direct price controls in recent decisions.¹³ In its 2013 determination, IPART applied a weighted average price cap to each of the New South Wales standard retailers. IPART believes that this approach encourages competition because retailers have some flexibility to adjust tariffs within the overall cap to respond to changing market conditions.¹⁴ In its 2013 determination, the Queensland Competition Authority (QCA) was required to set prices for each individual regulated tariff offered by the incumbent retailers in Queensland.¹⁵

Australian Energy Market Commission advice

In its report on best practice retail price methodology, the AEMC’s recommendations on the form of price control were as follows:

- If there are time-of-use tariffs in the suite of regulated tariffs, a weighted average price cap approach should be applied irrespective of the state of competition.
- If there are no time-of-use tariffs, the form of control should reflect the state of competition in the market:
 - If the market is competitive or moving towards competition, a weighted average price cap approach should be used.
 - If the retail market is monopolistic, individual price setting is recommended.¹⁶

¹³ In its 2013 determination, OTTER applied a revenue cap approach to standing offers from Tasmanian retailers from 1 January 2014 (OTTER, 2013a: Appendix 1 and 2).

¹⁴ IPART, 2013b: 47–48.

¹⁵ QCA, 2013b: Appendix A.

¹⁶ AEMC, 2013: 99–100.

The AEMC further observed that:

in the presence of competition, a weighted average price cap provides incentives for retailers to set reflective and efficient prices, and so promotes competition. If a retailer sets a particular price above the efficient cost reflective level then they will lose market share. As this is in part a process of discovery for retailers it is important that they have the flexibility to respond to customer choices.¹⁷

The AEMC also noted that a revenue cap approach is only feasible where the retailer has monopolistic characteristics.¹⁸

Issues paper submissions

AGL, ActewAGL Retail, Origin and Energy Australia supported the use of a weighted average price cap because it allows the standard retailer to adjust prices in a cost-reflective manner.¹⁹

ACAT generally supported this approach to price setting, with the following exception:

certain fees set by the retailer should be subject to direct consideration and approval by the Commission, in particular to ensure social equity.²⁰

As an example, ACAT cited the fact that ActewAGL Retail currently charges a higher disconnection fee for customers who are disconnected for debt in comparison with the fee for disconnection at a customer's request.

Mr Joe Wyder asked for an explanation of how the weighted average price cap determined in the price direction is applied by ActewAGL Retail to the suite of regulated tariffs. In particular, Mr Wyder questioned whether ActewAGL Retail can increase a particular tariff in excess of the increase in the average weighted price cap determined by the Commission. Mr Wyder also asked whether the retailer could increase the supply charge significantly and not increase the usage charge across the suite of tariffs.²¹

The weighted average price cap formula

The Commission's current weighted average price cap formula is presented in Box 2.1.

¹⁷ AEMC, 2013: 98.

¹⁸ AEMC, 2013: 97.

¹⁹ AGL, 2013c: 1; ActewAGL Retail, 2013c: 8; EnergyAustralia, 2013b: 6; Origin, 2013: 2.

²⁰ ACAT, 2013: 3.

²¹ Wyder, 2013: 1.

Box 2.1 Current weighted average price cap formula

ActewAGL Retail must ensure that its regulated retail tariffs comply with the following formula:

$$\sum_{i=1}^n \sum_{j=1}^m P_{ij}^t Q_{ij}^{t-1} \leq \left(\sum_{i=1}^n \sum_{j=1}^m P_{ij}^{t-1} Q_{ij}^{t-1} \right) \times (1 + X^t) \times (1 + \Delta CPI^t)$$

where

- ActewAGL Retail has n regulated retail tariffs that each have up to m components;
- P_{ij}^t is the price that ActewAGL Retail proposes to charge for component j of regulated tariff i for year t;
- P_{ij}^{t-1} is the price that ActewAGL Retail charges for component j of regulated tariff i in the year t-1;
- Q_{ij}^{t-1} is the reference quantity for component j of the regulated tariff i defined as the actual quantity (in both customer numbers or megawatt hours) as reported by ActewAGL Retail for the 12-month period ending 31 March in year t-1;
- X^t is determined in accordance with the cost-index model set out in Chapter 3;
- ΔCPI^t is calculated using the formula set out in Chapter 3.

Commission's consideration

Weighted average price cap operation

In deciding on a form of price control, the Commission's choices are effectively restricted to setting all regulated prices or applying a weighted average price cap. The Commission notes the preference expressed in submissions on the issues paper and the AEMC for the weighted average price cap approach. The Commission agrees with the AEMC's view that it is important to provide retailers with the flexibility to set individual tariffs, including, importantly, to be able to adjust individual tariffs to respond to market circumstances. The Commission is not attracted to setting each individual tariff because the Commission's view is that this is the responsibility of the retailer.

In response to Mr Wyder's questions, the Commission notes that, as discussed earlier, the effect of a weighted average price cap is that only the change in the weighted average price is limited, not the change in individual tariffs. This means that ActewAGL Retail has the flexibility to adjust individual tariffs, and the fixed and variable components of each tariff, as it sees fit as long as it keeps within the weighted average cap.

The process works as follows. First, in June of the year in question the Commission determines a maximum allowed average percentage increase in the suite of regulated tariffs. ActewAGL Retail then provides the Commission with its proposed new tariffs together with its weighted average calculations based on the new prices and customer numbers and load for each tariff in the previous year. The Commission checks that ActewAGL Retail's proposed prices are consistent with the approved average percentage change and, assuming that they are, approves the new prices. The new prices are then applied by ActewAGL Retail from 1 July of the year in question.

ActewAGL Retail currently provides four residential and three non-residential regulated tariff offerings. The Commission appreciates that customers on a particular tariff may experience a price change higher than the change in average prices. The corollary of this is that customers on other tariffs may experience price changes lower than the average change. This is how the weighted average price cap works. Customers are free to choose between the various tariffs, and the Commission expects customers to exercise their freedom of choice in response to price signals.

Proposed adjustments to the formula

The Commission proposes to make two adjustments to the way the weighted average price cap formula is presented. These are designed to improve the transparency of the formula. Neither affects the result of applying the formula.

The Commission's current formula separates out the real and consumer price index (CPI) adjustments to the weighted average price cap. The X factor is the maximum real allowed change in average regulated retail electricity prices. In practice, the Commission calculates the nominal allowed change from the cost-index model and derives the real allowed change by adjusting for the change in the consumer price index. The Commission is now proposing to focus exclusively on the nominal percentage change. This proposal has no impact on the resulting price to consumers or revenue to ActewAGL Retail, and is done purely to simplify the presentation of price adjustments.

The second proposed change is to present the formula as the measured change in average prices must be less than the calculated change in average costs given by the cost-index model.

The consequence of these changes is set out in Box 2.2.

Box 2.2 Proposed weighted average price cap formula

ActewAGL Retail must ensure that its regulated retail tariffs comply with the following formula:

$$1 + Y^t \geq \frac{\sum_{i=1}^n \sum_{j=1}^m P_{ij}^t Q_{ij}^{t-1}}{\sum_{i=1}^n \sum_{j=1}^m P_{ij}^{t-1} Q_{ij}^{t-1}}$$

where

- ActewAGL Retail has n regulated retail tariffs that each have up to m components;
- P_{ij}^t is the price that ActewAGL Retail proposes to charge for component j of regulated tariff i for year t;
- P_{ij}^{t-1} is the price that ActewAGL Retail charges for component j of regulated tariff i in the year t-1;
- Q_{ij}^{t-1} is the reference quantity for component j of the regulated tariff i defined as the actual quantity (in both customer numbers or megawatt hours) as reported by ActewAGL Retail for the 12-month period ending 31 March in year t-1;
- Y^t is the maximum average percentage change in regulated retail tariffs determined in accordance with the cost-index model set out in Chapter 3.

Draft decision

The Commission considers that a weighted average price cap approach is the most appropriate form of price control in the ACT for customers on regulated retail tariffs. To improve the clarity of the presentation of the price cap formula, the Commission proposes to make the adjustment to the formula as set out in Box 2.2.

The Commission proposes to continue to use a weighted average price cap approach to control regulated prices for the regulatory period commencing 1 July 2014 using the formula set out in Box 2.2.

2.2.2 Price control timing

The terms of reference for this price investigation contemplate the provision for annual review where appropriate. As noted in the issues paper, an annual adjustment or recalibration of prices is common regulatory practice in determinations that span more than a single year. Such adjustments ensure that prices remain reflective of the underlying efficient costs. An alternative to this is to estimate the likely changes in costs over time at the start of the regulatory period and then incorporate this estimated change into a price path for the out years of the regulatory period. In considering the Commission's proposed approach it is useful to look at the experience of other regulators and the views of the AEMC.

Recent regulatory decisions

The QCA reviews electricity retail prices on an annual basis as part of its three-year delegation from the Queensland Minister for Energy and Water Supply. Its current review involves making an annual price determination for each tariff and therefore is more exhaustive than the annual recalibration process currently applied by the Commission.²² In New South Wales, IPART uses an annual review and cost pass-through mechanism to:

address non-systematic risks stemming from uncertainty in the market, policy and regulatory environment, which affects the level and volatility of wholesale electricity prices.²³

IPART's 2013 pricing determination provides for retailers offering the standard contract to submit applications for annual pricing proposals. The proposal will cover energy purchase costs, cost allowances for complying with green cost programs, allowances for energy losses and customer retention and acquisition costs.²⁴

Similarly, in Tasmania, the Office of the Tasmanian Economic Regulator (OTTER) provides for an annual approval of the standing offer contract, including changes in the wholesale electricity price, customer numbers and loads and the notional maximum revenue allowed for each regulated offer retailer.²⁵

Australian Energy Market Commission advice

The AEMC's review noted that a mechanism is needed to address changes in cost components subject to regular or significant change, or that were beyond the reasonable control of retailers. The AEMC observed:

The inclusion of an annual review means that the regulated retail prices are more likely to promote cost reflectivity and flexibility. It also means that retailers have confidence in being able to manage these risks.²⁶

Nevertheless, the AEMC commented that annual reviews increased the administrative burden on the regulator and regulated retailer.

Issues paper submissions

ActewAGL Retail supports a recalibration process along the lines of the Commission's current approach.²⁷ ACAT stated that provided that the price-setting methodology is

²² The term 'annual recalibration' is synonymous with the term 'annual price adjustment' used by the Commission in the current and previous price directions.

²³ IPART, 2013b: 128.

²⁴ IPART, 2013b: 131.

²⁵ OTTER, 2013a: Appendix 1 and 2.

²⁶ AEMC, 2013: 102.

²⁷ ActewAGL Retail, 2013c: 30.

robust, some elements in the cost build-up could be subject to annual adjustment during the regulatory period.²⁸ AGL and Origin also supported annual price reviews.²⁹

Commission’s consideration

In the current electricity price direction, the Commission set the maximum allowed percentage change for regulated retail electricity prices for 2012–13, the first year of the regulatory period. The price direction also included an annual recalibration method to determine the change in tariffs for 2013–14, the second and final year of the regulatory period.

Essentially, the annual recalibration involves updating the parameters of the retail electricity cost-index model. This process draws on, for example, more recent forward price and load data, updated network costs and new estimates of green costs. A number of model components, such as retail operating costs, are simply adjusted by the change in the consumer price index. The recalibration process can also capture additional costs from a pass-through event.

The alternative – predetermining a price path and therefore cost increases over the length of the regulatory period – is not favoured by the Commission. While it provides some certainty in terms of disclosing the future price path, it relies on the regulator to estimate the likely change in the cost of supplying electricity over the duration of the regulatory period. While the regulated prices may start out as cost reflective, given the price and load uncertainties associated with the purchase of electricity on the wholesale market, it is unlikely that they will remain so over a period longer than one year.

Revising prices on an annual basis does mean an increased administrative burden on the regulator and regulated business. However, this can be mitigated, as it is in the Commission’s current arrangements, by minimising any structural changes to the cost-index model and clearly specifying how the parameters of the model will be adjusted.

The Commission maintains its view that regulated prices should be adjusted on an annual basis consistent with the Commission’s current practice of annually adjusting the benchmark cost of supplying electricity to customers for changes in wholesale energy, network and retail costs. An annual price recalibration is also consistent with the practice of other regulators and with the recommendations of the AEMC.

The key difference from current practice is that two annual recalibrations are required given the three-year regulatory period.

Draft decision

The Commission proposes to provide for two annual price recalibrations for the regulatory period commencing 1 July 2014. The first will determine prices for 2015–16

²⁸ ACAT, 2013: 3.

²⁹ AGL, 2013c: 1; Origin, 2013: 2.

and the second will determine prices for 2016–17. The details of the proposed annual recalibration method, which are largely consistent with the Commission’s current practice, are discussed in Chapter 6.

2.3 Retail electricity cost-index model

The Commission uses its cost-index model to determine the extent to which ActewAGL Retail can change its regulated retail tariffs over those in the previous year using the weighted average price cap formula.

In determining the allowed percentage change under the weighted average price cap formula, the Commission estimates the economically efficient cost base of an incumbent electricity retailer providing retail electricity supply services to customers on standard retail contracts. The individual cost components that make up the efficient cost base are discussed in detail in Chapter 3. In estimating the individual cost components, the Commission draws on benchmark cost information available in the marketplace, other regulatory decisions within the retail electricity sector in Australia and information provided by ActewAGL Retail.

In order to determine the percentage change that applies in the weighted average price cap formula, each year the Commission applies a cost-index model based on year-on-year changes in the individual cost components. The following cost components contribute to the overall retail cost of electricity:

- wholesale energy costs
- energy purchase costs
- Large-scale Renewable Energy Target (LRET) and Small-scale Renewable Energy Scheme (SRES) costs
- energy losses
- energy contracting costs
- National Electricity Market (NEM) fees
- retail costs
- retail operating costs
- ACT energy efficiency scheme costs
- network costs
- transmission and distribution network costs.

Once these cost components are determined, a retail margin is applied across the three major cost categories. The cost-index model that the Commission proposes to use for the next regulatory period is discussed in detail in Chapter 3.

2.4 Pass-through arrangements

2.4.1 Introduction

Cost pass-through arrangements are required to deal with costs that have not been incorporated into the cost-index model at the time of making the price direction. Pass-through arrangements typically apply to events that are unplanned, or whose extent is uncertain, and which are beyond the ability of the regulated entity to control. Pass-through arrangements are a common feature of retail electricity price regulation. If a pass-through event occurs then, subject to any materiality requirements, the regulator can investigate the event and adjust prices as appropriate. Pass-throughs are in addition to any annual adjustment that a regulator may make.

The Commission currently allows for pass-throughs in the following categories:

- regulatory change events where change is due to a decision of a defined authority; and
- tax change events where any tax, levy, impost, deduction, charge, rate, duty or withholding tax is levied on ActewAGL Retail by an authority.

Regulatory events include government mandated programs for national environmental schemes, retailer-of-last-resort events, energy efficiency schemes or changes in transmission and distribution charges. Tax change events cover the imposition of a tax or impost but generally exclude changes to the existing income taxes or where an existing tax is replaced with an equivalent tax. Pass-through events are subject to a materiality threshold of 0.25 per cent of ActewAGL Retail's revenue from regulated retail tariffs in the 12 months to March of the most recent year. The threshold is cumulative in that it is not applied to pass-through events individually. ActewAGL Retail can currently make an application for a pass-through event review at the time of an annual price adjustment or at any time during the year up to a maximum of one application per year.³⁰

2.4.2 Recent regulatory decisions

It is routine practice for other regulators to provide for the pass-through of certain costs. For example, in its 2013 determination, IPART provided for pass-through arrangements to address the risk material change in standard retailer costs due to unforeseen regulation or taxation change events outside the standard retailer's control.³¹ The pass-through arrangements provide for either IPART or the standard retailer to initiate a pass-through event review, are subject to a materiality threshold and allow for a price change on a date other than 1 July.

³⁰ ICRC, 2012: 35–36.

³¹ IPART, 2013b: 128.

2.4.3 Australian Energy Market Commission advice

The AEMC supported the inclusion of pass-through arrangements in a price determination, and recommended that both the regulator and retailer should be able to initiate a pass-through review. The AEMC suggests that cost pass-throughs should only be permitted for those costs the retailer cannot avoid, manage or insure against.

The AEMC recommended that changes in network costs should be listed as a definite pass-through event. Other events should be defined in advance of the regulatory period, on the basis of the following principles to guide whether an event constitutes a pass through:

- events should be significant, exogenous, unforeseen and unavoidable;
- events should not already have been provided for through other means; and
- events should have a material impact on retailers and/or customers that are not offset by the increased administrative cost for the regulator.³²

2.4.4 Issues paper submissions

AGL, EnergyAustralia, ActewAGL Retail and Origin argued that cost pass-through arrangements are an integral part of regulated pricing.³³ Further, ActewAGL Retail supported the continuation of the cost pass-through arrangements in the Commission's 2012–14 retail electricity price determination. However, AGL Energy and ActewAGL Retail do not support the pass-through being subject to a materiality threshold. ActewAGL Retail and AGL Energy argue that the administrative cost associated with making an application is a sufficient incentive for it not to seek a pass-through unless the costs are material. In contrast, EnergyAustralia supported pass-throughs being subject to an appropriate materiality threshold and ACAT supported the current materiality threshold.³⁴

ACAT argued that the current set of pass-through events be reduced, stating that:

There are events that are beyond ActewAGL's control but are reasonably foreseeable and these should be the subject of normal commercial risk management. The ultimate objective is not to provide a risk-free environment for the TFT provider, but rather to achieve a fair balance between the community interest and the viability of the regulated utility.³⁵

AGL, EnergyAustralia, Origin and ActewAGL Retail all supported using pass-through arrangements to deal with the uncertainty around the price on carbon.

³² AEMC, 2013: 104.

³³ AGL, 2013c: 1; EnergyAustralia, 2013b: 7; ActewAGL Retail, 2013c: ; EnergyAustralia, 2013b: 9.

³⁴ EnergyAustralia, 2013b: 7; ACAT, 2013: 3.

³⁵ ACAT, 2013: 3.

ActewAGL Retail also requested that the Commission provide assurance that the pass-through formula in the current price direction can be applied in a neutral way for within-year pass-throughs. ActewAGL Retail stated:

ActewAGL notes that the current formula requires that the annualised value of a pass through event (labelled APT by the Commission), to be added (or subtracted) to the annual projected revenue target, must be adjusted to ensure that the tariffs reflect the full pass through value (positive or negative).³⁶

2.4.5 Commission's consideration

The Commission's terms of reference require it to consider the pass-through of costs associated with changes in government policies, such as the price on carbon mechanism and energy efficiency schemes. The Commission notes that pass-through arrangements are used by all regulators, are supported by all submissions on the issues paper on this matter and are supported by the AEMC.

Pass-through events

The Commission agrees with the AEMC that pass-throughs should only be provided for events that are unforeseen, or whose extent is uncertain, and which are beyond the control of the regulated entity. The Commission also agrees that such arrangements should be set out clearly in advance of the regulatory period. The Commission's view is that its current set of pass-through arrangements for regulatory and tax events meets these requirements.

The AEMC recommended that both the regulator and retailer should be able to initiate a pass-through review. While the Commission's current arrangements allow for the Commission and ActewAGL Retail to initiate a pass-through review, this arrangement could be specified more clearly in the price direction. For avoidance of doubt, the Commission proposes to make this provision more transparent.

The Commission notes that ACAT has suggested constraining the set of allowable pass-through events on the basis that some events should be the subject of normal commercial risk management. However, ACAT has not identified which of the current set of events this argument applies to. Moreover, the Commission has identified the current set of events on the basis that they are beyond ActewAGL Retail's control and therefore not subject to normal commercial risk management. As such, the Commission is not attracted to reducing the set of existing pass-through events.

Carbon price pass-through event

The issues paper noted that in conducting this price investigation the Commission faces continuing uncertainty over a future price on carbon. If there is no legislative change to the current price on carbon arrangements under the *Clean Energy Act 2011* (the Clean Energy Act) before 31 May 2014, the Commission proposes to provide for a pass-

³⁶ ActewAGL Retail, 2013c: 9.

through arrangement that permits the Commission to adjust the regulated price at any time from 1 July 2014 in response to a change in the price-on-carbon legislation. This proposal is supported in all submissions on the issues paper on this matter. The uncertainty over the price on carbon, and stakeholder submissions, are discussed in more detail in Chapter 3.

For clarity, and given the magnitude of the potential price adjustment resulting from the removal of the price on carbon, the Commission will include a carbon pass-through event as a separate event. The detail of the proposed pass-through event is discussed in Chapter 6.

Timing of pass-through events

As noted earlier, the current arrangements provide for a pass-through event review at the time of an annual price adjustment or at any time during the year, up to a maximum of one application per year. The Commission proposes to restrict within-year pass-through reviews to a carbon price event for the next regulatory period. This proposal means that regulatory change and tax change pass-through event reviews can only take place as part of an annual recalibration process. The Commission's view is that restricting such events to the annual process will reduce the administrative burden associated with the additional effort required for within-year reviews.

The Commission notes ActewAGL Retail's concerns about the neutrality of the pass-through formula for within-year pass-throughs. While these concerns are moot for regulatory change and tax change events given the Commission's proposal to restrict review for these events to the annual recalibration process, they are valid in respect of the carbon price event. This matter is discussed in more detail in Chapter 6.

Materiality threshold

The Commission notes the preference of ActewAGL Retail and AGL Energy not to have a materiality threshold. In its 2010 draft determination the Commission considered the need for and the appropriate level of a materiality threshold. The Commission's rationale for introducing a materiality threshold was that within-year pass-throughs introduce administrative and regulatory burdens in addition to the annual price recalibrations and that, therefore, only events that had a substantial cost impact should be passed through. At the time the Commission stated:

This will ensure that ActewAGL Retail has an incentive to minimise costs, reduce uncertainty for customers, and contain the administrative costs associated with pass-throughs.³⁷

In deciding on the current threshold of 0.25 per cent annual regulated revenue in 2010, the Commission considered a range from 0.25 per cent to 1 per cent of revenue, and determined that the lower level was appropriate.

³⁷ ICRC, 2010a: 68.

The Commission has not been presented with information that persuades it to change its view on the need for or the level of the materiality threshold.

2.4.6 Draft decision

The Commission proposes the pass-through arrangements set out below for the regulatory period commencing 1 July 2014. The full set of pass-through arrangements are presented in detail in Chapter 6. The proposed arrangements are modelled on those in the current price direction with the exception of a specific carbon price event.

In summary, the proposed pass-through arrangements include:

- initiation:
 - The Commission and ActewAGL Retail may initiate a review for a regulatory change or tax change pass-through event.
 - The Commission may initiate a review for a carbon pass-through event.
- application timing:
 - For regulatory change and tax change events, applications for reviews can only be made when the Commission is undertaking an annual price recalibration.
 - For a carbon price event, the review can be undertaken at any time.
- process for a pass-through event review:
 - Reviews of regulatory change and tax change events will be undertaken as part of the annual recalibration process with price adjustments taking effect from 1 July.
 - Reviews of a carbon price event will be undertaken as a separate exercise within a regulatory year or as part of the annual recalibration process depending on the timing of the passage of the carbon pricing repeal legislation.
- price adjustment timing:
 - The Commission will ensure that the timing of any price adjustment arising from a successful application from any review is consistent with national retail electricity law requirements.
- events covered:
 - These will include regulatory change events, tax change events and a carbon price event.
- calculation:
 - The Commission will calculate the pass-through amount using the same principles it currently applies.
- materiality threshold:

- An aggregate materiality threshold of 0.25 per cent of ActewAGL Retail’s annual regulated revenue will apply to regulatory change and tax change events.

As an additional safety net, the Commission will list a change in the price on carbon legislation as a price direction trigger event under sections 20A(3)(c) and 24F(2) of the ICRC Act.

2.5 Summary of draft decisions on the form of regulation

The Commission’s draft decisions on the form of regulation for the next regulatory period are summarised in Table 2.1.

Table 2.1 Commission’s draft decisions on the form of regulation

Component	Draft decision
Length of regulatory period	Three years (specified in the terms of reference).
Form of price control	The Commission proposes to use a weighted average price cap where the allowed change in the average price is constrained by the change in the cost-index model as discussed in Chapter 3.
Timing of price control	The Commission proposes to undertake an annual recalibration of the parameters of the retail electricity cost-index model to determine regulated retail prices for 2015–16 and 2016–17.
Cost pass-through arrangements	The Commission proposes to: <ul style="list-style-type: none"> • largely adopt its current arrangements; • include a specific pass-through event for changes in the price on carbon legislation; and • restrict within-year reviews to the carbon price event.
Trigger events	The Commission proposes to list a change in the price on carbon legislation as a price direction trigger event.

2.6 Assessment against Australian Energy Market Commission best practice advice

Table 2.2 provides a summary assessment of the Commission’s proposed form of regulation against the AEMC’s advice on best practice retail price methodology.

Table 2.2 Assessment of Commission’s form of regulation against Australian Energy Market Commission advice

Component	AEMC advice	Commission’s approach
Length of regulatory period	Three years	Three years
Form of price control	Weighted average price cap	Weighted average price cap
Timing of price control	Annual price adjustments	Annual price adjustments
Pass-through arrangements	Regulator- and retailer-initiated pass-throughs for costs the retailer cannot avoid, manage or insure against.	Regulator- and retailer-initiated pass-throughs for costs the retailer cannot avoid, manage or insure against.

3 The Commission's retail electricity cost-index model

3.1 Introduction

As explained in Chapter 2, the Commission determines regulated retail electricity prices using a weighted average price cap. The Commission's cost-index model, which is used to determine the percentage change to be applied under the price cap, estimates the economically efficient cost base of an incumbent electricity retailer supplying services to regulated customers. It does this by estimating the individual cost components that would be incurred by an efficient supplier in the same position as ActewAGL Retail when providing electricity supply services to customers on the regulated tariff, that is, those customers who have not taken up separate market contracts for the supply of electricity.

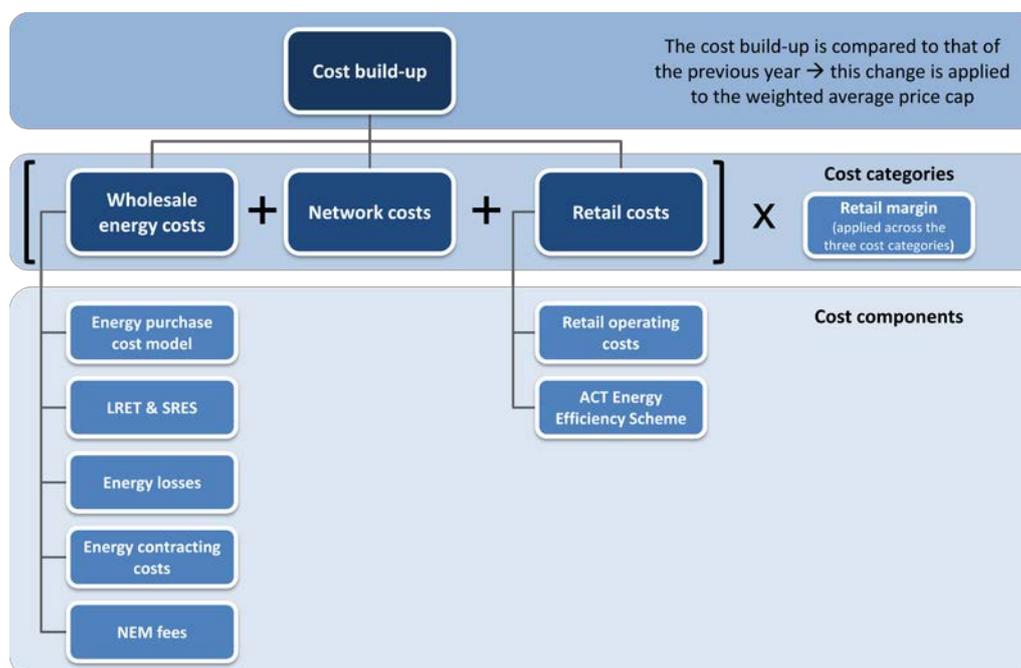
Retailers are responsible for paying generators for energy supplied to their customers. Retailers in turn charge their customers for the energy they have consumed. Thus, there are three main cost categories in the build-up to the total cost of providing electricity to customers:

- wholesale energy costs, which comprise energy purchase costs, LRET and SRES costs, energy losses, energy contracting costs and NEM fees;
- network costs, which include transmissions and distribution costs; and
- retail costs, which comprise retail operating costs and Energy Efficiency Improvement Scheme (EEIS) compliance costs.

Once these three cost categories are estimated, they are added together and multiplied by a retail margin to produce an overall cost in dollars per megawatt hour (\$ per MWh). This cost is then compared to the cost calculated for the previous year. This produces a maximum allowable percentage change that ActewAGL Retail can apply under the weighted average price cap to its basket of regulated retail tariffs.

The Commission's cost-index model and its constituent cost components are illustrated in Figure 3.1.

Figure 3.1 The Commission’s electricity cost-index model



The Commission’s cost-index model has been set out in detail in a number of Commission publications since 2010. This chapter consolidates the description of the model and its constituent components in one location. For those with a mathematical bent, the detailed formulas describing the model are provided in Appendix 3. This chapter also responds to technical comments about the model contained in stakeholder submissions on the issues paper.

3.2 Principles underpinning the energy purchase cost model

The energy purchase cost component of the wholesale energy cost category is the most significant and complex part of the Commission’s cost-index model, and indeed is a model in its own right. The Commission undertook a dedicated review of the design of the energy purchase cost model as part of its 2010 investigation of regulated retail prices. In the methodological review, the Commission designed the energy purchase cost model with reference to three high-level principles:

- The model should be simple, transparent and predictable to assist electricity retailers in their risk management by providing clarity about how the regulated retail price may vary with market conditions.
- The model should provide an unbiased estimate of electricity purchase costs that would be incurred by an efficient retailer.

- Outputs from the model should be replicable in that it can be repeated over time using the same largely observable inputs to enhance the predictability of the Commission's decision on this cost component.³⁸

In its submission to the issues paper, EnergyAustralia raised a concern in relation to the energy purchase cost model that accuracy was not included as a high-level principle, stating that:

Although there is an expectation that any model produces accurate output, it should be made explicit that this is a requirement as there is little point in a model which meets the other principles but is inaccurate.³⁹

The second principle – that the model should provide an unbiased estimate of electricity purchase costs that would be incurred by an efficient retailer – covers the concept of accuracy.

3.3 Market-based versus long-run marginal cost approaches to estimating energy purchase costs

3.3.1 Introduction

The Commission's energy purchase cost model is a market-based model that estimates the cost of purchasing electricity for the coming year based on forward prices and observed market outcomes. An alternative approach for determining the energy purchase cost is to estimate the long-run marginal cost of generating electricity to cover the regulated retail load. ActewAGL Retail has called for the long-run marginal cost to be instituted as a price floor when determining the energy purchase cost in the previous two reviews. While it is common to refer to using long-run marginal cost as a price floor, in practice this involves choosing the maximum of the long-run marginal cost and market-based approaches. It is worth noting that IPART's wholesale energy purchase cost is a weighted average of these two approaches.

In preparing its 2013 advice on best practice retail price methodology, the AEMC considered the choice between a market-based and long-run marginal cost approach. In submissions to the AEMC review, ActewAGL Retail and AGL called for long-run marginal cost to be used as a reference point or floor when determining the energy purchase cost.⁴⁰ Given the topicality of this issue, the Commission is once again reviewing the merits of adopting a long-run marginal cost floor for the purchase cost of electricity.

³⁸ ICRC, 2010d: 9.a

³⁹ EnergyAustralia, 2013b: 8.

⁴⁰ AGL, 2013a: 5; ActewAGL Retail, 2013a: 5.

3.3.2 Australian Energy Market Commission advice

In its advice on best practice retail price methodology, the AEMC examined the market-based approach to determining energy purchase costs in comparison to the long-run marginal cost approach. This included a discussion of a range of methods for calculating long-run marginal cost, including average incremental cost, perturbation, greenfields and levelised unit cost methods.

The AEMC assessed the market-based and long-run marginal cost approaches with reference to three efficiency factors it considered desirable, namely that the approach should:

- be forward-looking;
- reflect, and be responsive to, the current demand–supply balance; and
- include a time dimension.

The AEMC concluded that, where feasible, energy purchase costs should be estimated using a market-based approach, stating that:

Futures prices generally produce the best estimates of future energy purchase costs, resulting in customers paying efficient costs. This is because use of data from a liquid futures market encapsulates all three efficiency characteristics outlined above.⁴¹

The AEMC recommended that, should futures prices be considered unreliable due to insufficient liquidity in the futures market, a long-run marginal cost approach using the perturbation method should be used to estimate the energy purchase cost.

3.3.3 Recent regulatory decisions

New South Wales

The terms of reference for the Independent Pricing and Regulatory Tribunal’s (IPART) 2013 determination required IPART to set the energy purchase cost allowance no lower than the weighted average of the long-run marginal cost and a market-based cost. The given weights were 75 per cent for long-run marginal cost and 25 per cent for the market-based cost.⁴² As such, IPART was required to set a floor for the energy purchase cost allowance primarily based on the long-run marginal cost of generation.

Queensland

In its 2013 determination for 2013–14 to 2015–16, the Queensland Competition Authority (QCA) considered the merits of adopting an approach to estimating energy purchase costs based on long-run marginal cost rather than its preferred market-based approach. In its final determination, despite concerted calls from Queensland retailers

⁴¹ AEMC, 2013: 25.

⁴² IPART, 2013b: 173.

to adopt some form of long-run marginal cost approach, QCA maintained its market-based approach, stating that:

The Authority is not convinced that the inclusion of LRMC in any form in the estimation of energy costs is warranted or necessary and maintains its view that a market-based approach should provide the best estimate of the costs that retailers will incur in the year ahead.⁴³

Tasmania

In its 2010 determination for the 2010–11 to 2012–13 regulatory years, the Office of the Tasmanian Economic Regulator (OTTER) was required by legislation to set the energy purchase cost allowance at least equal to the long-run marginal cost of a notional new generator supplying electricity to non-contestable customers in Tasmania. OTTER was subsequently required to calculate the energy purchase cost allowance for 2012–13 (the final year of the 2010 regulatory period) based on the average of:

- the LRMC of electricity generation by a notional electricity generator to supply electricity to non-contestable customers on mainland Tasmania; and
- the price Aurora Energy would pay to purchase electricity in Victoria and transport the electricity to mainland Tasmania to supply non-contestable customers on mainland Tasmania.⁴⁴

For its 2013 determination for prices from 1 January 2014 to 30 June 2016, OTTER was required to rely on a wholesale pricing model developed for the Tasmanian Government and provided to OTTER very late in the determination process. While OTTER's final report contains little information on the mechanics of the model, it appears that it is market based and references Victorian contract prices as a foundation.

3.3.4 Issues paper submissions

The Commission received a number of submissions on the choice between estimating energy purchase costs using a market-based or long-run marginal cost approach. AGL, ESAA, EnergyAustralia, Origin and ActewAGL Retail supported setting energy purchase costs using long-run marginal cost as a floor.

AGL maintained its preference for the long-run marginal cost approach on the basis that this better reflects the costs that a vertically integrated retailer would incur and will also provide more stable wholesale energy costs. Notwithstanding this preference, AGL stated that:

Whilst AGL continues to promote the use of LRMC, if the ICRC prefers to use a market based approach, in AGL's view, the ICRC should continue to apply this model and any adjustment factors for consistency.⁴⁵

⁴³ QCA, 2013b: 25.

⁴⁴ OTTER, 2013a: 24.

ActewAGL Retail espoused a similar position to AGL, citing its preference for a long-run marginal cost floor but stated that:

However, given the detailed discussion and conclusion drawn by the Commission on this matter in its 2010 and 2012 determinations and noting ActewAGL’s preference for a transparent, stable and open regulatory process that minimises the administrative burden, ActewAGL acknowledges the Commission’s previous preference to maintain, where possible, the current approach to the derivation of EPC for the retail prices for franchise electricity customers.⁴⁶

EnergyAustralia advocated a long-run marginal cost floor approach on the basis that it represents the least-cost combination of generation plant required to meet forecast load.⁴⁷

Origin argued for using long-run marginal cost as reference point on the basis that most retailers do not rely entirely on the wholesale market for their load requirements but also establish and acquire generation or enter into long-term power purchase agreements.⁴⁸

In contrast, ACAT expressed a preference for the Commission’s market-based approach, stating that:

The ACT is a buyer in the wholesale electricity market and does not have any role in base load electricity generation (apart from renewable energy generation).⁴⁹

3.3.5 Commission’s consideration

In its 2010 methodology paper the Commission considered whether to use a measure of the long-run marginal cost as part of its energy purchase cost model. At that time the Commission rejected taking into account long-run marginal cost in determining this cost component. The Commission gave three main reasons why long-run marginal cost should not be included in the energy purchasing cost calculation. These reasons were:

- In competitive markets equilibrium prices are based on short-run cost considerations.
- There is no settled methodology for calculating long-run marginal cost.
- The retail price regulator should not be concerned with generation investment incentives.

⁴⁵ AGL, 2013c: 2.

⁴⁶ ActewAGL Retail, 2013c: 12.

⁴⁷ EnergyAustralia, 2013b: 5.

⁴⁸ Origin, 2013: 3.

⁴⁹ ACAT, 2013: 3.

If the retail market is competitive and there is an active and vibrant wholesale market, the competitive retail prices will be based on short-term factors. That is, retailers will take as their input price for wholesale electricity the price they pay for that electricity. This price will depend on the retailer's hedging arrangements, which may involve pre-purchasing electricity through the contract market several years before dispatch. However, a retailer that based its competitive price on the long-run marginal cost of generating electricity would find itself losing customers when the long-run marginal cost was well above the short-term wholesale price adjusted for hedging costs, and losing money when the long-run marginal cost was much lower than the wholesale price.

The question is does this translate through to the case where the retail price is set by a regulator. In its 2010 methodology paper the Commission made the point that if long-run marginal cost is above the spot price and the regulator based its regulated prices on the long-run marginal cost, then this results in a gain for the retailer. The argument made in submissions at that time was that basing regulated prices on the long-run marginal cost of generation was necessary to ensure efficient investment in generation capacity. The Commission rejected this argument given that all the gains flow to the retailer and this does not have an impact on generation investment incentives.

The Commission also identified concerns about the methodology for calculating the long-run marginal cost. There is no generally agreed methodology for determining the long-run marginal cost. Most methods depend on either long-run forecasts of future demand (especially demand increases) or the costs of optimising new generation plant to meet the regulated load. As noted in the 2010 methodology paper, building generation to cover just the regulated load (the demand by customers on the regulated tariff) may be much higher than the average cost of serving the entire load.

The final reason the Commission gave in the 2010 methodology paper against using the long-run marginal cost as a floor for the wholesale purchase cost of electricity was that even if there were market failures in the wholesale market that could potentially lead to a lack of investment incentives in generation capacity, it is not the role of a retail regulator to solve this problem.

3.3.6 Draft decision

The Commission's draft decision is to maintain the current market-based energy purchase cost approach with no reference to the long-run marginal cost floor for a number of reasons.

First, the Commission believes that its market-based model provides a robust, conservative and transparent estimate of energy purchase costs. Second, the Commission's 2010 concerns with basing energy purchase costs on long-run marginal cost, summarised above, remain. Third, in line with submissions from ActewAGL Retail and AGL and the AEMC best practice advice, the Commission agrees that it is important, where possible, to maintain a stable, consistent and transparent method for setting prices.

The Commission notes that ActewAGL Retail has raised concerns with some of the parameters of the energy purchase cost model. These concerns are discussed later in this chapter.

It is important to note that the Commission's view on long-run marginal cost differs from that of the AEMC. The AEMC's view is that long-run marginal cost is a valid option in the absence of robust market data. The Commission has always categorically rejected using long-run marginal cost, whatever the circumstances.

3.4 Energy purchase cost model

3.4.1 Introduction

Energy purchase costs are the costs incurred by the incumbent retailer in paying for the electricity supplied to its customers on regulated retail tariffs through the wholesale market.

The cost of paying for the energy supplied through the wholesale energy market accounts for about 35 per cent of the total cost of providing retail electricity services to customers who pay the regulated retail tariff in the ACT. While not the largest component in the build-up of efficient costs (network costs account for about 44 per cent of the total cost), energy purchase costs provide the greatest challenge to regulators due to complexity of wholesale energy markets, the volatility of wholesale energy prices, and the potential adverse outcomes if wholesale energy costs are not properly reflected in the regulatory model. The design of an energy purchase cost model must strike the right balance between properly compensating the retailer and protecting the interests of customers.

The Commission tackled this task in three steps:

- development of an approach;
- specification of a conservative, hypothetical hedging strategy and derivation of the cost of implementing that strategy; and
- identification of forward-looking proxies for the elements of that cost to enable the calculation of an energy purchase cost in advance of the period in question.

3.4.2 A precautionary approach

As discussed above, the Commission has embraced a market-based approach to determining energy purchase costs rather than referencing long-run marginal cost. A consequence of the Commission's decision to adopt a model based on the electricity futures market is the need to explicitly consider the costs associated with hedging the risks inherent in a volatile wholesale market for electricity. Hedging is the practice of reducing the risk of adverse future price movements in the electricity spot market by

taking an offsetting position by, for example, forward purchasing electricity at an agreed price. In its final report on best practice retail price methodology, the AEMC states that:

In order to use data from a liquid futures market, the regulator must make a number of underlying assumptions. This includes assumptions on the profile of future prices that will make up the energy purchase cost of the retailer, ie the retailer's hedging strategy.⁵⁰

As alluded to earlier, the characteristics of electricity as a commodity provide unique challenges when modelling the wholesale market for electricity. Electricity is non-storable under currently available technologies. Peak usage is also two or three times the average daily usage, which results in a small proportion of generating capacity rarely being used but commanding high prices at peak times. There are also marked seasonal differences in average and peak electricity usage. All of these factors result in the potential for significant volatility in the spot market price of electricity. This exposes electricity retailers to significant price risk as they have made advance agreements with residential and business customers to supply electricity at an agreed price.

Given these market characteristics, forward contract markets and futures markets have evolved to provide market participants with hedging options to mitigate some of the inherent risks in the wholesale electricity market. It is accepted practice for prudent retailers to hedge their purchases of energy in the wholesale market. Retailers can physically hedge their exposure to risk by forward purchasing electricity in the contract market. Alternatively, they can financially hedge their risk by taking positions in the futures market, trading in electricity options or purchasing caps that insure against high spot prices.

Hence, the Commission faced the complex problem of designing an energy purchase cost model that incorporates an efficient hedging strategy in estimating the efficient cost of purchasing wholesale electricity by a prudent retailer. In its 2010 methodology paper, the Commission canvassed three possible approaches to analysing the risks faced by retail electricity suppliers:

- the portfolio approach;
- the commodity or stock price hedging approach; and
- the corporate finance approach.

The intention was to find a method that could be used to translate these risks into tangible decisions on modelling the energy purchase cost. The Commission found that the modern corporate finance approach, characterised by the focus on either the long-term profitability of the business or the possibility of short-term liquidity shortages, was the most appropriate.

⁵⁰ AEMC, 2013: 39.

3.4.3 A hypothetical hedging strategy

Consistent with this approach, the Commission’s hedging strategy focuses on minimising two similar risks. First, the risk of setting the purchase cost of electricity so low that the resulting regulated price generates negative expected returns to the retailer, threatening its long-run viability. Second, the risk of not allowing for sufficient hedging cover, resulting in the business facing short-run cash flow problems, threatening its capacity to maintain its right to trade in the wholesale market.

This approach is effected in the energy purchase model by allowing a sufficient margin in the wholesale electricity purchase price to minimise both the long-run financial viability risk and provide sufficient cover for the working capital needed to participate in the market in the short run.

In its 2010 methodology paper, the Commission explicitly determined that it would take a precautionary approach to estimating the purchase cost of electricity.⁵¹ This was based on the need to ensure that ActewAGL Retail, which is both the retailer of last resort and the incumbent retailer in the ACT, is not potentially exposed to financial failure, which would in turn seriously undermine the electricity supply arrangements in the ACT. As such, the Commission has adopted a conservative hedging strategy in designing the energy purchase cost model.

The essence of the hedging strategy is that a retailer purchases enough forward cover to reduce to a negligible level the possibility of having insufficient forward cover to meet demand in any trading interval. This means that, in most trading intervals, the retailer will have more forward contracts than it needs. The hedging strategy assumes that these excess entitlements to electricity are sold on the spot market. It can be shown (see Appendix 4 for details) that the cost in dollars per MWh of such a strategy can be written as:

$$FP \times [LR \times M + LS \times (1 - M)]$$

where FP is the price of forward contracts, LR is the ratio of peak to average load, LS is the load shape as captured in the ratio of the load-weighted to the time-weighted spot price and M is the forward margin of contract over spot prices.

It is important to note at this juncture that a regulator’s choice of an ‘optimal’ hedging strategy has no effect on the regulated firm’s behaviour. The regulator has no better information than the regulated firm at the time of the regulatory decision and thus has no effect on the outcome of the regulated business’s optimal hedging strategy. Indeed, a retailer is at liberty to adopt its own hedging strategy which should, even when adjusting for its risk profile, cost less than the Commission’s hedging approach.

⁵¹ ICRC, 2010b: 22.

As part of the analysis of the risks associated with estimating a forward price in advance of the retailer facing the costs of servicing the regulated load, the Commission examined the relationship between spot prices and load in its 2010 methodology paper. The Commission noted that modelling the joint distribution of spot price and the load was a difficult exercise as the observed prices are clearly not normally distributed.⁵² Instead, the distribution of the spot price data appeared to be elliptically distributed and appeared positively skewed and leptokurtic.⁵³ This finding implied that the probability of extreme adverse outcomes is much greater than expected under any assumption of normality. For example, an extremely adverse outcome would be a series of high-demand, very high spot price half-hour intervals.

It can be seen that the hedging cost presented above satisfies the precepts of the precautionary approach by accounting for the load variability risk through the load shape and the load ratio. The load shape accounts for the first-order risk moments of the joint spot price and load distribution. The load ratio adds a precautionary layer and captures the worst-case load scenario, and accounts for second-order or more extreme moments of the distribution.

The load shape measures the extent to which the level of the load and the spot price move together. It captures the relationship between the spot price for electricity and the load or quantity of electricity demanded for each half-hour trading interval over the course of each period. It is measured as the ratio of the load-weighted spot price to the time-weighted spot price. If the spot price were independent of the level of the electricity load, the load shape should be equal to one. However, the observed outcome (consistent with economic theory) is that higher wholesale prices for electricity are more likely to occur during periods of high demand. Thus, the load shape is usually greater than one.

3.4.4 Proxies for the elements of cost

While the formula given above would allow accurate calculations of the hypothetical hedging strategy at the end of the period in question, it cannot be used directly to measure costs for a future period. Since the Commission is required to set retail prices for a forthcoming period of 12 months, it must identify proxies, based on data available before the year commences, for the elements entering the formula.

Box 3.1 summarises the complete cost model and the elements for which proxies must be found. The model as presented in Box 3.1 generalises the cost expression in two important ways: allowing for a cost of carbon, C , and dividing the year into quarters. The first is discussed below; the second is dealt with now.

⁵² A joint distribution is necessary because the spot price and the load vary together and not independently.

⁵³ A distribution is skewed if it is not symmetric and a distribution is leptokurtic if it has a higher peak and fatter tails than a normal distribution.

Box 3.1 Energy purchase cost model summary

$$EPC_s = FP_s \times [(1 - M_s) \times LS_s + M_s \times LR_s] + C \text{ and}$$

$$EPC = \sum_{i=1}^4 w_s \times EPC_s$$

where the following are defined for each quarter s :

- EPC_s denotes the carbon-inclusive energy purchase cost;
- FP_s denotes the carbon-exclusive forward price;
- M_s denotes the forward price margin;
- LS_s denotes the load shape;
- LR_s denotes the load ratio;
- C denotes the cost of carbon, which equals the price on carbon as mandated in the legislation multiplied by the national carbon intensity factor;
- w_s denotes the quarterly load weight;
- the subscript s denotes the quarter;
- EPC without the subscript denotes the annual energy purchase cost.

Source: ICRC, 2013d: Appendix 2.

Quarterising the model

The energy purchase cost model variables can be calculated either on a quarterly or an annual basis. Before 2012 the Commission employed an annual average approach. In the 2012 price investigation the Commission examined the average and maximum quarterly loads over the previous eight years.⁵⁴ The analysis demonstrated that the average load as well as variation in the maximum load are different across quarters. More specifically, the average load was higher in the second and third quarters as compared to the first and fourth quarters. There was also evidence of reduced variability in the level of the maximum load in the third quarter.

Following from this analysis, from 2012–13 the Commission decided to apply the model based on quarterly load values. This allowed the Commission to determine the energy purchase cost on a quarterly basis and then weight these quarterly costs to determine a more accurate annual energy purchase cost.

⁵⁴ ICRC, 2012: 50.

The forward price

The forward price can be defined in the Commission's model as the price that represents the cost of purchasing electricity futures contracts by an electricity retailer as part of its hedging strategy in advance of the time the electricity is supplied to customers. In calculating the forward price, the Commission uses average historical data as its best estimate of the forward price facing the electricity retailer for the coming year. The Commission therefore has to decide on the length of the period over which to average the forward price.

In order to satisfy the precepts of the precautionary approach it needs to be recognised that a prudent retailer purchases electricity a significant period in advance of supplying customers. Prior to 2012, the Commission had access to two sources of forward prices: Australian Securities Exchange (ASX) futures prices and over-the-counter contract prices from ICAP.⁵⁵ While recognising that electricity retailers in fact entered into over-the-counter contracts, the Commission relied on ASX futures prices. This was based on the assumption that arbitrage between the ASX futures market and the over-the-counter market ensured that ASX futures prices were reflective of over-the-counter contract prices.

Before 2012, forward prices were calculated as the numerical average of the 23 months before the start of the financial year. This period was chosen on the basis that it reflected the fact that prudent retailers typically hedge two to three years in advance. When, for the reasons discussed below, the Commission switched to over-the-counter carbon-exclusive contract data, there were only 14 months of historical data available for the 2012–13 price determination, as this type of contract was only introduced on 1 April 2011. The Commission also used a 14-month period for its 2013–14 price adjustment, which was required by the 2012–14 price direction.⁵⁶ Now that data availability is no longer a constraint, it is timely to re-examine the averaging period.

Forward price margin

The forward price margin captures the observation that forward prices generally exceed average spot prices. The Commission assumes that the retailer purchases its expected maximum load in advance and must resell the excess on the spot market. This advance purchase protects the retailer from price spikes but comes at a cost when the forward price exceeds the average spot price. This cost is accounted for in the Commission's model through the forward price margin. In 2010 the Commission examined the observed relationship between forward and spot prices and set the margin at 5 per cent based on the industry standard.

⁵⁵ In an over-the-counter contract, two parties, such as a generator and a retailer, bilaterally agree to trade a future volume of electricity at a given price.

⁵⁶ ICRC, 2013e: 6.

The load profile

To proxy the load ratio, the Commission calculates the historical ratio between peak load and average load and identifies the highest value. An extra 0.1 is added to this highest ratio to allow for the possibility that the future load ratio may exceed the currently observed maximum. The Commission’s view is that this is an extremely conservative hedging strategy.

The Commission uses as a proxy for the regulated retail load the net system load profile as reported by AEMO.⁵⁷ The Commission uses the historical average as its forecast of the load shape. The Commission updates the calculated historical average, starting from 2003–04, for each quarter as additional data becomes available. This ensures that the load shape captures on average the variation in loads and spot prices over time. In contrast, the load ratio is designed to capture the extreme events, by taking the maximum historical observed value.

3.4.5 The cost of carbon

Introduction

The Commission’s current pricing model incorporates an adjustment to the wholesale energy purchase cost to account for the price on carbon set under the Australian Government’s carbon pricing legislation, the *Clean Energy Act 2011* (the Clean Energy Act).

The Commission identified the incorporation of the price on carbon into the energy purchase cost model as the major challenge of the previous investigation. The issue the Commission faced at that time was the uncertainty leading up to the passage of carbon pricing legislation. The futures market at that time incorporated into its prices an expectation of the probability that there would be a future price on carbon. The over-the-counter contract market developed contractual arrangements under which the cost of carbon became contingent on whether there was a price on carbon. Carbon-exclusive over-the-counter contracts became the norm where the price on carbon was imposed after the fact.

These over-the-counter arrangements essentially resolved the uncertainty over the price on carbon at that time. This led to the Commission’s 2012 decision to switch from using futures prices to carbon-exclusive over-the-counter contracts as the basis of the forward price of electricity. The Commission also allowed for a pass-through if the price on carbon was removed during the 2012–14 regulatory period. The Commission reaffirmed the decision to use over-the-counter contract prices in 2013.

The Commission currently calculates the forward price using carbon-exclusive over-the-counter contract data for New South Wales sourced from ICAP. The Commission uses New South Wales data as the ACT is wholly contained in the New South Wales

⁵⁷ This data is available from the AEMO website: www.aemo.com.au.

region of the National Electricity Market (NEM) and therefore faces wholesale prices determined in that state.

The issues paper noted that in conducting this price investigation the Commission faces continuing uncertainty over a future price on carbon.

Adjusting for the price on carbon in the Commission's model

The price on carbon is accounted for in the Commission's energy purchase cost model by first calculating the wholesale energy purchase cost based on a carbon-exclusive forward price of electricity. This assumes that retailers purchase carbon-exclusive over-the-counter contracts. This figure is then added to the legislated price on carbon times the national carbon intensity emissions factor to give the carbon-inclusive energy purchase cost.

Since the Commission's energy purchase model first calculates a carbon-exclusive energy purchase cost and then adjusts it for the prevailing price on carbon, from a purely mechanical point of view it is a straightforward matter to include or exclude an adjustment for the price on carbon.

Current price on carbon legislative arrangements

The price on carbon is currently set under the Australian Government's carbon pricing legislation, the Clean Energy Act. The Clean Energy Act sets a fixed price on carbon of \$24.15 per tonne of emitted CO₂ for 2013–14, rising to \$25.40 in 2014–15. Thereafter, the price on carbon is to be set by the market through an emissions trading scheme. At the time of writing, the Clean Energy Act remains in force.

On 15 October 2013 the incoming Australian Government published a consultation paper and exposure drafts of the legislation to repeal the Clean Energy Act. The Australian Government stated in the consultation paper that:

- 2013–14 will be the last financial year that the carbon tax will apply.
- The Government will not extend the carbon tax beyond 2013–14, even if the Parliament does not pass the carbon tax repeal bills until after 1 July 2014.⁵⁸

The draft legislation provides for the price on carbon to be repealed retrospectively to 30 June 2014 should the repeal bills not be passed until after this date.

While the Australian Government's intentions with respect to removing the current price on carbon are clear, until the legislation to repeal the Clean Energy Act is passed there remains uncertainty about whether or not a price on carbon will apply from 1 July 2014.

⁵⁸ Australian Government, 2013: 1.

The Commission’s issues paper sought stakeholder views on whether the Commission’s current approach – that is, using over-the-counter contract prices and allowing for pass-through arrangements – is sufficient to deal with potential carbon pricing outcomes if the uncertainty is not resolved before the price direction is finalised.

Calculating the cost of carbon

As discussed earlier, the introduction of the Clean Energy Act required the Commission to account for the costs associated with the price on carbon in determining the energy purchase cost from 2012–13.

The Commission makes a deliberate distinction between the price on carbon and the cost of carbon. The ‘price on carbon’, which is measured in dollars per tonne of carbon emissions, refers to the legislated price that electricity generators face per tonne of carbon emitted. The Commission uses the term the ‘cost of carbon’, which is measured in dollars per MWh, as the increase in the wholesale price of electricity resulting from the price on carbon.

As discussed earlier, the energy purchase cost model uses historical data in the calculation of the load shape and the load ratio – the two major components of the uplift factor. The Commission’s model is an accurate measure of the true costs faced by an incumbent retailer only if it is expected that future data is consistent with the historical data. The introduction of a price on carbon raised the question of whether this is true, especially with respect to the load shape. The Commission examined this issue in detail in its 2012 final report and reached the conclusion that the uplift factor should only apply to the forward price and not to the cost of carbon, as set out in Box 3.1.⁵⁹ This is because, due to the operation of the AFMA clause, discussed below, there is no risk associated with the cost of carbon. That is, the cost of carbon only applies if a price on carbon applies and therefore requires no additional uplift.

The Commission calculates the cost of carbon in accordance with the Australian Financial Markets Association (AFMA) Carbon Benchmark Addendum. The AFMA addendum is a mechanism introduced to mitigate the market risks associated with electricity over-the-counter derivatives arising from the price on carbon legislation.⁶⁰ It does this by adjusting contract prices by the cost of carbon at the time the contract matures, rather than locking in a carbon-inclusive price at the time of contracting.

As required by the addendum, the Commission calculates the cost of carbon by multiplying the legislated price on carbon by the national carbon intensity factor, as set out in Appendix 3. To be able to determine the cost of carbon for a particular year, the Commission must determine the carbon intensity in advance.

⁵⁹ ICRC, 2012: 51.

⁶⁰ AFMA, 2012: 4.

The Australian Market Operator (AEMO) calculates and reports the daily emissions intensity as the carbon dioxide equivalent intensity index measured in tonnes of carbon dioxide equivalent gas emitted per megawatt hour. This index is reported on a daily basis by AEMO for each state in the NEM and for the entire market. The Commission uses the national carbon intensity factor reported by AEMO for the previous year as the best forecast of the year ahead. In 2013–14 the Commission averaged the emissions intensity factor over a 14-month period, which matched the averaging period for the forward price at the time.

The Commission therefore, in order to calculate the cost of carbon in any particular, needs to determine two things in advance of the year in question: the price on carbon and the emissions intensity factor. The problem for 2014–15 is the uncertainty around the former.

3.4.6 Issues raised with the energy purchase cost model

The Commission received a number of specific comments and suggestions on various elements of the current energy purchase cost model. The issues raised and the Commission's considerations are discussed in this section.

Forward price and emissions intensity factor averaging period

Issues paper submissions

ActewAGL Retail has consistently argued that an averaging period of two to three years would reflect a prudent retailer's actual hedging behaviour.⁶¹ In its submission on the Commission's 2012 draft report, ActewAGL Retail recognised the pragmatic approach but noted of the proposed 14-month averaging period that:

the time shortened purchasing portfolio period is not consistent with the established portfolio purchasing model or wholesale energy purchasing behaviour of a prudent retailer.⁶²

In its submission on the issues paper for this investigation, ActewAGL Retail stated that given the availability of data, it anticipates a return to the 23-month averaging period that is reflective of the actual purchasing window of a prudent retailer.⁶³

ActewAGL Retail also supported the continuation of matching the averaging period of the forward price and the cost of carbon, stating that:

To value carbon within a different timeframe from energy, is to de-couple carbon pricing from standard electricity pricing, presenting an asymmetric contribution of each towards the total energy purchase cost.⁶⁴

⁶¹ ActewAGL Retail, 2012b: 10.

⁶² ActewAGL Retail, 2012a: 3.

⁶³ ActewAGL Retail, 2013c: 17.

Commission’s consideration and draft decision

In setting a regulated price for the period commencing 1 July 2014, the Commission is no longer restricted by the availability of over-the-counter contract data to a 14-month period and has the option of reverting to a longer timeframe. The Commission’s preference is to use a longer averaging period than 14 months to better reflect a prudent retailer’s hedging behaviour.

Consequently the Commission proposes to use its previously established 23-month averaging period to estimate the forward price for 2014–15. This would encompass data from 1 July 2012 to 31 May 2014. For the purposes of the draft report, the Commission proposes to use the data available at the time immediately prior to publication, which will cover the period from 1 July 2012 to 31 January 2014. The final report will utilise the full 23-month data period.

With regard to the averaging period for the emissions intensity factor, the Commission inadvertently applied a 14-month averaging period in calculating the energy purchase allowance for 2013–14. The Commission had intended to use the most recent available 365 days on 31 May 2013 as the averaging period, as set out in the 2012–14 price direction. The difference between the two averages is less than a percentage point.

The Commission’s view is that the most recent 365 days remains the appropriate period to use because it provides the best estimate of the emissions intensity over the year to come and captures any seasonal variations across the year. This contrasts with the averaging period for the forward price, which needs to be over a significantly longer period to reflect prudent hedging behaviour well in advance of the year in question. Moreover, the intention of carbon-exclusive contracts and the AFMA addendum was to decouple the price on carbon from electricity pricing. As such, the Commission rejects ActewAGL Retail’s view that the averaging periods for the forward price and emissions intensity factor need to be aligned.

The Commission therefore proposes to average the emissions intensity factor over the most recent 365 days at 31 May prior to each year of the next regulatory period.

The Commission’s hedging strategy

Issues paper submissions

The Commission received a number of comments from stakeholders that suggested that the hedging strategy applied in the Commission’s energy purchase cost model is not conservative.

In its submission on the issues paper, AGL agreed that the Commission’s assumption that the retailer purchases forward contracts in excess of the historical maximum load is reasonable in setting a regulated price that will in effect be the maximum price in a full retail contestability environment. AGL further notes that:

⁶⁴ ActewAGL Retail, 2013c: 17.

while a particular hedging strategy might be considered 'conservative', the assumption that the incumbent retailer would hedge its entire load through a single market (i.e. futures or OTC contracts) does not represent a conservative approach to modelling retail portfolio risk.⁶⁵

ActewAGL Retail also commented on this issue, arguing that the uplift factor produced by the energy purchase cost model has decreased each year since the model was introduced and predicted that this trend will continue. ActewAGL Retail stated that:

This outcome contradicts the trend in ActewAGL's actual hedging costs which have been rising due to the increasing peakiness of the ACT load profile.⁶⁶

ActewAGL Retail explained this increased peakiness as follows:

Whilst energy saving initiatives have reduced average load in recent years (all quarters since Q211) the number of households with energy intensive reverse cycle air-conditioners is increasing. Despite average load falling in each quarter since Q211 the trend for peak load has been continued growth, particularly in the summer quarters.⁶⁷

ActewAGL Retail concludes that it does not consider the outcome of the Commission's model to be conservative and that anything less than a conservative hedge is not within the acceptable function of a prudent and efficient retailer.

AGL notes that the load ratio has been increasing over a medium-term trend due to the growth in solar rooftop installations and that this increasing peakiness should be allowed for in the energy purchase cost model.⁶⁸ Origin also contends that embedded generation has contributed to changes in load shape, which means retailers are recovering their cost over declining volumes.⁶⁹

Commission's consideration

As discussed earlier in this chapter, a key element of the Commission's hedging strategy is the uplift factor which is applied to the forward price. The uplift factor comprises the load shape, the load ratio and the forward price margin. The forward price margin, set at 5 per cent, captures the observation that forward prices generally exceed average spot prices. The uplift factor is calculated as follows:

$$\text{Uplift factor} = (1 - \text{forward price margin}) \times \text{load shape} + \text{forward price margin} \times \text{load ratio}$$

This can be simplified to:

⁶⁵ AGL, 2013c: 2.

⁶⁶ ActewAGL Retail, 2013c: 13.

⁶⁷ ActewAGL Retail, 2013c: 13.

⁶⁸ AGL, 2013c: 2.

⁶⁹ Origin, 2013: 1.

$$\text{Uplift factor} = (0.95 \times \text{load shape}) + (0.05 \times \text{load ratio})$$

The uplift factor is therefore calculated as the weighted average of 95 per cent of the load shape and 5 per cent of the load ratio. Table 3.1 shows the load ratio, load shape and the calculated uplift factor since 2009–10.

Table 3.1 Load shape, load ratio and the uplift factor, 2009–10 to 2014–15

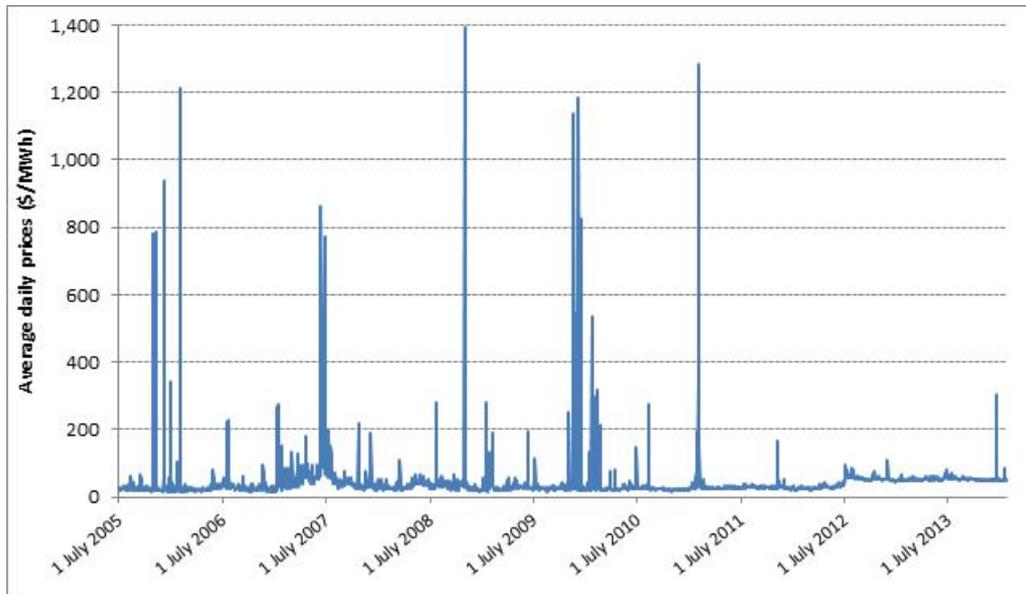
Year	Load shape	Load ratio	Uplift factor
2009–10	1.165	2.248	1.219
2010–11	1.161	2.350	1.220
2011–12	1.155	2.350	1.215
2012–13	1.155	2.218	1.208
2013–14	1.141	2.317	1.200
2014–15	1.130	2.374	1.192

It is evident from Table 3.1 that the uplift factor has indeed trended down in recent years. This has been driven by a fall in the load shape, which with a 95 per cent weighting in the uplift factor formula, has more than offset the increase in the load ratio in recent years.

The load shape, which captures the relationship between the spot price and load, has fallen in recent years due to the reduced volatility in the spot price in the New South Wales wholesale electricity market. An examination of the market shows that the observed spot market price for electricity in New South Wales has remained relatively stable since 2011. Figure 3.2 shows the average daily price since 1 July 2005.⁷⁰

⁷⁰ The average daily price is equal to the average price for the 48 half-hour periods in each day. There is intraday variation in price that is not captured in the average daily price.

Figure 3.2 New South Wales average daily electricity spot prices from July 2005 to present

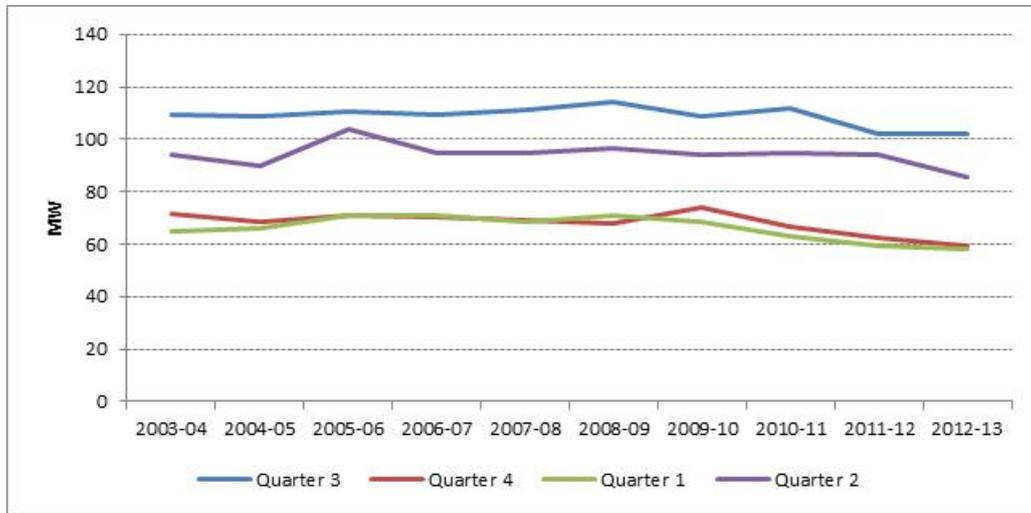


Source: AEMO data.

On 20 December 2013 the wholesale spot price for electricity in New South Wales exceeded \$1,000 per MW for the first time in 25 months, since 9 November 2011. The recent price spike occurred during the early afternoon over three successive half-hour periods. For the half-hour period ending at 13:30 the price peaked at \$7,696.44. In the issues paper the Commission reported that the average daily price had not exceeded \$200 per MWh since early 2011. This limit has now been breached as is evident in Figure 3.2. However, the Commission continues to have the view that the volatility in the wholesale market in New South Wales remains low as compared to historical data, as can be seen in the figure.

In contrast to the load shape, the load ratio, which captures the peakiness of the load, has risen in recent years. This is despite a reduction in average quarterly load, as shown in Figure 3.3.

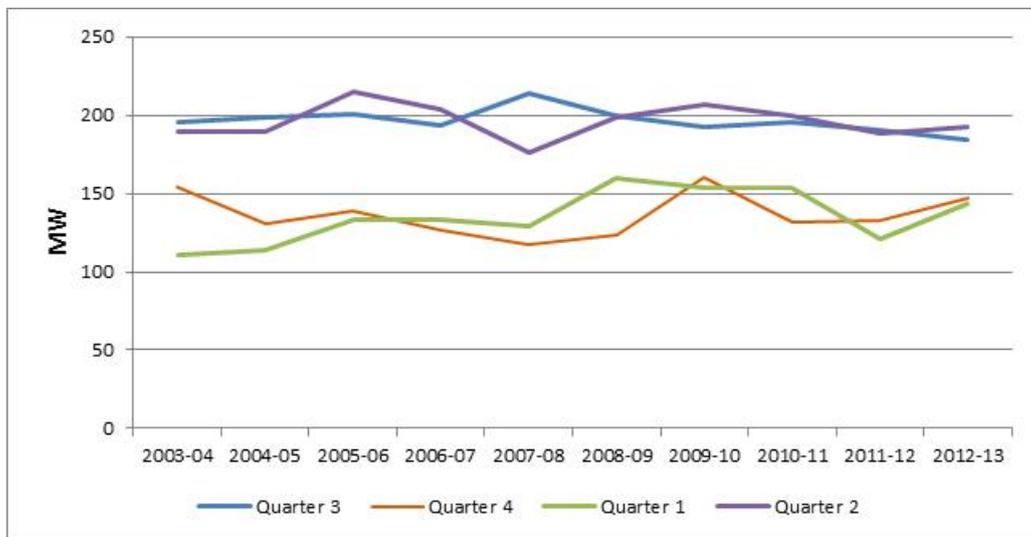
Figure 3.3 Average quarterly ACT electricity load from 2003–04 to 2012–13



Source: AEMO data.

An explanation can be found in an examination of ACT quarterly maximum load, as shown in Figure 3.4. The data indicates that the maximum load has not fallen as much as the average load in recent years in the summer months. This appears to accord with ActewAGL Retail’s view about increased use of reverse-cycle air-conditioning. The load ratio has risen, as it is the ratio of the maximum to the average load, and the average load has fallen faster than the maximum load.

Figure 3.4 Maximum quarterly ACT electricity load from 2003–04 to 2012–13



Source: AEMO data.

Conclusion and draft decision

The Commission acknowledges that the uplift factor will vary over time with actual market conditions. Currently, it has trended down over the past few years, which

reflects the low price volatility in the market. In the future, if high levels of price volatility return, the uplift factor may rise. In a sense, the cost of the Commission's assumed hedging strategy is behaving as it was intended, with cost falling under more benign market conditions.

Moreover, it should be noted that the Commission's hedging strategy is primarily designed to protect the prudent retailer from the substantial costs associated with spot price spikes inherent in a volatile market. Furthermore, the Commission has repeatedly acknowledged that the prudent retailer will adopt the hedging strategy that it believes best manages the risks it faces in the wholesale electricity market and that the Commission's hedging strategy can be viewed as an upper bound.

The Commission agrees with AGL that a prudent retailer is likely to hedge its exposure to risk in a number of markets. This might include a combination of forward purchasing electricity in the contract market, taking positions in the futures market, trading in electricity options and purchasing caps that insure against high spot prices. The Commission's view is that the hedging strategy applied in the energy purchase cost model is conservative, despite relying on one market, as it ensures that retailers are not exposed to any upside spot market risk.

Therefore, on balance, the Commission proposes to maintain its current hedging model for the next regulatory period.

The forward price margin

Issues paper submissions

In its submission on the issues paper, ActewAGL Retail broadly supports the continuation of the Commission's energy purchase model but with an adjustment to the forward price margin. ActewAGL Retail states:

Within that model, market developments over recent years have resulted in the need for one update – an increase to the parameter value of the forward price margin uplift (FPMU) in the hedge cost (HC) component.⁷¹

ActewAGL Retail argues that the average difference between the forward price and the time-weighted spot price in the last four years has been 21 per cent compared to the 5 per cent margin applied in the Commission's model.⁷² ActewAGL Retail urged the Commission to reconsider its 5 per cent assumption and increase the forward price margin to a level that more closely reflects the relationship in the observed data.

Commission's consideration

In developing its hedging strategy for the energy purchase cost model in 2010, the Commission considered the generally held view that there is a risk premium attached

⁷¹ ActewAGL Retail, 2013c: 12.

⁷² ActewAGL Retail, 2013c: 15.

to the forward price. This Commission also took account of the view held in the market that forward contracts were trading at a margin to the expected spot prices. In effect, by hedging with forward contracts in excess of expected sales, retailers purchase electricity at a high price and then sell it back on the market at a low price when demand is low.

Generally, observed forward electricity prices exceed the expected spot price due to the nature of the risks faced by market participants in the electricity market and the fact that unlike many commodities electricity is non-storable.⁷³ This effect is called being in contango. In a contango situation the forward price will decline over time towards the expected spot price as the commencement of the forward period approaches.⁷⁴

To deal with the additional costs implied under a contango situation, the Commission incorporated a mechanism into the hedging strategy to account for the extent to which the forward price exceeds the expected spot price – which it called the forward price margin.

In order to determine the magnitude of the forward price margin, the Commission analysed ASX forward price data and compared this to the time-weighted spot price. This data, from 2004–05 to 2008–09, as presented in Table 3.2. What struck the Commission at the time was that, rather than the expected contango, average realised spot prices exceeded average forward prices in three out of the five years considered. That is, the data showed normal backwardation. The Commission also noted the considerable variability in the limited amount of available data, which, together with backwardation, precluded the Commission from making a definitive decision on the magnitude of the relationship between the forward and spot price.

⁷³ For example, the analysis of the Nordic electricity market by Botterud et al. (2010) shows that futures prices tend to be higher than spot prices.

⁷⁴ Normal backwardation is the opposite effect, where the expected spot price exceeds the forward price.

Table 3.2 Average forward and spot price comparison

Year	Average forward price	Average time-weighted spot price	Difference	Period ending	Sample period	Data source
2004–05	35.68	39.33	-10.2%	30 June 2004	Data from September 2002	ASX
2005–06	36.28	37.25	-2.7%	30 June 2005	2 years	ASX
2006–07	37.88	58.72	-55.0%	30 June 2006	2 years	ASX
2007–08	44.57	41.66	6.5%	30 June 2007	2 years	ASX
2008–09	49.52	38.85	21.5%	30 June 2008	2 years	ASX
2009–10	49.74	44.19	11.2%	30 May 2009	23 months	ASX
2010–11	47.99	36.74	23.4%	30 May 2010	23 months	ASX
2011–12	44.87	29.67	33.9%	30 May 2011	23 months	ASX
2012–13	61.71	55.10	10.7%	30 May 2012	14 months	ICAP
9-year average	45.36	42.39	6.5%		2004–05 to 2012–13	
5-year average	50.77	40.91	19.4%		2008–09 to 2012–13	
4-year average	51.08	41.43	18.9%		2009–10 to 2012–13	

Despite the inconclusive and indeed counterintuitive results of the data analysis, consistent with the Commission's decision to take a precautionary approach to setting the electricity price, the Commission chose to determine a forward price margin of 5 per cent. This figure was consistent with the view taken by Frontier Economics in modelling undertaken for IPART in 2010.⁷⁵ Had the Commission relied on the relationship between the observed data, this would have resulted in a perverse outcome. For example, using an average of the difference between the forward and spot price from 2004–05 to 2008–09 would have resulted in a forward price margin of -6 per cent.

The Commission has extended its data analysis to 2012–13, to match that presented by ActewAGL Retail in its submission. This is also presented in Table 3.2. Based on this analysis, the Commission concurs with ActewAGL Retail's main point that the average difference between the forward price and time-weighted spot price in the last 4 years, at 18.9 per cent, is well above the 5 per cent provided for in the forward price margin. This contrasts with the average difference over the 9-year data period of 6.5 per cent. The other striking point to note is that a clear contango pattern has emerged, with the forward price consistently exceeding the expected spot price.

The Commission recognises that in 2010–11 a spike in forward prices due to the pending introduction of the original carbon pollution reduction scheme contributed to the 23.4 per cent difference between the forward and spot price in that year. More generally, the Commission's view is that it is the recent stability in the New South

⁷⁵ Frontier Economics, 2010: 39.

Wales wholesale electricity market, discussed earlier, that is primarily responsible for the changed relationship between forward and spot prices.

The recent market developments and the contango pattern shown in the relationship between the forward and expected spot price over recent years suggest a number of questions. The first is whether there is a case for increasing the magnitude of the current forward price margin as suggested by ActewAGL Retail. The second is the mechanism by which any increase might be determined given that the 5 per cent level was based on judgement rather than data analysis.

In order to answer the first question, it is necessary to consider once again whether the observed relationship between forward and spot prices can provide any guidance as to the appropriate magnitude of the margin. An examination of the extended data set presented in Table 3.2 once again shows a high level of variability within a still-limited number of data points. For example, there is no evidence that the average forward price is statistically different from the time-weighted average spot price. The Commission is not seeing this level of variation in any other aggregate data series. As such, the observed data is not helpful in informing the Commission as to whether the 5 per cent margin requires adjustment.

As to the second question, the mechanism by which any increase in the forward price margin might be determined should the Commission decide to go down this path, ActewAGL Retail requested that the forward price margin be adjusted to more closely reflect the relationship in the observed data. The logical extension of this is the development of some mechanism to model the relationship between the forward and spot price such that the margin could be adjusted on a regular, say annual, basis.

The variability in the observed data discussed earlier makes the development of any adjustment mechanism problematic. The key issue in this regard is the extreme variability in the spot price. While the New South Wales market is displaying a low level of variability right now, there is no guarantee that increased variability may not return in the future. This possibility has been raised by EnergyAustralia, for example, which stated in its submission to the issues paper:

the Australian Bureau of Meteorology considers that “The chances of the November to January maximum temperature exceeding the long-term median maximum temperature are greater than 60% over most of Australia”, indicating an increased possibility that price volatility may be greater than in the recent past.⁷⁶

The odds are that the difference between the forward and spot price is always likely to be highly variable over a period of time. Adjusting the forward price margin on a regular basis is therefore likely to result in an unstable margin from one year to the next. Indeed, it is possible that under a regular adjustment scenario, in circumstances where the spot price exceeds the forward price, the forward price margin will be

⁷⁶ EnergyAustralia, 2013b: 4.

negative. This would be a perverse outcome as it would effectively mean the load ratio, intended to provide an uplift for demand peaks, would have a negative effect in the uplift factor. It goes without saying that a prudent retailer would not welcome such an outcome.

The volatility in the spot price data coupled with the limited data set also militates against developing a robust method for regularly adjusting the forward price margin. One might attempt to address this by using an averaging approach. For example, an annual adjustment to the forward price margin could be based on a moving average of the difference between the forward and spot price over a period of several years. While this may help to some extent, it is unlikely to entirely overcome the volatility issue and could still result in a negative margin.

Conclusion and draft decision

An analysis of the observed relationship between the forward and spot price has not provided the Commission with any evidence to support changing the 5 per cent margin granted for the forward price margin. It is, however, worth noting that the long-term 9-year average difference is 6.5 per cent, which is reasonably close to the current 5 per cent allowance. The variability of the data also precludes any robust mechanism based on observed data for regular adjustment of the margin. In the Commission's view, it is likely to be many years before there is a sufficiently robust data set available from which to draw statistical inferences to inform the value of the forward price margin.

Looking at this issue from another perspective, the question is whether the Commission has any reason to believe that the current energy purchase cost allowance in 2013–14 is too low and needs a step-up by adjusting the forward price margin in 2014–15. For example, increasing the margin to 7.5 per cent would increase the retail electricity price by 1 per cent. As discussed earlier, the Commission acknowledges that the uplift factor, of which the forward price margin is a component, will vary over time with actual market conditions. As such, the Commission's hedging strategy is behaving as it was intended. A step-up in the energy cost allowance is therefore not warranted.

Therefore, on balance, the Commission proposes to maintain the current forward price margin of 5 per cent for the next regulatory period.

Cost of carbon

Issues paper submissions

AGL, EnergyAustralia, Origin and ActewAGL Retail supported the Commission's current approach to dealing with the uncertainty over the price on carbon, which involves pass-through arrangements coupled with the use of carbon-exclusive forward contract prices in the energy purchase cost model.⁷⁷ For example, AGL stated that this approach provides an:

⁷⁷ ActewAGL Retail, 2013c: 10; AGL, 2013c: 2; EnergyAustralia, 2013b: 9.

appropriate mechanism for ensuring that regulated prices can be amended in the event that the carbon pricing mechanism is repealed during the regulatory period.⁷⁸

ActewAGL Retail further requested that the Commission consider including a specific pass-through mechanism for the carbon repeal matter in the definition of a regulatory change event. ActewAGL Retail also sought assurance that pass-through formula applied by the Commission can be applied in a neutral way for within-year pass-throughs.⁷⁹

The ESAA stated that reliance on market-based costs alone may not be reflective of the actual carbon costs faced by retailers, potentially exposing them to costs that cannot be passed on to customers. The ESAA also suggested that in determining its approach the Commission should take into account two additional matters. First is the fact that all businesses are required to apply the Clean Energy Act while it remains law. Second:

Retailers in the ACT are bound by the National Energy Customer Framework (NECF) and so can only change standing offers once every six months. This means once carbon price is repealed, there may be a delay until standing offers can be changed.⁸⁰

ActewAGL Retail also noted the NECF timing requirement in relation to the position of the Australian Competition and Consumer Commission (ACCC) in its proposed price monitoring and enforcement role.⁸¹ ActewAGL Retail raised a concern about this requirement in relation to comments made by the Chairman of the ACCC and reported in the media that prices should fall ‘fairly immediately’ once the Clean Energy Act is repealed.

ACAT was of the view that the Commission should require ActewAGL Retail to reduce prices quickly should the price on carbon be repealed after 1 July 2014 by the amount prices went up when the price on carbon was introduced.⁸²

Recent regulatory decisions for 2014–15 retail prices

In its 2013 determination, IPART decided to use the legislated price on carbon in setting the 2014–15 regulated retail price. The determination included a broad cost pass-through arrangement that IPART considered was the most appropriate means to deal with unanticipated changes in regulation, legislation or taxation, including changes to the price on carbon legislation.⁸³

In its December 2013 draft determination for Queensland regulated retail electricity prices for 2014–15, QCA calculated two sets of prices in response to the price on

⁷⁸ AGL, 2013c: 1.

⁷⁹ ActewAGL Retail, 2013c: 9.

⁸⁰ ESAA, 2013: 3.

⁸¹ ActewAGL Retail, 2013c: 10.

⁸² ACAT, 2013: 4.

⁸³ IPART, 2013b: 137.

carbon uncertainty. The first, carbon-inclusive set of prices, would apply until the price on carbon legislation is repealed. The second, carbon-exclusive set, would apply after the legislation is repealed.⁸⁴ The QCA's view is that these arrangements negate the need for any pass-through of carbon costs or savings in 2015–16 and therefore has not proposed any pass-through arrangements.⁸⁵ QCA notes that implementation of the new prices mid-year following the repeal would require a new delegation or price determination from the Queensland Government.

Commission's consideration

The terms of reference for this price investigation require the Commission to consider the impact on electricity costs associated with the Australian Government's carbon pricing mechanism and the pass-through of those costs to regulated prices.

Unless the repeal legislation is passed in sufficient time before the end of this financial year, the Clean Energy Act will remain in force on 1 July 2014. Should this be the case, despite the Australian Government's stated intention to apply the repeal legislation retrospectively to 30 June 2014, the Commission agrees with the ESAA's point that businesses will still be required to comply with the price on carbon arrangements.

Consequently, under this scenario the Commission will be required to consider the price on carbon in the regulated retail price for 2014–15.

The Commission's final decision will be informed by future developments in the passage of the repeal bills as the price investigation proceeds. The Commission is required to make a final decision by late May 2014 in order to release its final report and price direction in early June 2014. For the purposes of this draft report, the Commission will propose a carbon-inclusive regulated retail price but also present a carbon-exclusive price for comparison purposes.

The Commission also needs to decide what mechanism to put in place in the price direction to enable the Commission to respond to any changes in the price on carbon arrangements that take place after 1 July 2014, should the political uncertainty not be resolved by 31 May 2014. Consider this scenario as an example. If the Commission includes an allowance for a price on carbon in the final regulated retail price and the repeal bills are passed at some stage during 2014–15, a mechanism is required to allow the Commission to adjust the price. The Commission has two adjustment options.

The first is to rely on pass-through arrangements. The Commission's current price direction provides for pass-through arrangements for a range of regulatory change and tax change events, including a change in the price on carbon arrangements, at any time during 2012–13 and 2013–14. Positive and negative pass-throughs, which influence

⁸⁴ QCA, 2013a: iv.

⁸⁵ QCA, 2013a: 47.

prices up and down, respectively, are catered for in these arrangements. Under these arrangements in the scenario cited in the paragraph above, the Commission could initiate a negative pass-through event which, *ceteris paribus*, would result in a downward price adjustment.

The second option would be for the Commission to make any necessary price adjustments as part of the usual annual price recalibration process.

The primary advantage of the pass-through arrangement over the annual recalibration option is one of timing. The former provides flexibility to adjust prices at any time during a regulatory year, while the latter only permits price changes at the start of a new regulatory year. As discussed earlier, ActewAGL Retail, AGL, Origin and EnergyAustralia supported a pass-through arrangement. However, the submissions also raised a number of specific matters that should be considered in developing any specific arrangements.

The details of the proposed pass-through arrangements for the cost of carbon are contained in Chapter 6.

3.4.7 Overarching energy purchase cost model conclusion

This section has comprehensively assessed the Commission’s energy purchase cost model, including responding to stakeholder concerns about particular components of the model. Apart from reverting to a 23-month and 12-month averaging period for the forward price and emissions intensity factor, respectively, the Commission proposes to maintain its current model as described in this section and formulated in Appendix 3.

3.5 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs

The LRET and the SRES are national environmental obligations imposed by the Australian Government that create financial incentives for investment in renewable energy sources through market-based mechanisms. The LRET applies to the establishment and growth of centralised renewable-energy power stations, such as wind, solar or hydro. The SRES applies to dispersed installations, such as solar panel systems and solar water heaters. The schemes require electricity retailers to purchase and surrender Large-scale Generation Certificates (LGC) and Small-scale Technology Certificates (STC) at regular intervals.⁸⁶

The Commission’s methodology for estimating the cost of meeting these national obligations is summarised in this section.

⁸⁶ More information on the LRET and the SRES can be found on the Clean Energy Regulator’s website: www.cleanenergyregulator.gov.au/Renewable-Energy-Target/Pages/default.aspx.

3.5.1 Large-scale Renewable Energy Target

An electricity retailer is subject to an LRET obligation each calendar year, for which the cost of complying is calculated as set out in Box 3.2.

Box 3.2 Large-scale Renewable Energy Target compliance costs

$$\text{LRET obligation} = \text{LGC} \times \text{RPP}$$

where LGC is the price of a large-scale generation certificate (dollars per MWh) and RPP is the renewable power percentage.

The RPP represents the proportion of a retailer's total MWh of electricity purchased for which it is required to surrender LGCs.

Source: ICRC, 2012: 12.

In its 2012 price determination the Commission described its approach to determining efficient LRET costs.⁸⁷ The approach estimates costs using historical certificate prices and includes an ex post adjustment to account for differences between forecast and actual costs in relation to the RPP.

The Commission has adopted a market-based approach to estimating LRET costs, with LGC prices based on publicly available spot market data. In calculating the forward LGC price, the Commission uses average historical spot data as its best estimate of the forward price facing the electricity retailer for the coming year. The period over which to average the forward price for the next calendar year in question has been set at 11 months prior to and including May preceding the start of the financial year. The Commission sources LGC and STC spot price data from ICAP.

An implication of developing a model based on historical spot prices is that there is a need to apply a holding cost to compensate the retailer for the costs it incurs in holding the certificates up to their surrender or alternatively the start of the next financial year. To this end the Commission applies a 10 per cent per year holding cost.

LRET obligations accrue over a calendar year, while the Commission's electricity cost-index model is based on a financial year. This requires apportioning the costs of satisfying obligations to surrender LGCs across six months of each calendar year either side of a financial year. For example, estimating costs for the 2013–14 financial year requires the apportioning of costs of satisfying obligations in the 2013 and 2014 calendar years. The Commission uses half-yearly load weights provided by ActewAGL Retail to apportion costs across calendar years.

The Commission sources RPP data from the Clean Energy Regulator. The Commission uses the actual RPP for the first calendar year in question and the estimated RPP for the

⁸⁷ ICRC, 2012: 12–16.

second year, both figures published by the Clean Energy Regulator. The Commission's approach provides for a cost adjustment each financial year. This is to account for the difference between the estimated RPP at the time of the price determination and the actual RPP that is subsequently published by the Clean Energy Regulator.

The Commission also applies a 5 per cent mark-up to the cost of LGCs to meet the LRET requirement to account for administrative operating costs associated with managing compliance with this scheme.

The equations describing the Commission's approach to estimating LRET costs are detailed in Box 3.3.

Box 3.3 Large-scale Renewable Energy Target cost estimation equations

The first step is to present the basic equation that determines the LRET cost estimate in dollars per MWh that is applied in the Commission's electricity cost-index model:

$$\text{LRET cost}_{2014-15} = \text{LW}_{2014} \times \text{LGCC}_{2014} + \text{LW}_{2015} \times \text{LGCC}_{2015} + \text{CA}_{2013-14}$$

where the following are defined for each year:

- LW denotes the half-yearly load weight for the calendar year;
- LGCC denotes the total cost of the LGCs to meet LRET requirements (dollars per MWh) in the calendar year;
- CA denotes the LRET cost adjustment from the previous financial year.

The next step is to describe the determination of the total cost of the LGCs to meet LRET requirements:

- $\text{LGCC}_{2014} = \text{RPP}_{2014} \times [\text{LGCspot}_{2014} \times (1 + \text{HC}) \times (1 + \text{OM})]$
- $\text{LGCC}_{2015} = \text{RPP}_{2015} \times [\text{LGCspot}_{2015} \times (1 + \text{HC}) \times (1 + \text{OM})]$

where the following are defined for each calendar year:

- RPP denotes the renewable power percentage for the calendar year;
- LGCspot denotes the average LGC spot price for the calendar year (dollars per LGC) for the 11 months prior to June;
- HC denotes the holding cost percentage, currently 10 per cent;
- OM denotes the operating cost mark-up percentage, currently 5 per cent;

Issues paper submissions

AGL stated its preference for estimating the long-run marginal cost of compliance with the LRET scheme on the basis that retailers will not only source LGCs from the market.⁸⁸ This view was supported by Origin, EnergyAustralia and ActewAGL Retail.⁸⁹

ActewAGL Retail also raised concerns about the liquidity of the LGC market, stating:

the closing price of the ICAP spot LGC market does not reflect actual liquidity, or the required market depth for a retailer to secure minimum volumes without significant

⁸⁸ AGL, 2013c: 2.

⁸⁹ Origin, 2013: 5; EnergyAustralia, 2013b: 9; ActewAGL Retail, 2013c: 18.

movements in price. This market condition deteriorates further with regard to longer dated futures, which an efficient retailer with cash flow constraints would need to consider over buying primarily from spot.⁹⁰

ActewAGL Retail concluded by stating that should the Commission be predisposed towards a market-based approach, it should continue to:

1. Reference publicly available closing prices of LGCs traded in a liquid market;
2. Incorporate retailer holding costs (of at least 10 per cent);
3. Make appropriate allowances to recover costs associated with volume risk, liquidity risk, delivery risk and regulatory risk, and operational administration costs.⁹¹

ACAT supported the Commission’s market-based approach to determining LRET costs.⁹²

Australian Energy Market Commission advice

In its advice on best practice retail price methodology, the AEMC recommended that regulators should calculate a retailer’s liabilities under the LRET on a price per MWh basis by multiplying the:

- renewable power percentage, which determines the number of certificates that retailers are required to purchase, by the
- the price for LGC certificates.

The AEMC recommended that, due to its superior qualities of transparency and efficiency, wherever possible a futures market approach should be used. A long-run marginal cost approach is recommended if the market is considered illiquid.⁹³ The AEMC also recommended that the regulator should consider a set of liquidity factors in determining whether the futures market LGCs is liquid.⁹⁴

Recent regulatory decisions

In its 2013 determination, IPART adopted a long-run marginal cost basis for estimating the cost of LGCs on the basis that there was insufficient liquidity in the market for LGCs to rely on traded price data.⁹⁵

⁹⁰ ActewAGL Retail, 2013c: 18.

⁹¹ ActewAGL Retail, 2013c: 19.

⁹² ACAT, 2013: 4.

⁹³ AEMC, 2013: 85.

⁹⁴ AEMC, 2013: 85.

⁹⁵ IPART, 2013b: 77.

In its 2013 determination, QCA maintained its market-based approach using spot prices to estimate LGC prices, stating:

While some retailers noted that there is a lack of liquidity in the market for LGCs, a low volume of trading does not necessarily mean market prices are unreliable. Following an examination of market prices over recent years, ACIL concluded that the market price has reacted as one would expect to prevailing market conditions.⁹⁶

In recognition of a lack of liquidity, QCA averaged LGC spot market prices over a longer period than normal. In its 2013 determination, OTTER adopted a market-based approach using published forward prices to estimate LGC prices.⁹⁷

Commission's consideration

The Commission considered the choice between adopting a market-based or long-run marginal cost approach in 2012 and remains unconvinced about the need for adopting long-run marginal cost as a proxy for the LGC price. The Commission notes ActewAGL Retail's concerns about the liquidity of the LGC market and the AEMC's recommendation that long-run marginal cost should be adopted if the market is not considered liquid.

The Commission has been monitoring the indicative spot prices for LGCs that are publicly available from intermediaries. Figure 3.5 shows the daily LGC spot price from 1 July 2013 to date. One sign of a lack of liquidity is an absence of movement in market prices. It is evident from Figure 3.5 that this is not the case. The Commission's view is that there is sufficient liquidity in the LGC spot market to meet ActewAGL Retail's LRET requirements. The latter point is important as ActewAGL Retail's LRET requirements in any given year are very small in relation to the size of the LRET market. The Commission also discussed the state of the market with a market intermediary, which confirmed the Commission's view.

⁹⁶ QCA, 2013b: 37.

⁹⁷ OTTER, 2013a: 38.

Figure 3.5 Large-scale Generation Certificates spot price from 1 July 2013



Source: ICAP data.

The Commission is aware of the potential for liable entities to hold more LGCs than they currently require and either hold them for future compliance periods or submit them and receive a credit for subsequent compliance periods. Both of these actions could potentially reduce liquidity in the market. However, given the scale of ActewAGL Retail’s liabilities compared to the entire market, the Commission is confident that ActewAGL Retail will be able to discharge its liabilities when required.

The Commission is not persuaded to provide an additional allowance for volume risk, liquidity risk, delivery risk and regulatory risk as suggested by ActewAGL Retail. In general there is much less volatility in the LGC market when compared to the wholesale electricity market and therefore little call for hedging. *A fortiori* the Commission also provides an additional 10 per cent holding cost and a 5.7 per cent retail margin that together should cover any risk in this regard.

As to the choice between using spot or futures prices in a market-based model, the Commission’s is confident that the spot market is sufficiently robust to allow ActewAGL Retail to discharge its LRET liabilities when required.

Draft decision

The Commission intends to continue to base the price of LGCs on publicly available spot price data averaged over an 11-month period and include an allowance for funding costs.

3.5.2 Small-scale Renewable Energy Scheme

An electricity retailer is subject to a SRES obligation each calendar year, for which the cost of complying is calculated as set out in Box 3.24.

Box 3.4 Small-scale Renewable Energy Scheme compliance costs

$$\text{SRES obligation} = \text{STC} \times \text{STP}$$

where STC is the price of a small-scale technology certificate (dollars per MWh) and STP is the small-scale technology percentage.

The STP represents the proportion of a retailer's total MWh of electricity purchased for which it is required to surrender STCs.

Source: ICRC, 2012: 13.

The Commission has adopted the same approach to estimating SRES costs as it has for LRET costs. For completeness the equations describing the Commission's approach to estimating SRES costs are detailed in Box 3.5.

The LRET and SRES costs calculated using the methodology described above are added together to form the LRET and SRES component of the wholesale energy cost category of the electricity cost-index model.

Issues paper submissions

AGL, EnergyAustralia and ActewAGL Retail supported estimating the STC price using the \$40 clearing house price.⁹⁸

Australian Energy Market Commission advice

In its advice on best practice retail price methodology, the AEMC recommended that regulators should calculate a retailer's liabilities under the SRES on a price per MWh basis by multiplying the:

- small-scale technology percentage, which determines the number of certificates that retailers are required to purchase, by the
- price for STC certificates.

The AEMC recommended that a market-based approach using futures prices should be used where there is sufficient liquidity. Otherwise the clearing house price should be used. The AEMC recommended that the same liquidity factors used in determining whether the LRET market is liquid should be used to assess the SRES market.⁹⁹

⁹⁸ AGL, 2013c: 2; EnergyAustralia, 2013b: 9; ActewAGL Retail, 2013c: 18.

⁹⁹ AEMC, 2013: 87.

Box 3.5 Small-scale Renewable Energy Scheme cost estimation equations

The first step is to present the basic equation that determines the SRES cost estimate in dollars per MWh that is applied in the Commission’s electricity cost-index model:

$$\text{SRES cost}_{2014-15} = \text{LW}_{2014} \times \text{STCC}_{2014} + \text{LW}_{2015} \times \text{STCC}_{2015} + \text{CA}_{2013-14}$$

where the following are defined for each year:

- LW denotes the half-yearly load weight for the calendar year;
- STCC denotes the total cost of the STCs to meet SRES requirements (dollars per MWh);
- CA denotes the SRES cost adjustment from the previous financial year.

The next step is to describe the determination of the total cost of the STCs to meet SRES requirements:

- $\text{STCC}_{2014} = \text{STP}_{2014} \times [\text{STCspot}_{2014} \times (1 + \text{HC}) \times (1 + \text{OM})]$
- $\text{STCC}_{2015} = \text{STP}_{2015} \times [\text{STCspot}_{2015} \times (1 + \text{HC}) \times (1 + \text{OM})]$

where the following are defined for each year:

- STP denotes the small-scale technology percentage for the calendar year;
- STCspot denotes the average STC spot price for the calendar year (dollars per STC);
- HC denotes the holding cost percentage, currently 10 per cent;
- OM denotes the operating cost mark-up percentage, currently 5 per cent.

Recent regulatory decisions

In its 2013 determination, IPART adopted a market-based approach to estimate the cost of STCs rather than continuing to use the \$40 clearing house price adopted in its 2010 determination. This change was made on the basis that there was sufficient liquidity in the market for STCs to rely on traded price data.¹⁰⁰ In its 2013 determination, QCA maintained its cost-based approach to estimating STC prices using the \$40 per certificate clearing house price.¹⁰¹ In its 2013 determination, OTTER adopted a market-based approach.¹⁰²

¹⁰⁰ IPART, 2013b: 80.

¹⁰¹ QCA, 2013b: 38.

¹⁰² OTTER, 2013a: 40.

Commission’s consideration

The Commission notes ActewAGL Retail’s concerns about the liquidity of the STC market and the AEMC’s recommendation that the clearing house price should be adopted if the market is considered illiquid.

The Commission has been monitoring the indicative spot prices for STCs that are publicly available from intermediaries. Figure 3.6 shows the daily STC spot price from 1 July 2013 to date. As is the case for the LRET market, there is clearly movement in the market price. The Commission’s view is that there is sufficient liquidity in the STC spot market to meet ActewAGL Retail’s SRES requirements. As in the LRET case, the latter point is important given the scale as ActewAGL Retail’s SRES requirements in any given year in relation to the size of the SRES market. The Commission also discussed the state of the market, which confirmed the Commission’s view. Given this view and the levels at which STCs are trading in the market, the Commission does not consider it appropriate to base the STC price on the \$40 per certificate clearing house price.

Figure 3.6 Small-scale Technology Certificates spot price from 1 July 2013



Source: ICAP data.

As to the choice between using spot or futures prices in a market-based model, the Commission’s view is that the spot market is sufficiently robust for this purpose. Consistent with its view on LRET costs, the Commission finds no reasonable justification for including an additional allowance for volume risk, liquidity risk, delivery risk and regulatory risk.

Draft decision

The Commission intends to continue to base the price of STCs on publicly available spot price data averaged over an 11-month period and include an allowance for funding costs.

3.6 Energy losses

Energy is lost in transporting electricity from generators to customers via transmission and distribution networks. These losses affect the price paid for electricity by the incumbent retailer in two ways. First, the spot price is the price of electricity at the reference node in Western Sydney. Electricity consumed in the ACT is priced at the point of connection, or node, between the national transmission network and the ACT distribution network. This price is determined by applying a marginal loss factor to the spot price. The marginal loss factor reflects the energy lost in the transmission network in transporting energy to the ACT relative to the losses involved in providing energy to the reference node.

Second, there are losses in the distribution network that takes electricity from the ACT node to the customer’s premises. These losses impose a cost on retailers, because they must purchase more electricity than they are able to sell. The distribution loss factors are calculated by AEMO and are used by all regulators to determine the energy loss allowances where regulated tariffs still apply.

AEMO publishes reports that provide marginal and distribution loss factors for the forthcoming financial year.¹⁰³ In previous determinations, the Commission has calculated an energy loss adjustment factor combining the marginal and distribution loss factors applicable to the ACT. The equation describing the calculation of this factor and how it is applied to determine the energy losses in the electricity cost-index model is set out in Box 3.6.

¹⁰³ AEMO publishes marginal and distribution loss factors on its website: www.aemo.com.au/Electricity/Market-Operations/Loss-Factors-and-Regional-Boundaries.

Box 3.6 Current energy loss equation

The energy loss component of the wholesale energy cost category of the electricity cost-index model is calculated as follows in dollars per MWh:

$$\text{Energy loss} = \frac{\text{EPC}_t + \text{LRET and SRES costs}_t}{(2 - \text{DLF}_t) \times (2 - \text{MLF}_t)} - (\text{EPC}_t + \text{LRET and SRES costs}_t)$$

where the following are defined for each year t:

- EPC denotes the energy purchase cost (dollars per MWh);
- LRET and SRES costs denote the total calculated costs to meet LRET and SRES requirements (dollars per MWh);
- DLF denotes the distribution loss factor applicable to the ACT;
- MLF denotes the marginal loss factor applicable to the ACT.

Australian Energy Market Commission advice

The AEMC recommended that the best method to estimate energy losses is to apply published loss factors, as approved by AEMO to the energy purchase cost allowance, NEM fees, ancillary service fees and jurisdictional energy costs to determine a loss allowance in dollars per MWh.

Issues paper submissions

Submissions, such as that from ActewAGL Retail, generally supported the Commission's current approach to calculating energy losses.¹⁰⁴

Commission's consideration

Currently, the Commission applies the loss factors to the energy purchase cost and LRET and SRES costs to take account of losses that occur on purchases by retailers. The Commission notes that NEM fees are levied on a per MWh basis and that there is a case for extending the energy loss calculation by applying the loss factors to NEM fees. Additionally, the Commission understands that the marginal loss factor is a financial mechanism used for settlements in the spot market, while the distribution loss factor is a physical measure of the electricity dissipated between the ACT node and ACT consumers. The nature of the loss factors suggests that the components used to calculate energy losses should be treated differently.

Both the distribution loss factor and the marginal loss factor are required to estimate the energy purchase cost of the incumbent retailer. First, electricity sales by the

¹⁰⁴ ActewAGL Retail, 2013c: 19.

incumbent retailer are scaled by the distribution loss factor to the electricity purchases by the retailer at the ACT node. Second, the regional reference price in Western Sydney is scaled by the marginal loss factor to the price at the ACT node. The product of these two scaled values defines the energy purchase cost liability of the retailer. In contrast, the liability reporting point for LRET and SRES costs and NEM fees is at the ACT node. This suggests that only the distribution loss factor should be applied to these costs.

As a result, the Commission proposes to include NEM fees in the energy loss equation, but to apply the marginal loss factor to the energy purchase costs only. As a result, the energy purchase costs will be adjusted by both the marginal loss factor and the distribution loss factor, while LRET and SRES costs and NEM fees will be adjusted by the distribution loss factor only. The proposed changes to the energy loss equation are in Box 3.7.

Box 3.7 Proposed energy loss equation

The proposed energy loss component of the wholesale energy cost category of the electricity cost-index model will be calculated as follows in dollars per MWh:

$$\begin{aligned} \text{Energy loss} &= \text{EPC}^t \times (\text{MLF}^t \times \text{DLF}^t - 1) \\ &+ (\text{LRET and SRES}^t + \text{NEM fees}^t) \times (\text{DLF}^t - 1) \end{aligned}$$

where the following are defined for each year t:

- EPC denotes the energy purchase cost (dollars per MWh);
- LRET and SRES costs denote the total calculated costs to meet LRET and SRES requirements (dollars per MWh);
- NEM fees denote the National Electricity Market fees (dollars per MWh);
- DLF denotes the distribution loss factor applicable to the ACT;
- MLF denotes the marginal loss factor applicable to the ACT.

Draft decision

The Commission proposes to change its approach to estimating energy losses by applying the equation in Box 3.7.

3.7 Energy contracting costs

Energy contracting costs represent the costs incurred by the incumbent retailer in managing an electricity trading desk. An electricity trading desk is necessary to

manage electricity purchases, which are typically made using a forward-looking portfolio approach, and manage the associated financial risks.

The Commission estimated the energy contracting costs of the incumbent retailer in 2003 and has adjusted this component to reflect the annual change in the consumer price index since then.

Issues paper submissions

No substantive issues were raised with the Commission's approach to estimating energy contracting costs. ActewAGL Retail supported the Commission's current approach.¹⁰⁵

Draft decision

The Commission proposes to maintain its current approach to estimating energy contracting costs by adjusting this component to reflect the annual change in the consumer price index.

3.8 National Electricity Market fees

The NEM is the market for electricity that flows across the interconnected electricity grid that covers most parts of Queensland, New South Wales, the ACT, Victoria, Tasmania and South Australia. The NEM is managed by AEMO, which is funded through user fees that are ultimately borne by customers. The fees cover a range of functions necessary for the safe and reliable delivery of electricity to all consumers. The Commission estimated the NEM fees of the incumbent retailer in 2003 and has adjusted this component to reflect the annual change in the consumer price index since then.

Australian Energy Market Commission advice

The AEMC noted that NEM fees comprise a very small component of the cost build-up and recommended that the fees be based on the budgeted revenue requirements of AEMO.¹⁰⁶

Issues paper submissions

No substantive issues were raised with the Commission's approach to estimating NEM fees. ActewAGL Retail recommended that the Commission's current approach should remain unchanged for the next regulatory period.¹⁰⁷

¹⁰⁵ ActewAGL Retail, 2013c: 19.

¹⁰⁶ AEMC, 2013: 48.

¹⁰⁷ ActewAGL Retail, 2013c: 19.

Draft decision

The Commission proposes to maintain its current approach to estimating NEM fees by adjusting this component to reflect the annual change in the consumer price index.

3.9 Retail operating costs

3.9.1 Introduction

Retail operating costs are the efficient costs incurred by the retailer in providing retail services to customers. This section discusses two key remaining issues relevant to the determination of the efficient level of retail operating costs in this investigation.

The first is whether there are economies of scale in the provision of retail electricity services and, if so, whether the ACT market is too small to take advantage of them. In previous price investigations, ActewAGL Retail has argued that benchmarking retail operating costs to much larger businesses in other jurisdictions fails to adequately compensate them for its efficient retail operating costs. ActewAGL Retail also raised this issue in its submission to the AEMC.¹⁰⁸

The second issue is the method used to determine the efficient level of retail operating costs. There are two general approaches used in this regard:

- a bottom-up approach which relies on detailed cost information provided by retailers; and
- benchmarking against publicly available industry costs or regulatory decisions.

The Commission adopted a benchmark approach to operating costs in 2003 and since then has adjusted the retail operating cost allowance each year by the change in the consumer price index.

3.9.2 The Commission’s current approach

In its 2003 retail electricity price determination, the Commission modelled efficient benchmark costs of electricity supply to regulated tariff customers. This included an assessment of retail operating costs provided by ActewAGL Retail, also based on benchmarks. The Commission’s cost structure underpinning the assessment of the retail operating cost benchmark comprised the following retail activities:

- customer care and call centre operations;
- billing and charging;
- sales and marketing, being primarily the costs of communicating the transitional regulated tariff arrangements;

¹⁰⁸ ActewAGL Retail, 2013a: 5.

- collection and default;
- administration (business overheads such as finance, human resource management and, regulatory administration); and
- retail competition activities such as churn management and advertising for new customers.¹⁰⁹

ActewAGL Retail proposed \$85 per customer for retail operating costs plus an additional \$8.33 per customer for additional retail competition costs. The Commission accepted ActewAGL Retail's \$85 per customer even though this was 6.25 per cent higher than the Commission's comparable industry benchmark of about \$80 per customer, to account for the fact that:

there are likely to be diseconomies of scale in relation to the ACT market relative to the Victorian and South Australian markets from which this upper limit cost benchmark amount of \$80 per customer has been derived.¹¹⁰

The Commission did not accept the additional \$8.33 per customer proposed by ActewAGL Retail for additional retail competition costs. This decision was made on the basis that the comparable industry benchmarks considered by the Commission already included an allowance for such costs. For example, the Essential Service Commission of South Australia's (ESCOSA) cost estimate included an allowance of \$10.00 for additional competition costs.¹¹¹

While on the face of it the Commission included a small element of retail competition-related costs in its 2003 cost benchmarking assessment, this is not the same as including a specific allowance for customer acquisition and retention costs. The latter would include the costs of marketing campaigns, discounts and other incentives for customers to switch retailers or market offers.

Since 2003 the Commission has adjusted the retail operating cost allowance each year by the change in the consumer price index. In 2007 the Commission started reporting retail operating costs in per MWh rather than per customer, determining an allowance of \$9.70 per MWh for 2007–08.¹¹² In its most recent decision in 2013, the Commission determined a retail operating cost allowance of \$11.43 per MWh for 2013–14. This is equivalent to about \$106.69 per customer. In its submission to the issues paper, ActewAGL Retail also estimates the ACT retail operating cost allowance at about \$107 per customer.¹¹³

¹⁰⁹ ICRC, 2003: 13.

¹¹⁰ ICRC, 2003: 22.

¹¹¹ ICRC, 2003: 22.

¹¹² ICRC, 2007: 42.

¹¹³ ActewAGL Retail, 2013c: 22.

3.9.3 Australian Energy Market Commission advice

The AEMC considered both the bottom-up and benchmarking approaches to determining the efficient level of retail costs and recommended that regulators use both approaches. If the determination period is longer than one year, the AEMC recommended that retail operating costs be escalated using a forecast of the consumer price index.¹¹⁴

The AEMC notes that economies of scale are particularly relevant under a benchmarking approach, given the significant variation in the size of the regulated retailers that operate in the NEM.¹¹⁵

3.9.4 Issues paper submissions

The Commission received a number of submissions on the determination of the level of retail operating costs in the ACT. EnergyAustralia, ActewAGL Retail and AGL support consideration being given to economies of scale when determining the level of costs. For example, EnergyAustralia stated:

Due to the size of the market however, the economies of scale which do exist are not realised to the same extent as in other jurisdictions and consequently the ROC for the incumbent in the ACT cannot be benchmarked to those in other jurisdictions.¹¹⁶

ActewAGL Retail presented the results of economies of scale modelling using the Commission’s 2013–14 standard retail operating cost allowance. Based on this analysis, ActewAGL Retail submitted that an indicative range of \$114 to \$178 per customer should be considered as an appropriate retail operating cost allowance in the ACT when economies of scale are taken into account.¹¹⁷

Origin submitted that recent increases in the ACT retail operating cost allowance pale in comparison with increases determined in New South Wales and Queensland.¹¹⁸ ActewAGL Retail also commented on this matter, stating that:

the ACT ROC allowance is now the lowest of benchmarked jurisdictions, even before taking into account the diseconomies of scale and no CARC compensation.¹¹⁹

¹¹⁴ AEMC, 2013: 62.

¹¹⁵ AEMC, 2013: 61.

¹¹⁶ EnergyAustralia, 2013b: 10.

¹¹⁷ ActewAGL Retail, 2013c: 24.

¹¹⁸ Origin, 2013: 5.

¹¹⁹ ActewAGL Retail, 2013c: 21.

3.9.5 Recent regulatory decisions

New South Wales

In its 2013 determination, IPART determined a retail operating cost allowance of \$111.94 per customer for 2013–14 using a bottom-up cost analysis and benchmarking against publicly listed companies.¹²⁰ The bottom-up analysis considered information provided by the New South Wales standard retailers on their historic, current and forecast retail operating costs, and adjusting the results to remove costs recovered elsewhere in the regulatory package and any inefficient costs.¹²¹ The 2013–14 allowance is substantially higher than the allowance of \$84.40 for 2012–13.¹²² IPART cited a number of reasons for the higher costs in 2013–14, such as:

- a change in the way costs are allocated between retail and distribution arms of the energy businesses following the privatisation of the retail businesses;
- additional bad debts and associated administrative costs;
- an increase in administrative costs associated with more solar panel connections; and
- a rise in administrative costs to deal with the *Clean Energy Act 2011*.

Queensland

In its 2013 determination on regulated retail electricity prices for 2013–14, the QCA determined a retail operating cost allowance for small customers of \$115.80 per customer for 2013–14. This was based on an incumbent retailer and benchmarked using IPART's 2013 draft decision.¹²³

Tasmania

In its 2013 determination, OTTER determined the amount of retail operating costs based on the ACT benchmark of \$111.94 per customer.¹²⁴

¹²⁰ IPART approved an allowance of \$110 per customer in 2012–13 prices. This amount is escalated by 1.76 per cent from 2012–13 prices to \$111.94 in current prices.

¹²¹ IPART, 2013b: 98, 110.

¹²² The allowance of \$82.94 in 2012–13 prices has been escalated to \$84.40 in current prices.

¹²³ QCA adopted IPART's \$110 per customer retail operating cost plus an additional \$3.80 per customer for late payment fees that IPART excluded from its allowance, making a total allowance of \$113.80 per customer. This amount is escalated by 1.76 per cent from 2012–13 dollars to \$115.80 in current prices.

¹²⁴ OTTER determined an allowance of \$110 per customer in 2012–13 prices. This has been inflated to \$111.94 in 2013–14 prices.

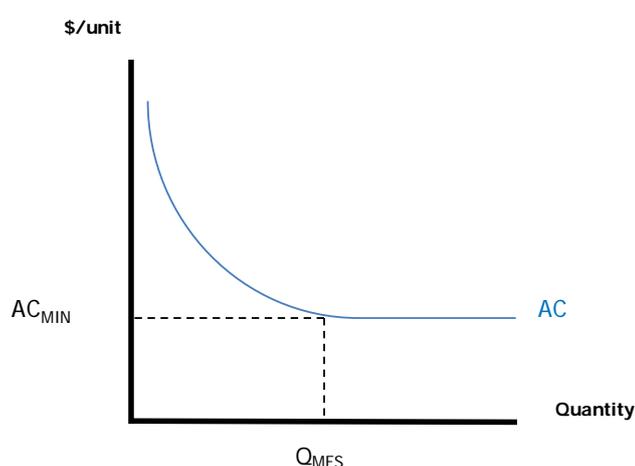
3.9.6 Commission’s consideration

Economies of scale

If average costs fall as output increases, the firm is said to have economies of scale or increasing returns to scale. Average costs can fall as output rises for a number of reasons, the most common being that fixed costs do not vary with output.

Minimum efficient scale can be defined as that level of output where average cost reaches a minimum. This is demonstrated in the L-shaped cost curve in Figure 3.7. Average cost declines up to the quantity of output where the average cost reaches its minimum, Q_{MES} , and remains constant beyond this amount. The minimum average cost, AC_{MIN} , would be the long-run equilibrium price if there were free entry.

Figure 3.7 Minimum efficient scale



The minimum efficient scale can provide insights into the potential for entry and how big a new entrant must become to be as efficient as the existing firms. A useful measure of the importance of scale economies is the cost disadvantage incurred by a firm operating at less than minimum efficient scale. Carlton and Perloff (1994) state:

If this disadvantage is small, then economies of scale are unimportant.¹²⁵

The argument put forward by stakeholders that the Commission should take into account economies of scale when determining the level of retail operating costs in the ACT is premised on two assumptions. The first is that there are economies of scale in the provision of retail electricity services. The second is that the ACT customer base is well below the minimum efficient scale in the NEM and therefore is subject to a significant cost disadvantage.

The Commission agrees that there are economies of scale inherent in the provision of retail electricity services. For example, the costs of setting up an information

¹²⁵ Carlton and Perloff, 1994: 67.

technology system for billing customers are unlikely to vary much with the number of customers. The extent to which the ACT customer base is below minimum efficient scale and the level of cost disadvantage that this may generate is more difficult to assess. These two issues are considered in turn.

Minimum efficient scale

In its submission to the issues paper, AGL provided comparative national customer numbers for ActewAGL Retail, Origin, AGL and EnergyAustralia, as shown in Table 3.3. AGL makes the point that ActewAGL Retail’s customer base is less than a tenth of that of the two largest retailers.

Table 3.3 Small customer numbers as at June 2013 (electricity and gas)

	ActewAGL Retail	Origin Energy	AGL Energy	EnergyAustralia
Customer numbers	<300,000	3,961,000	3,517,000	2,848,000

Source: AGL, 2013c: 5.

The implication of AGL’s submission is that the minimum efficient scale is upwards of three million customers and that ActewAGL Retail’s customer base is well below this level. This would place ActewAGL Retail well below Q_{MES} in Figure 3.7 and therefore potentially subject to significant cost disadvantage. The Commission’s view is that it is not so clear cut what the minimum efficient scale is in the retail electricity market. Table 3.4 shows the average number of electricity customers in Victoria by retailer in 2012–13.

Table 3.4 Average electricity customer numbers Victoria, 2012–13

Retailer	Residential	Business	Total	Change in market share from 2011–12
EnergyAustralia	567,885	60,091	627,976	-0.5
AGL	539,128	65,939	605,067	-1.3
Origin Energy	515,828	87,755	603,583	-1.8
Lumo Energy	185,951	19,453	205,404	0.3
Red Energy	175,167	7,250	182,417	0.5
Australian Power & Gas	120,128	1	120,129	0.0
Simply Energy	107,371	11,210	118,581	0.3
Neighbourhood Energy	61,095	-	61,095	-0.4
Momentum Energy	15,204	37,487	52,691	1.3
Powerdirect	21,724	24,482	46,206	0.2
Dodo Power & Gas	24,985	69	25,054	0.4
Alinta Energy	13,827	164	13,991	0.5
Click Energy	13,094	884	13,978	0.2
Other	848	1,243	2,091	-
ERM Power Retail	-	2,050	2,050	0.1
Diamond Energy	1,168	56	1,224	0.0
All retailers	2,363,403	318,134	2,681,537	-

Source: ESC, 2013: 10.

While the Commission recognises that Victorian retailers may have customers in other jurisdictions, what is evident from Table 3.4 is that there are a number of retailers that have a similar number of electricity customers as ActewAGL Retail, such as Australian Power & Gas and Simply Energy, which are successfully competing for customers in a deregulated market with much larger competitors. Indeed, the change in market share from 2011–12 is dominated by the smaller retailers at the expense of their larger competitors. This suggests that minimum efficient scale may be closer to ActewAGL Retail’s customer numbers with a corresponding reduction in any potential cost disadvantage.

Cost disadvantage

Leaving aside the measurement of minimum efficient scale, the next issue to consider is the potential magnitude of the cost disadvantage that ActewAGL Retail might face should it be operating at less than minimum efficient scale.

Scherer (1979) cites a number of empirical studies of the manufacturing industry investigating the potential cost disadvantage of suboptimal scale plants. These studies examined the percentage increase in long-run unit costs as a consequence of building and operating plants at one-third and half of minimum efficient scale. Scherer (1979) found that in half the industries assessed for the one-third of minimum efficient scale study, the increase in unit costs was less than 5 per cent and concluded that:

the long-run cost curves in most industries are much less steep at suboptimal plant scales than one is led to believe by typical textbook illustrations.¹²⁶

One would expect the magnitude of cost disadvantage associated with suboptimal scale to be more significant in the manufacturing industry than in the provision of retail electricity services. It could be argued, therefore, that the Commission may have been generous by providing an additional 6.25 per cent in the retail operating cost allowance in 2003 for economies of scale.

In conclusion, the Commission is not convinced of the need to further adjust the retail operating cost allowance to reflect any potential cost disadvantage associated with economies of scale.

As an aside, one wonders how ActewAGL Retail, if it indeed confronts the level of cost disadvantage it claims in its submission due to economies of scale, would fare should it face vigorous competition from larger and therefore more scale-efficient competitors.

Efficient level of retail operating costs

As discussed earlier, the Commission benchmarked the level of retail operating costs in 2003 and has adjusted this amount for changes in the consumer price index since then. While there is a degree of circularity in looking at other regulators’ decisions due to the practice of one regulator benchmarking against another’s most recent decision, it is still instructive to consider where the ACT’s allowance sits in relation to allowances provided in other jurisdictions. Table 3.5 shows the comparative retail operating cost allowances across jurisdictions for 2013–14.

Table 3.5 Retail operating cost allowance across jurisdictions, 2013–14 (current prices)

\$ per customer per year	ACT	New South Wales	Queensland	Tasmania
Retail operating cost	106.69	111.94	115.80	111.94

Table 3.5 **Error! Reference source not found.** shows that the Commission’s 2013–14 retail operating cost allowance of approximately \$107 per customer in 2013–14 is significantly below the allowances provided in Queensland, New South Wales and Tasmania. As noted earlier, the Commission started adjusting the retail operating cost allowance on a per MWh basis rather than per customer basis from 2007–08. Table 3.6 shows that, had the Commission continued adjusting the allowance on a per customer basis, it would have been about \$112 per customer in 2013–14, consistent with current jurisdictional allowances. The discrepancy between the Commission’s per MWh and per customer adjustment values is likely due to the fall in energy use per customer since 2007–08.

¹²⁶ Scherer, 1979: 94.

Table 3.6 Estimated ACT retail operating cost allowance per customer, 2007–08 to 2012–13

	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14
Retail operating cost per customer	\$94.91	\$97.12	\$101.35	\$103.19	\$106.13	\$109.73	\$111.66
CPI adjustment	n/a	2.33%	4.35%	1.82%	2.85%	3.39%	1.76%

Source: Commission calculations.

In order to redress this discrepancy, and realign the ACT retail operating cost allowance with those of other jurisdictions, the Commission proposes a step-up in the per MWh allowance for 2014–15 to match the value had the Commission continued with its per customer adjustment since 2007–08. This adjustment is effected in Chapter 6. The Commission proposes to then continue its current practice of adjusting the 2014–15 allowance by the change in the consumer price index for subsequent years of the next regulatory period.

3.9.7 Draft decision

The Commission proposes to:

- introduce a step-up in the per MWh allowance for 2014–15 to match the value had the Commission continued with its per customer adjustment since 2007–08;
- adjust the allowance each year by the change in the consumer price index; and
- not make any adjustment for economies of scale.

The Commission considers that the step up in the retail cost allowance in 2014–15 and the retention of the current methodology allow ActewAGL Retail to recover the efficient costs of providing retail services and are not inconsistent with retail operating cost allowances provided for in other jurisdictions. The Commission proposes to continue its practice of adjusting the retail operating cost allowance each year by the change in the consumer price index.

3.10 Energy efficiency scheme costs

3.10.1 Description of the scheme

The ACT Government’s Energy Efficiency Improvement Scheme (EEIS) places a mandatory obligation on all active retailers in the ACT to promote energy efficiency measures in households and small businesses. The scheme came into effect on 1 January 2013 under the *Energy Efficiency (Cost of Living) Improvement Act 2012* (the Energy Efficiency Act).

The EEIS commenced on 1 January 2013 and is currently scheduled to run until 31 December 2015. The EEIS requires all electricity retailers that are authorised to sell electricity to ACT customers to contribute towards energy savings in the ACT based on their electricity sales in the ACT. The scheme applies to two types of retailers:

- Tier 1 – retailers with more than 500,000 MWh of sales per year and at least 5,000 customers. Currently ActewAGL Retail is the only tier 1 retailer.
- Tier 2 – retailers with less than 500,000 MWh of sales per year and/or fewer than 5,000 customers.

The EEIS sets a territory-wide energy savings target, shown in Box 3.8, and requires ACT electricity retailers to meet an individual savings obligation. The energy savings obligation is calculated as follows:

$$\text{SESO}_t = \text{EST}_t \times \text{Sales}_t \times \text{EF}_t$$

where

- SESO_t denotes the supplier energy savings obligation for calendar year t (t CO₂-e);
- EST_t denotes the energy savings target for calendar year t (percentage);
- Sales_t denotes the electricity sales by the retailer for calendar year t (MWh);
- EF_t denotes the emissions factor, which is the tonnes of CO₂ equivalent greenhouse gas emissions attributed to the consumption in the ACT of 1 MWh of electricity (t CO₂-e).

Box 3.8 ACT energy efficiency scheme targets

The energy savings target is the overall reduction in greenhouse gas emissions to be achieved by retailers. Retailers apply the target to their electricity sales to determine their obligation under the scheme. The target is currently set as follows:

- 7 per cent of total electricity sales for the period 1 January 2013 to 31 December 2013; and
- 13 per cent of total electricity sales for the period 1 January 2014 to 31 December 2014; and
- 14 per cent of total electricity sales for the period 1 January 2015 to 31 December 2015.

Source: ACT Government, 2013b.

In order to meet these obligations, retailers are required to implement eligible activities such as providing customers with:

- high-efficiency lamps to replace low-efficiency lamps;
- efficiency refrigerators to replace pre-1996 refrigerators;
- standby power controllers.

The EEIS is funded by electricity retailers passing on the compliance costs to ACT electricity customers. In the case of ActewAGL Retail, the Commission includes the prudent and efficient compliance costs as a separate component in the build-up of efficient costs that determine the regulated retail electricity price.

Tier 1 retailers can incur financial penalties if they do not meet their savings targets. A tier 1 retailer not meeting its energy saving obligation faces a penalty of \$70 per tonne of carbon dioxide equivalent gas emitted per megawatt hour (t CO₂-e per MWh).

Tier 2 retailers have the option of paying an energy savings contribution rather than meeting their energy savings obligation. This is determined by the Minister based on the estimated cost of compliance for a tier 1 retailer and is currently set at \$37 per t CO₂-e.¹²⁷

3.10.2 Assessing Energy Efficiency Improvement Scheme costs in this investigation

The terms of reference for this price investigation require the Commission to identify and report on the efficient costs associated with compliance with this scheme. Moreover, in the 2013–14 price adjustment final report, the Commission foreshadowed that it would assess the prudence and efficiency of EEIS costs for the regulatory period commencing 1 July 2014.¹²⁸

3.10.3 Commission’s current approach

The Commission currently estimates EEIS costs using the methodology set out in Box 3.9. The Commission’s approach can be broadly characterised as a cost-based method as it relies on the actual costs incurred by ActewAGL in complying with the scheme. In practice, since the Commission relies on forecast and estimated costs in order to determine cost allowance in advance of the actual cost being incurred, a pass-through arrangement is included to allow for an ex post cost adjustment.

In 2012–13, which included the first six months of operation of the scheme, the Commission determined a cost allowance of \$1.12 per MWh. This was based on an abatement cost per tonne of \$37 per t CO₂-e used in the regulatory impact statement for the Energy Efficiency (Cost of Living) Improvement Bill. The Commission approved a cost allowance of \$3.75 per MWh for 2013–14. This included \$3.63 per MWh based on ActewAGL Retail’s estimated abatement cost per tonne of \$41 per t CO₂-e and a cost adjustment of \$0.12 per MWh from 2012–13. The cost adjustment reflected the difference between ActewAGL Retail’s estimated abatement costs and the costs used in the regulatory impact statement.

¹²⁷ Section 11 of the Energy Efficiency Act requires the Minister to determine the energy savings contribution for tier 2 retailers.

¹²⁸ ICRC, 2013b: 13.

What the Commission has not done in its approach to date is to assess the prudence and efficiency of the abatement costs submitted by ActewAGL Retail to the Commission. This section considers the Commission's approach to determining the prudent and efficient costs of ActewAGL Retail's compliance with the EEIS for the next regulatory period. The approach developed in this section is applied in Chapter 6 to determine the prudent and efficient EEIS cost allowance for 2014–15.

Box 3.9 ACT Energy Efficiency Improvement Scheme cost estimation formula

The first step is to present the basic equation that determines the EEIS cost estimate in dollars per MWh that is applied in the Commission's electricity cost-index model:

$$\text{EEIS cost}_{2013-14} = (\text{CM}_{2013} \times \text{LW}_{2014}) + (\text{CM}_{2014} \times \text{LW}_{2014}) + \text{CA}_{2012-13}$$

where the following are defined for each year:

- CM denotes the cost per MWh for each calendar year (dollars per MWh);
- LW denotes the half-yearly load weight for each calendar year provide by ActewAGL Retail (percentage);
- CA is the cost adjustment from the previous financial year (dollars per MWh).

The next step is to describe the determination of the cost per MWh for each calendar year:

- $\text{CM}_{2013} = \text{CT}_{2013} \times \text{EF}_{2013} \times \text{EST}_{2013}$
- $\text{CM}_{2014} = \text{CT}_{2014} \times \text{EF}_{2013} \times \text{EST}_{2014}$

where the following are defined for each year:

- CT denotes the abatement cost per tonne for the calendar year based on ActewAGL Retail costs (dollars per tonne);
- EF denotes the emissions factor for each calendar year determined under the Energy Efficiency Act (percentage);
- EST denotes the energy savings target for the calendar year determined under the Energy Efficiency Act (percentage).

3.10.4 Australian Energy Market Commission advice

In its advice on best practice retail price methodology, the AEMC recommended that where jurisdiction-specific environmental schemes apply, the regulator should be guided by a set of criteria in estimating costs. The criteria are:

- Provided there is sufficient liquidity, market-based methods for estimating prices are preferred.

- The most up-to-date and accurate information should be used.
- The method should be clear and transparent to retailers to enable them to manage associated risks schemes and to minimise under- or over-recovery.¹²⁹

3.10.5 Issues paper submissions

EnergyAustralia requested a change in the current methodology used to calculate EEIS costs to ensure that the efficient costs of tier 1 and tier 2 retailers are considered.

EnergyAustralia stated:

As the scheme outlines different obligations for tier 1 and 2 retailers, the allowance should be set at the level of the tier 1 retailer (ActewAGL), except when the price paid by tier 2 retailers is higher, in which case the tier 2 cost should be used instead. It would be detrimental to competition if the scheme design and the price regulation approach were to prevent tier 2 retailers from recovering their full (efficient) costs under this scheme.¹³⁰

The ACT Government supported the Commission undertaking a retrospective assessment of ActewAGL Retail’s compliance cost for the first year of the EEIS from 1 January 2013 to 31 December 2013. The government suggested that the Commission could consider and compare compliance cost in other jurisdictions with similar schemes. The government also stated:

The ICRC’s assessment of the efficient compliance costs for ActewAGL Retail will be an important input for determining the Energy Savings Contribution for Tier 2 retailers under the scheme.¹³¹

In its submission, ActewAGL Retail did not support any ex post assessment of its expenditure on the scheme, stating:

However, ActewAGL would be concerned at the risk of any ex post assessment and adjustment having made commitments and supported this with substantial evidentiary material in relation to prudence and efficiency to the Commission at the time of the reset for 2013–14 prices.¹³²

ActewAGL Retail recommended that the Commission use the same formula it applied in 2013–14 to determine EEIS costs for the next regulatory period.¹³³

ActewAGL Retail noted that there is substantial uncertainty in relation to EEIS costs moving forward due to potential changes in the abatement factor used to estimate abatement costs. ActewAGL Retail stated:

¹²⁹ AEMC, 2013: 92.

¹³⁰ EnergyAustralia, 2013b: 11.

¹³¹ ACT Government, 2013c: 2.

¹³² ActewAGL Retail, 2013c: 26.

¹³³ ActewAGL Retail, 2013c: 27.

The impact of the change for the period January 2014 to June 2014 will be approximately \$1 million.¹³⁴

3.10.6 Commission's consideration

Approach to assessing prudence and efficiency

The first decision facing the Commission is whether to adopt an ex ante or ex post approach to assessing prudence and efficiency. The Commission notes ActewAGL Retail's preference for the former and the ACT Government's support for the latter.

If the Commission were regulating ActewAGL Retail using the traditional building-block approach based on actual costs, as is the case for ACTEW Water's provision of water and sewerage services, an ex post assessment may have merit, but only if it related to capital expenditure. An ex post capital expenditure assessment ensures that only prudent and efficient capital expenditure is rolled into the regulated asset base that is the basis for calculating capital costs and therefore prices. In the case of ActewAGL Retail, the Commission uses a cost benchmark regulatory approach, which relies less on historical costs than the building-block model. Moreover, the bulk of ActewAGL Retail's expenditure on the EEIS is operating rather than capital expenditure. While historical operating expenditure performance can inform expectations about future expenditure, the more important matter is for the regulator to assess ex ante that future operating expenditure is likely to be efficient.

As such, the Commission proposes to apply a forward-looking assessment of the prudence and efficiency of ActewAGL Retail's forecast expenditure on the energy efficiency scheme for 2014–15 and subsequent years of the regulatory period.

Expenditure on the scheme will be deemed prudent if ActewAGL Retail can demonstrate that it is reasonably necessary in order to meet its legislative requirements under the Energy Efficiency Act.

Expenditure will be deemed efficient if ActewAGL Retail has undertaken sufficiently robust expenditure decision-making processes and there is no lower-cost alternative that could be substituted. The latter will be assessed with reference to two yardsticks. The first is benchmark costs in other jurisdictions, where appropriate and such information is available. The second is the penalty cost associated with non-compliance with the scheme, i.e. the opportunity costs associated with not implementing the energy efficiency scheme.

Impact on tier 2 retailers

As discussed earlier, tier 2 retailers have the option of paying an energy savings contribution rather than implementing energy efficiency activities. Section 11 of the

¹³⁴ ActewAGL Retail, 2013c: 28.

Energy Efficiency Act requires the Minister to determine an energy savings contribution, taking into account:

- the impact of the contribution on levels of competition in the retail electricity market in the ACT; and
- the cost of achieving the equivalent abatement of greenhouse gas emissions through other means including energy efficiency.

The determination currently in force sets the energy savings contribution at \$37 per t CO₂-e.¹³⁵ This amount is based on the expected average cost of abatement to be borne by tier 1 retailers that was used in the regulation impact statement.

The Commission understands that providing tier 2 retailers with the option of paying a fee equal to the estimated cost of participation of a tier 1 supplier is intended to offset the cost advantage a tier 1 supplier would have if a tier 2 supplier were required to set up and deliver energy efficiency services. The explanatory statement to the Energy Efficiency Bill states:

This is in recognition of the significant overhead costs smaller suppliers would incur if compelled to undertake eligible activities to meet their targets, and the disincentive this may provide for their participation in the ACT electricity retail market.¹³⁶

In its submission to the issues paper, EnergyAustralia has effectively requested that the Commission set a floor for the EEIS cost allowance to reflect the higher of a tier 1 retailer’s costs or the tier 2 retailer’s costs.

A perusal of the Environment and Sustainable Development Directorate’s website indicates that there are no tier 2 retailers currently offering eligible energy efficiency activities in the ACT.¹³⁷ The conclusion that can be drawn from this is that tier 2 retailers selling electricity in the ACT have chosen to pay the energy savings contribution. As such, the current \$37 per t CO₂-e is the cost faced by the tier 2 retailer. The Commission understands from the ACT Government’s submission and discussions with staff from the Environment and Sustainable Development Directorate that the current energy savings contribution determination may be changed to reflect the prudent and efficient cost allowance determined by the Commission for 2014–15.

Given this arrangement, the Commission does not propose to consider any floor cost when estimating the EEIS cost allowance. The Commission will, however, consider a cost ceiling.

¹³⁵ *Energy Efficiency (Cost of Living) Improvement (Energy Savings Contribution) Determination 2012 (No 1) Disallowable Instrument DI2012–92.*

¹³⁶ ACT Government, 2012: 6.

¹³⁷ http://www.environment.act.gov.au/energy/energy_efficiency_improvement_scheme_eeis.

Cost ceiling

As discussed earlier, should a tier 1 retailer not meet its energy savings obligation, it is required to pay a penalty of \$70 per t CO₂-e. This amount is the opportunity cost of ActewAGL Retail not meeting its obligations and should be considered as the ceiling for efficient costs of implementing energy efficiency activities under the scheme. In assessing the efficiency of ActewAGL's expenditure on the EEIS, the Commission proposes to use this penalty rate as the ceiling above which costs will be deemed inefficient. That is, it is not efficient for ActewAGL Retail to spend more on complying with the scheme than the costs associated with non-compliance.

Cost pass-through

The Commission proposes to maintain its current pass-through provisions for costs associated with the EEIS as there are a range of matters that are outside of ActewAGL Retail's control that have cost implications. This includes the abatement factor issue raised in ActewAGL Retail's submission to the issues paper.

3.10.7 Draft decision

The Commission proposes to maintain its current approach to estimating EEIS compliance costs for the next regulatory period, with the addition of an ex ante prudence and efficiency assessment of ActewAGL Retail's expected abatement costs.

The Commission's proposed approach relies on the most up-to-date and accurate information and utilises a method that is clear and transparent to retailers, as recommended by the AEMC. The Commission has not applied a market-based approach as the EEIS is not based on creating and trading certificates.

3.11 Network costs

Transmission and distribution network costs are paid by the retailer to transport electricity from generators to customers. Transmission and distribution charges are determined by the AER and released each year in early June. The network costs are equal to the sum of transmission and distribution charges paid by ActewAGL Retail.

Australian Energy Market Commission advice

The AEMC recommended that network charges approved by the AER should be reflected in regulated retail prices.¹³⁸

Issues paper submissions

No substantive issues were raised with the Commission's approach to recovering network charges.

¹³⁸ AEMC, 2013: 54.

Draft decision

As discussed in Chapter 6, the AER is currently undertaking a new determination of ActewAGL Distribution’s costs. The determination will cover a transitional period from 1 July 2014 to 30 June 2015 and a subsequent regulatory control period from 1 July 2015 to 30 June 2019. The transmission network around the ACT is owned by TransGrid. The AER will produce a price determination for TransGrid for the period from 1 July 2014 to 30 June 2019.¹³⁹

As network costs are unavoidable for all retail businesses, the Commission passes through the network costs determined by the AER.

3.12 Retail margin

3.12.1 Introduction

The retail margin provides the return the incumbent retailer earns on the investment it must undertake to provide retail services. In previous determinations, the Commission has taken the view that the retail margin should be set at a reasonable level commensurate with the level of investment required and the risks associated with running a retail business.

Usually margins are described as gross or net. The gross margin represents the total revenue of the retailer less energy, network costs and other fees, while the net margin is the gross margin less the costs associated with running the retailers’ retail business. Regulators normally set a net margin over the efficient costs of running the retail business, although historically the margin is calculated on an earnings before interest, tax, depreciation and amortisation (EBITDA) basis – that is, it implicitly includes an allowance for depreciation, which is not explicitly included in the cost of providing retail services. The Commission expresses the retail margin on an EBITDA basis as a percentage of total costs.

The Commission currently applies a retail margin of 5.4 per cent to all of the efficient costs in the cost-index model. This margin has been retained since it was granted in the 2010 determination based on the extensive research done at that time by IPART and its consultants.

3.12.2 Recent regulatory decisions

New South Wales

In its June 2013 determination, IPART increased the New South Wales retail margin from 5.4 per cent to 5.7 per cent. IPART engaged SFG Consulting (SFG) to provide advice on a feasible range for the retail margin over the 2013 to 2016 regulatory

¹³⁹ The AER’s current transmission determination for TransGrid may be found on its website: www.aer.gov.au/node/3333.

period. SFG had been engaged for IPART’s 2010 retail electricity price review and used the same methodology in 2013 in order to provide comparability. This involved estimating the retail margin of a standard retailer using three methods:

- expected returns based on expected cash flows an electricity retailer will earn;
- benchmarking retail margins by reference to other retailers; and
- bottom-up calculation through estimating the revenue on the assets employed sufficient to equal the anticipated cost of capital.

Table 3.7 shows the average retail margin calculated using the three approaches. The outcomes differ because each approach has a different reliance on market-based versus modelled data. The retail margin is presented as an estimate of EBITDA divided by sales.

Table 3.7 SFG retail margin summary

Percentage of sales	2013	2010
Expected returns	4.3	4.1
Benchmarking	6.4	6.7
Bottom-up	6.2	5.4
Average	5.7	5.4

Source: SFG Consulting, 2013: 2.

Table 3.8 shows the range of feasible outcomes for 2013 arising from SFG’s analysis. The three estimation approaches give an average retail margin range from 4.3 per cent to 6.4 per cent. SFG recommended applying equal weights to the approaches, which results in an average retail margin of 5.7 per cent. IPART concluded that any value chosen from within the reasonable range would be appropriate, but consistent with its approach in 2010, chose to adopt the average of 5.7 per cent for the regulatory period commencing 1 July 2013.¹⁴⁰

¹⁴⁰ IPART, 2013b: 94.

Table 3.8 SFG feasible margin range for 2013

Percentage of sales EBITDA	Low	High	Average
Expected returns	3.9	4.8	4.3
Benchmarking	6.3	6.6	6.4
Bottom-up	5.6	7.0	6.2
Grand average			5.7

Source: SFG Consulting, 2013: 5.

Queensland

The QCA uses a benchmarking approach of examining the regulatory decisions in other jurisdictions to determine the retail margin. In its most recent decision for regulated retail electricity prices for 2013–14, the QCA discussed how it drew on IPART’s 2010 electricity retail price decision to set the margin at 5.4 per cent for the 2012–13 period.

A number of submissions to the 2013 price investigation argued that Queensland electricity retailers faced more risk than those in New South Wales. The QCA concluded that there was no compelling evidence for a higher retail margin than had been determined in New South Wales, and in the QCA’s view, retailers in Queensland faced similar risks. Consequently, given the detailed analysis undertaken for IPART for the 2013–16 determination, the QCA adopted IPART’s updated retail margin of 5.7 per cent expressed as a percentage of total costs, inclusive of the retail margin.¹⁴¹ This is equivalent to a 6 per cent margin on total costs, excluding the retail margin.

Tasmania

Under the Tasmanian pricing legislation, OTTER is required to consider any interstate or international benchmarks for costs, revenues and return on assets.¹⁴² In its decision for the 1 July 2010 to 30 June 2013 regulatory period, OTTER set the retail margin at 3.7 per cent after considering the decisions of other regulators. OTTER concluded that the Tasmanian retailer did not face the same risks as businesses in other jurisdictions. This was because the retailer did not face competition from new entrants and energy price risk was mitigated by a legislative requirement that Aurora’s management of energy costs had to satisfy the Treasurer. This justified a lower retail margin than had been determined by other regulators at that time.

In its July 2013 price determination, OTTER accepted the argument that retailers will face additional risks associated with their regulated contracts due to Tasmania moving to full retail competition.¹⁴³ OTTER identified that the retailers would face additional risks in the forthcoming regulatory period due to:

¹⁴¹ QCA, 2013b: 54.

¹⁴² *Electricity Supply Industry (Pricing and Related Matters) Regulations 2013*, Regulation 13.

¹⁴³ OTTER, 2013a: 79.

- energy price risk associated with hydrological events as energy contracts may not fully cover the potential for wholesale electricity prices to diverge from that used in the price determination; and
- uncertainties about customer numbers as customers will be able to change retailers.

In its December 2013 statement amending its determination of July 2013, OTTER noted that Aurora faced elevated risks as retail competition was introduced. The retail margin should thus reflect the full costs and risks associated with operating in a competitive market. These risks were no different to those faced by retailers elsewhere in the National Electricity Market. Further, OTTER argued, consistent with its legislative requirements to promote competition, that a lower retail margin was inappropriate in a competitive retail environment as it might contribute to a restriction on competition.¹⁴⁴

OTTER consequently adopted a retail margin of 5.7 per cent of total costs in line with recent regulatory decisions in Queensland and New South Wales, but transitioned over several years to account for the gradual introduction of competition. Table 3.9 sets out OTTER’s retail margin decision.

Table 3.9 OTTER’s retail margin decision,

Percentage of total costs	1 Jan 2014 to 30 Jun 2014	2014–15	2015–16
Retail margin	4.85	5.7	5.7

Source: OTTER, 2013a: 87-89; OTTER, 2013b: 9.

3.12.3 Australian Energy Market Commission advice

In its advice on best practice retail price methodology, the AEMC proposed an objective for regulators to consider when setting the retail margin. The AEMC recommended a number of principles to guide regulators in determining a retail margin. The AEMC’s recommendations are set out in Box 3.10.

¹⁴⁴ OTTER, 2013b: 7–8.

Box 3.10 AEMC-recommended objective for calculating a retail margin

Objective

The retail margin is to be commensurate with the efficient financing costs of a benchmark, efficient entity with a similar degree of risk as that which applies to the retailer in respect of the provision of regulated electricity services.

Principles

The AEMC recommended that three principles be followed in determining a retail margin:

- A range of estimation methods, financial models, market data and other evidence should be considered.
- The retail margin should be capable of responding to changes in market conditions.
- Any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and return on debt should be considered.

Source: AEMC, 2013: 68-69.

Although it opted for recommending an objective rather than a detailed method, the AEMC noted that:

In practice, this will likely result in a regulator using either an expected returns or bottom-up approach to calculate the retail margin, depending on the particular circumstances in the market at the time. Benchmarking should be used as a “sense check” against the primary method.¹⁴⁵

On the matter of whether the margin should be applied to all cost components or just to a retailer’s controllable costs, the AEMC’s view was that the outturn values of either approach should be the same given that the retail margin objective is to determine a margin in relation to a level of risk. This view is also shared by regulators because applying the margin to the retailer’s controllable costs would merely mean that a higher margin is applied to the energy and retail components, as against a lower margin applied against all costs.

3.12.4 Issues paper submissions

EnergyAustralia, Origin and AGL supported increasing the retail margin to 5.7 per cent, noting that both IPART and the QCA had increased the retail margin. AGL noted the desirability of the Commission maintaining consistency with the IPART and QCA decisions.¹⁴⁶

¹⁴⁵ AEMC, 2013: 69.

¹⁴⁶ AGL, 2013c: 11.

ActewAGL Retail argued for a higher margin, stating:

ActewAGL considers it appropriate for the Commission to reflect a commercial level of retail margin for the next regulatory period, as assessed and determined in recent decisions by regulators in NSW and Queensland. ActewAGL considers the most appropriate approach to assessing its retail margin to be a market based one. Based on SFG's analysis for IPART, this would allow for a margin between 6.3 per cent and 6.9 per cent.¹⁴⁷

ActewAGL Retail concluded that a retail margin of at least 6 per cent should apply in the ACT market, and applied in a manner consistent with previous determinations.

ACAT rejected the notion that the retail margin determined by IPART should automatically be applied in the ACT and saw no reason for the current retail margin to be increased.¹⁴⁸

3.12.5 Commission's consideration

The retail margin represents the return the incumbent retailer earns for its investment in the business and the risks it assumes in providing retail services. Without a retail margin, the incumbent retailer would be unable to attract the funds needed to provide those services. The retail margin is not intended to compensate the retailer for firm-specific risks. The margin is concerned with systematic risks, that is, changes in the broader market or economy that impacts the business.

As discussed earlier, there are several ways to calculate a retail margin. A bottom-up approach requires the regulator to construct a margin using the estimated assets employed and the costs of providing the retail service, including the costs associated with purchasing energy and paying network fees. The benchmarking approach samples the margins of other businesses operating in retail industries, while the expected returns method looks at cash flows the electricity retailer is expected to earn. As the AEMC observed, the outcomes of these models should produce similar results, although as shown by SFG's work, the models will produce a dispersion, rather than a convergence, around a number. This is because the data underpinning the analysis varies in its empirical origins. SFG's analysis produced a feasible range between 3.9 per cent and 7.0 per cent.

The Commission granted a retail margin of 5.4 per cent in 2012 for the period from 1 July 2012 through 30 June 2014. This margin has been retained since it was granted in the 2010 determination based on the extensive research done at that time by IPART and its consultants. As discussed earlier, the recent retail electricity price decisions of jurisdictional regulators have converged around IPART's 2013 decision to adopt a retail margin of 5.7 per cent of total costs.

¹⁴⁷ ActewAGL Retail, 2013c: 29.

¹⁴⁸ ACAT, 2013: 5.

In approaching the task of setting the retail margin for the regulatory period commencing 1 July 2014, the Commission has once again paid particular attention to the detailed analysis of the retail margin carried out by IPART and its adviser SFG in 2013, described earlier. SFG used substantively the same methodology in 2013 as it did in its 2010 exercise.

In requesting a retail margin of at least 6 per cent, ActewAGL Retail acknowledged the recent work of IPART and SFG and its adoption by other regulators. However, in arguing for a retail margin in excess of that approved by other regulators, ActewAGL Retail did not provide any evidence that it faced systematic risks greater than those faced by retailers in New South Wales or Queensland.

In recent decisions, Queensland and New South Wales regulators have considered the level of risk and not found any evidence that suggests electricity retailer risks are more elevated now or that their jurisdiction is riskier than others. Even given the special circumstances in Tasmania, OTTER has determined that the retail margin in that state should be guided by retail margins approved in New South Wales and Queensland. The Commission is similarly not convinced that there is any material difference in risk for an ACT retailer compared to those in other jurisdictions. As such, the Commission is hard pressed to find a reason to grant a margin in excess of 5.7 per cent.

ActewAGL Retail has sought a higher margin with reference to SFG’s benchmarking approach, rather than an average of the three approaches undertaken. The Commission considers that it is not appropriate to focus just on the benchmarking approach when estimating the retail margin, and that the expected returns and bottom-up approaches are equally, if not more, valid ways of determining the retail margin. The Commission’s preference is to give each of the approaches equal weighting, as IPART has done.

While the retail margin is intended to compensate for systematic risks, it is also important not to double count or over compensate for market-wide risk in the retail margin. For example, the pricing methodology used by regulators generally includes other mechanisms to deal with cost pass-through events or costs associated with movements in the wholesale electricity price.

As was the case in 2010, the SFG analysis and IPART’s recent decision were based on consideration of the following risks:

- the risk of variation in their regulated load profile due to changes in economic conditions that affect the demand for electricity;
- the risk of variation in wholesale electricity spot and contract prices due to changes in economic conditions and demand; and
- general business risk due to changes in economic conditions.¹⁴⁹

¹⁴⁹ IPART, 2013b: 88.

The Commission notes that in calculating the energy purchase cost it has already adopted a precautionary approach to hedging price and load variability. In addition, the Commission has also provided a broad range of pass-throughs for matters to insulate ActewAGL Retail from such things as changes in taxes and network tariff changes.

Consequently, it could therefore be argued that the Commission is potentially double-compensating ActewAGL Retail for the risks that it faces and that a 5.7 per cent retail margin is relatively generous.

3.12.6 Draft decision

The Commission is of the view that it is appropriate to apply the outcomes of the recent extensive analysis undertaken by IPART and SFG to the ACT. The Commission therefore proposes to increase the retail margin to 5.7 per cent for the regulatory period commencing 1 July 2014. The incremental 0.3 per cent increases the draft regulated retail tariff by about \$0.58 per MWh.

3.13 Consumer price index adjustment

As discussed above, the Commission adjusts a number of cost components for annual changes in the consumer price index. The Commission calculates the percentage change in the consumer price index using the following formula, populated with the Australian Bureau of Statistics all groups index for the weighted average of eight capital cities.¹⁵⁰

$$\Delta CPI_t = \frac{CPI_{Mar(t-2)} + CPI_{Jun(t-2)} + CPI_{Sep(t-1)} + CPI_{Dec(t-1)}}{CPI_{Mar(t-3)} + CPI_{Jun(t-3)} + CPI_{Sep(t-2)} + CPI_{Dec(t-2)}} - 1$$

The Commission notes that it is possible to adjust the formula to use the March t-1 data, which is released by the ABS at the end of April each year. The Commission, however, for methodological reasons associated with adjusting the cost-index model, proposes to continue to calculate the percentage change in the consumer price index using its current approach.

3.14 Draft decisions on the electricity cost-index model

Table 3.10 provides a summary of the Commission's draft decisions on the components of the electricity cost-index model to be applied for the regulatory period commencing 1 July 2014.

¹⁵⁰ ABS, 2014.

Table 3.10 Draft decisions on the retail electricity cost-index model

Component	Method
Wholesale energy costs	
Energy purchase cost	Maintain the current energy purchase cost model as set out in Appendix 3, with the exception of averaging the forward price and carbon emissions intensity factor over 23 and 12 months, respectively.
LRET and SRES costs	Continue to base the price of LGCs and STCs on publicly available spot price data averaged over an 11-month period and include an allowance for funding costs.
Energy losses	Make adjustments as set out in the formula in Box 3.7.
Energy contracting costs	Maintain the current approach of adjusting energy contracting costs by the annual change in the consumer price index.
NEM fees	Maintain the current approach of adjusting NEM fees by the annual change in the consumer price index.
Retail costs	
Retail operating costs	Provide for step up for 2014–15 and then continue the current approach of adjusting retail operating costs by the annual change in the consumer price index.
ACT Energy Efficiency Improvement Scheme costs	Subject costs to prudence and efficiency assessment and then apply the current formula.
Network costs	Maintain the current approach of passing through the network costs determined by the AER.
Retail margin	Apply a retail margin of 5.7 per cent to all cost components.

3.15 Assessment against Australian Energy Market Commission best practice advice

Table 3.11 provides a summary assessment of the Commission’s retail electricity cost-index model against the AEMC’s advice on best practice retail price methodology.

Table 3.11 Assessment of Commission's model against the Australian Energy Market Commission advice

Component	AEMC advice	Commission's model
Wholesale energy costs		
Energy purchase cost	Market-based approach for liquid market	Market-based approach
LRET and SRES costs	Market-based approach for liquid market	Market-based approach
Energy losses	Apply published loss factors to the energy purchase cost allowance, NEM fees, ancillary service fees and jurisdictional energy costs.	Applies published loss factors to the energy purchase cost allowance and LRET and SRES costs.
Energy contracting costs	N/A	Estimated value in 2003 and adjusted for change in consumer price index since
NEM fees	Based on AEMO budget requirements	Estimated value in 2003 and adjusted for change in consumer price index since
Retail costs		
Retail operating costs	Based on incumbent retailer Level determined with reference to bottom-up or benchmarking Economies of scale relevant under benchmarking approach	Based on incumbent retailer Level determined by benchmarking Considered and dismissed further adjustment for economies of scale
ACT Energy Efficiency Improvement Scheme costs	Cost-setting criteria: <ul style="list-style-type: none"> • Use market-based methods where the market is liquid. • Use most up-to-date and accurate information. • The method should be clear and transparent to retailers. 	Based on prudent and efficient costs
Network costs	Pass-through costs determined by AER	Pass-through costs determined by AER
Retail margin	Use expected returns or bottom-up approach to calculate the retail margin, with benchmarking applied as a 'sense check'.	Average of 3 methods based on work undertaken for IPART.

4 A competition allowance in electricity retailing

4.1 Introduction

As noted in Chapter 1, a consequence of recent policy decisions by SCER and the release of the AEMC's best practice guide is that there is now a single framework within which to consider various regulatory issues related to competition in electricity retailing, which were previously considered separately.

Although a number of submissions to the review argued for removal of all regulation of retail electricity prices in the ACT, current SCER policy is that this should only occur when the AEMC has determined that competition in the ACT market is effective.¹⁵¹ The decision to remove regulation in those circumstances is one for the jurisdictional government. The position of the ACT Government is succinctly summarised in its submission to this review:

The ACT Government remains committed to retail electricity price deregulation, should effective competition emerge and be sustained in the Territory's retail sector.¹⁵²

It is clear from the AEMC's advice on best practice regulation that the base to which a competition allowance might be added should be the efficient costs of the incumbent retailer. The AEMC stated:

The Commission considers that these [retail operating costs] should be based on the efficient costs of the incumbent retailer, who is required to provide for customers under the regulated retail price.¹⁵³

The AEMC supported basing retail operating costs on the incumbent retailer for a number of reasons, including:

- There is more transparency and customer understanding, as the retailer is an observable entity rather than a hypothetical construct.
- This is the approach that regulators in the NEM currently use and is therefore consistent with providing predictability and stability of approach.¹⁵⁴

The AEMC's recommendation in its best practice advice differs from its finding in its review of the effectiveness of competition in the ACT retail electricity market in 2010.

¹⁵¹ Submissions arguing for full deregulation included those of ActewAGL Retail, Energy Supply Association of Australia and EnergyAustralia Pty Ltd.

¹⁵² ACT Government, 2013c: 1.

¹⁵³ AEMC, 2013: 56.

¹⁵⁴ AEMC, 2013: 59.

In that review the AEMC questioned the Commission's approach of referencing the incumbent retailer and proposed that an option for increasing competition was for the Commission to base the regulated retail tariff on the efficient costs of a new entrant business.¹⁵⁵ Since that review the AEMC has developed the option of a competition allowance as its preferred means of facilitating the development of competition.

In their submissions on the Commission's issues paper ActewAGL Retail and EnergyAustralia expressed a preference for basing costs on a hypothetical efficient new entrant retailer.¹⁵⁶ The principal argument offered in support of this proposition was that it would encourage other retailers to enter the market and thereby facilitate competition. As explained above, the approach recommended by the AEMC is to separate competition facilitation issues from the measurement of efficient cost and, if deemed appropriate, to facilitate competition by including a competition allowance.

AGL and Origin argued that the Commission's decision to reference an incumbent retailer does not mean that a competition allowance or customer acquisition and retention costs should be excluded.¹⁵⁷ AGL stated:

However, IPART and QCA's approaches have shown that this definition of a retailer does not mean that CARC and headroom allowance should be excluded.¹⁵⁸

The Commission agrees that the decision on whether to include a competition allowance is quite separate from the decision to base efficient costs on the incumbent retailer. Pursuant to the advice provided by the AEMC, the Commission has based its assessment of efficient cost in Chapter 3 on the incumbent retailer and gives separate consideration to the question of including a competition allowance in the balance of this chapter.

4.2 Australian Energy Market Commission approach to facilitating competition

In its best practice advice, the AEMC concluded that 'effective competitive markets are generally the best means of promoting customers' long-term interests'.¹⁵⁹ Accordingly, it recommended that retail electricity prices only be regulated where effective competition was not present.¹⁶⁰ Moreover, if effective competition was deemed to be feasible, retail price regulation should facilitate its development.¹⁶¹ The

¹⁵⁵ AEMC, 2010: i.

¹⁵⁶ ActewAGL Retail, 2013c: 20; EnergyAustralia, 2013b: 7.

¹⁵⁷ AGL, 2013c: 4; Origin, 2013: 2.

¹⁵⁸ AGL, 2013c: 4.

¹⁵⁹ AEMC 2013: 23

¹⁶⁰ AEMC, 2013: 24

¹⁶¹ AEMC, 2013: 24.

AEMC considered that the most appropriate way to facilitate competition was to provide ‘headroom’ to encourage the entry of new retailers by setting prices above efficient costs.¹⁶² The AEMC considered this was best done by the provision of a ‘competition allowance’ in the cost build-up used to determine regulated prices.¹⁶³

In reaching these conclusions, the AEMC noted that the decision whether to facilitate competition was one for jurisdictions. The AEMC indicated that, for this purpose, jurisdiction should be taken to mean jurisdictional government. The ACT government has indicated its policy position on this matter and drawn the Commission’s attention to it. The ACT government has, in providing terms of reference for this review, implicitly asked the Commission to determine whether a competition allowance should be included in regulated retail electricity prices in the ACT. The purpose of this chapter is to consider whether a competition allowance, as defined by the AEMC, should be so included.

Including a competition allowance would mean higher electricity prices in the near term than would otherwise obtain. Such an impost on ACT electricity customers could only be justified if some longer-term benefits were obtained that more than offset the cost burden imposed in the shorter term. The assertion on which advocacy of a competition allowance rests is that provision of such an allowance will encourage the entry of other retailers into the ACT retail electricity market, and that the striving among retailers for the custom of ACT electricity consumers that this will engender will deliver a range of benefits, including allowing price regulation to be removed without endangering the interests of consumers. According to the AEMC, these benefits could include:

- prices, which trend to efficient levels over time;
- incentives for retailers to reduce costs and prices over time;
- a quality of service matching customer expectations; and
- a choice of products and services consistent with customer preferences.¹⁶⁴

While these are the sorts of benefits that might generally be expected to result from the introduction of competition into a market, the retail electricity market has some rather unusual features. Before relying on general arguments about the benefits of introducing competition, it would be wise to investigate whether any of these arguments are affected by the unusual features of the retail electricity market, particularly as it operates in the ACT.

Much of the analysis conducted in the Australian context rests on the view that competition always provides significant gains in efficiency. Nonetheless, there is a

¹⁶² AEMC, 2013: 75

¹⁶³ AEMC, 2013: 79

¹⁶⁴ AEMC, 2013: 15

sizable commentary elsewhere questioning the benefits of a deregulated electricity market. For example, Blumsack et al. (2006) start the abstract of their paper on the restructuring of the electricity industry in the United States with the sentence:

Blind faith is unlikely to produce a free market that is competitive.¹⁶⁵

Their conclusion is that, while there have been substantial price reductions in the United States from deregulating trucking and airlines, the same cannot be said of electricity. Rothkopf (2007) has a similar view and counsels states in the United States that have not deregulated to remain regulated.

In order to address these issues, we first describe the way the retail electricity market works and the business environment in which electricity retailers operate. We then describe the general argument about the impact of introducing competition to a market and identify those elements where the characteristic of the retail electricity market might not accord with those usually assumed in the formulation of the general argument. This provides a basis for the assessment of the likely gains from introducing a competition allowance to the setting of retail electricity prices in the ACT. The final section of the chapter describes the Commission's conclusions.

4.3 Electricity retailing in the National Electricity Market

The market for electricity is fascinating for a variety of reasons. A casual perusal of the volume of economic literature suggests that the market for energy including electricity is perhaps the second-most studied non-financial market after the market for labour. This section provides a brief overview of the electricity market as it operates in the eastern states of Australia: the National Electricity Market (NEM). This section does not provide a full review of the NEM and the rules governing it. The discussion is limited to those aspects necessary to gain an understanding of the nature of electricity retailing as it operates within the NEM.

4.3.1 Structure

The NEM came into existence in the mid-1990s when the eastern states of Australia – Queensland, New South Wales, the ACT, Victoria, South Australia and, subsequently, Tasmania – decided to combine their state-level markets into a single 'national' market. The NEM involves four kinds of entities: generators, network service providers, retailers and customers. The generators produce the electrical energy that is ultimately consumed by the customers. The network services providers supply the infrastructure, the 'poles and wires', that carries the energy from the generators to the customers. The retailers buy the energy from the generators and sell it to the customers.

¹⁶⁵ Blumsack et al., 2006: 16.

When the NEM was created, it was believed that generation and retailing were potentially competitive markets. The network services businesses are capital intensive with long-lived assets that would be prohibitively expensive to duplicate. Hence, they were regarded as a natural monopoly and made subject to regulation by the Australian Energy Regulator (AER).¹⁶⁶

Retailers who use the services provided by the network businesses to transport electrical energy from the generators to their customers pay for those services at prices determined by the AER. Since the form of regulation adopted by the AER sets initial prices and a price adjustment mechanism for five years, these prices are relatively stable and known in advance of the periods to which they apply. Thus, for the rest of this chapter, it will be assumed that network costs faced by retailers are reasonably predictable.

Operationally, the networks comprising the NEM are divided into a national transmission network and a set of distribution networks. The transmission network carries energy from the generators to connection points with the various distribution networks. Each distribution network is connected to the transmission network and carries energy from that connection point to the customer, typically over shorter distances than the transmission network and at much lower voltages.¹⁶⁷

4.3.2 Dispatch and settlement

The defining characteristic of electricity that makes it different from almost all other goods is that it is not storable in significant quantities at reasonable cost. Demand for electricity must be met by generating the energy at the instant it is demanded. In Australia we are used to being able to turn on the light, kettle, air conditioning or TV whenever we wish.¹⁶⁸ The entity that ensures that electricity is available whenever it is demanded is the Australian Energy Market Operator (AEMO).

AEMO forecasts demand over five-minute intervals and ensures that just enough generation occurs to meet that demand.¹⁶⁹ The process of instructing generators to produce electricity at a certain rate is called dispatch. AEMO chooses the amount of power to dispatch from each generator by holding a tender whereby generators offer to

¹⁶⁶ The distribution and transmission businesses, the network service providers, serving the ACT are ActewAGL Distribution and TransGrid, respectively.

¹⁶⁷ Some very large customers, such as aluminium smelters, may be connected directly to the transmission network, and a distribution network may be connected to the transmission network at more than one point.

¹⁶⁸ There are, of course, many parts of the world where electricity is rationed, and there are times when, due to planned or unplanned outages, some electricity customers may be left without power. While well beyond the scope of this chapter, there is a trade-off between ensuring supply and the cost of doing so. Much of the debate on creating an efficient energy market revolves around methods for reducing peak demand as that demand is costly to provide.

¹⁶⁹ In addition to the generators dispatched through the process described below, AEMO has contracts with a special set of energy suppliers able to respond very quickly to any departures of demand from forecast occurring within the five-minute interval.

generate a certain quantum of electricity in the forthcoming five-minute interval at a particular price. These prices can vary within the bounds set in the rules that govern the market from minus \$1,000 to plus \$13,100 per MW.¹⁷⁰ The current average price is around \$50 per MW in New South Wales. AEMO chooses and dispatches that combination of generators that minimises the cost of meeting demand, calculated using the prices defined below.

The NEM is divided into regions, with each state member of the NEM constituting a separate region.¹⁷¹ Each region identifies one of the connection points, or nodes, between a distribution network within its boundaries and the transmission network as the regional reference node.¹⁷² The price of power in a region for a particular five-minute interval is the cost of supplying one extra unit of power to the reference node during that interval. Thus, the price is determined by the tender offer price of the last generator AEMO needs to dispatch to meet demand. All other generators receive the same price, regardless of the fact that they would have been prepared to supply at a lower price.¹⁷³

The prices for five-minute intervals are combined in groups of six to yield an average price for each interval of half an hour. This price per half-hour interval is called the spot price and is used to determine the payments that retailers must make to generators through the clearing house provided by AEMO.

Every Friday morning, AEMO bills each retailer for the electricity they have taken from each reference node supplying their customers for each half-hourly period making up the week being billed, using the spot prices for those half-hourly intervals. Every Friday afternoon, AEMO pays the generators for all the electricity they have supplied to the transmission network in the relevant week, using the same prices to calculate the amounts due.¹⁷⁴ The amount collected by AEMO from the retailers in the morning should equal the amount paid to generators in the afternoon.¹⁷⁵

This set of transactions is often referred to as taking place in the wholesale market for electricity. This wholesale market shares the characteristic of being an intermediate market in the passing of a good from its producer to its ultimate consumer with other

¹⁷⁰ More information on the rules that govern the wholesale market can be found at www.aemo.com.au.

¹⁷¹ The ACT is part of the New South Wales region.

¹⁷² The one for New South Wales is in Western Sydney.

¹⁷³ An alternative market model is a discriminatory auction model where each generator that is dispatched in a period receives the price that they bid. Fabra (2006) reviews the two alternative auction models for wholesale electricity markets.

¹⁷⁴ Because energy is lost as electricity travels over the transmission network, AEMO adjusts the price at each node to reflect the amount of electricity that would need to be given up at the reference node to supply an extra unit of electricity at the node in question.

¹⁷⁵ When electricity generated in one region is supplied to a customer in another region, the price paid to the generator may differ from the price charged the retailer. Differences in the overall amounts paid are termed settlement residues. The rights to receive these residues are periodically auctioned by AEMO.

wholesale markets like those for fruit and vegetables, flowers, meat or fish. In many other respects, particularly in the role taken by the retailers in the market, the electricity wholesale market is very different.

4.3.3 Retailing in the National Electricity Market

Once a retailer has signed up a customer, it can be seen that its role in this process is largely passive. AEMO ensures that its customers' demand for electricity is met through the dispatch process, charges the retailer for the electricity its customers have used and pays the generators, on the retailer's behalf, for the electricity they have supplied to the retailer's customers. The retailer, of course, charges its customers for the electricity they have consumed. A critical issue for the retailer, however, is that it supplies its customers at a price fixed by contract in advance and varied infrequently, but pays for electricity at the spot price determined at the time for each half-hour interval. The retailer controls the price at which it supplies but has no control over the quantity of electricity its customers consume or the price which it must pay for that electricity in the wholesale market.

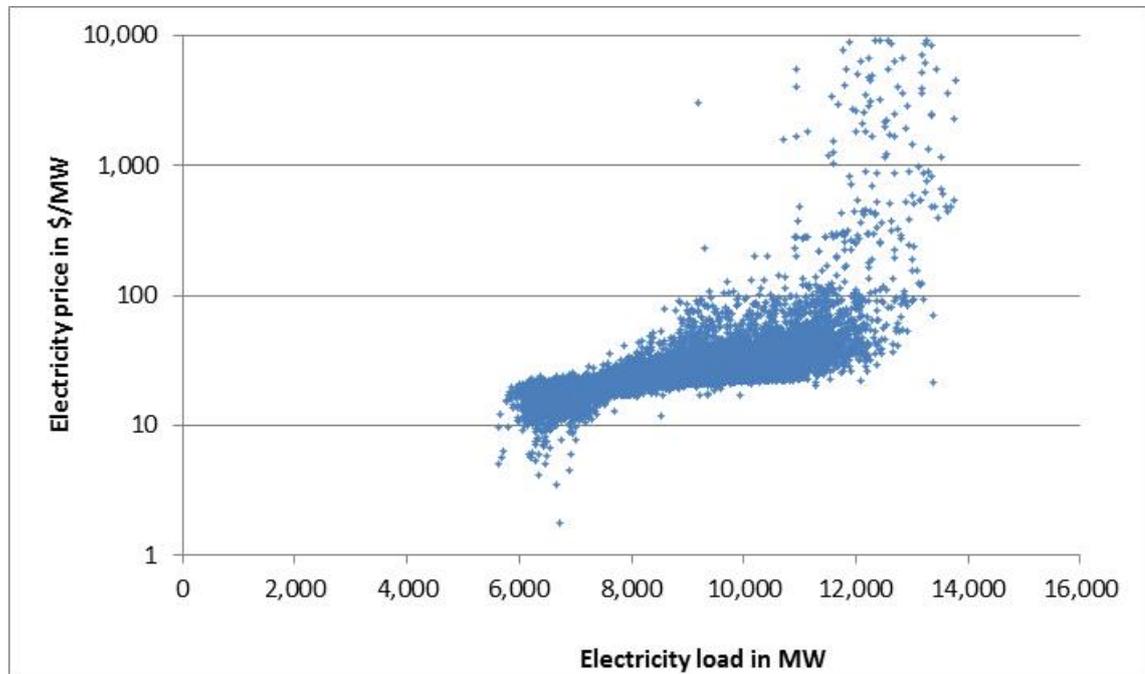
At times of peak consumption, AEMO may need to dispatch all, or nearly all, the generators, including some offering electricity only at very high prices. Hence, the wholesale price may rise precipitously as demand approaches total capacity. This also means that very high spot prices are usually observed at times when the electricity load is highest. To illustrate the variation in prices, Figure 4.1 provides a scatter plot of the half-hourly prices and loads for New South Wales for the financial year 2009–10. This figure shows the wholesale price and load for each half-hour period for an entire year. Note that the price on the vertical axis is measured on a logarithmic scale due to the potential for very high prices relative to the average. Some of the points plotted at a price of \$1 per MW were actually associated with a negative price but have been plotted at \$1 per MW.¹⁷⁶

The figure illustrates the risks that electricity retailers are exposed to in buying electricity in a volatile wholesale market while selling at a fixed price in the retail market. These risks are heightened by the correlation between prices and loads at times when loads are high, prices are also high. If the wholesale price remained near the maximum for several half-hour periods in a week, a retailer who had not taken steps to mitigate these risks could find itself with insufficient revenue from retail sales to meet the cost of the electricity supplied to its customers by the generators.¹⁷⁷

¹⁷⁶ In 2009–10 the maximum price was \$10,000 per MW.

¹⁷⁷ During the development of the NEM, this possibility was a cause of major concern among generators. As a consequence, the rules under which the NEM operates require retailers to deposit funds or provide guarantees to AEMO sufficient to cover any likely liability that they may incur through their customers' taking electricity from the network. A retailer that is unable to meet these requirements will no longer be permitted to operate as an electricity retailer.

Figure 4.1 Half-hourly electricity spot prices and load in New South Wales, 2009–10



Source: AEMO data.

The risks that the retailer confronts as a result of its inability to control the quantity of electricity its customers consume or the wholesale price it must pay for that electricity have led to the development of a suite of financial markets that have grown up around the wholesale electricity market. These provide retailers with a means of managing these risks and support the efficient working of the market. There are well-established markets for electricity futures, options and caps associated with the wholesale market.

A full review of all of the components of the ancillary markets that support the financial side of the market is beyond the scope of this chapter, but some examples can illustrate what is available. Retailers and generators can contract in advance to lock in a price for a fixed profile of electricity. There are fixed-load contracts that do not vary over the 48 half-hour periods in a day, or the retailers and generators can contract for a peak load that locks in a price for a fixed load for just the peak-load hours. Thus, generators receive either their contracted price or the wholesale market price for the electricity that is dispatched from the generator.

From the retailers' perspective there is an additional complication. While they can contract in advance for a fixed load, retailers face loads that vary over time. For example, a retailer that has pre-purchased its average half-hourly load will at times face demand above and below this amount. Thus, a retailer will still face the volatile wholesale price at times.

4.4 Characteristics of an electricity retailing business

4.4.1 What do electricity retailers in the National Electricity Market do?

The functions of retailers within the NEM are quite restricted.¹⁷⁸ In order to continue in business as retailers, they must maintain their licences with the AER and their right to participate in the market operated by AEMO. The first is largely an administrative requirement. The second requires that they maintain balances or guarantees with AEMO sufficient to meet the trading requirements of the NEM.

As we have seen, although retailers are often described as purchasing electricity in the wholesale market, this is entirely a passive activity. They are simply liable for the cost of all the electricity their customers consume. They neither control the amount consumed nor the price they are charged for it by AEMO. As this exposes retailers to significant risks, prudence suggests that retailers should engage in a range of activities designed to ameliorate those risks. For this reason retailers typically adopt hedging strategies of one kind or another.

Retailers are not at all involved in the physical process by which electricity is provided to their customers. The electricity is produced by generators, carried to the local connection node by transmission companies and from there to their customers by the local distributor. The local distributor is also responsible for metering customer consumption of electricity and providing the data to the relevant retailer.

On the sales side, retailers sign up, bill and service customers. The first activity involves retailers promoting themselves to customers in various ways to induce customers to contract with them for the supply of electricity. This could involve advertising their services, direct marketing by telephone, email or house-to-house calls, and other activities designed to raise awareness of their presence in the market or encourage loyalty among their customers. Billing involves processing the metering data provided by the distributor to produce bills for customers and collecting the payments due. Servicing customers involves providing a mechanism to answer questions and queries, perhaps through a call centre.

Retailers also have obligations under various Commonwealth and state or territory climate change programs. At the Commonwealth level the principal obligations arise from the renewable energy target, and require retailers to purchase renewable energy certificates corresponding to certain proportions of the electricity sales.¹⁷⁹ As an associated activity, some retailers also offer ‘greenpower’, electricity that is generated with zero carbon emissions. In the ACT, there is a feed-in tariff scheme that may involve retailers reimbursing customers for energy generated from domestic photo-

¹⁷⁸ The restrictions on their functions arise largely from the rules under which the NEM operates. Some restrictions, for example on their participation in metering, were deliberately, albeit perhaps misguidedly, imposed.

¹⁷⁹ See Chapter 3 for further details.

voltaic installations.¹⁸⁰ There is also an energy efficiency program that requires retailers to undertake certain activities to assist their customers attain higher levels of energy efficiency.¹⁸¹

4.4.2 Costs for an incumbent retailer

Each of the activities engaged in by retailers has an associated cost. The Commission measures these costs for the incumbent retailer on an annual basis in order to construct the cost index on which changes to the regulated retail price of electricity in the ACT are based. The figures for the most recent determination, 2013–14, are shown in Table 4.1. The dollar figures do not purport to measure the actual costs of the incumbent retailer but to move in line with them and to reflect the relative importance of the different costs within the total. If a competition allowance were to be implemented in the ACT, the AEMC recommends that it be added as a separate and identified element in the cost build-up depicted in Table 4.1.

Table 4.1 Incumbent retailer costs, 2013–14

	\$/MWh	Proportion controlled	Proportion uncontrolled
Forward price	39.77		19.9%
Hedging cost	7.96	4.0%	
Carbon-exclusive energy purchase cost	47.73		
Cost of carbon	21.26		10.6%
Carbon-inclusive energy purchase cost	68.99		
LRET and SRES costs	11.66		5.8%
Energy losses	3.91		2.0%
Energy contracting cost	0.82	0.4%	
NEM fees	0.82		0.4%
Total energy purchase cost	86.20		
Retail operating costs	11.43	5.7%	
ACT Energy Efficiency Scheme costs	3.75		1.9%
Total retail costs	15.18		
Network costs	88.29		44.2%
Total energy + retail + network costs	189.67		
Retail margin	10.24	5.1%	
Total cost	199.91	15.2%	84.8%

Source: ICRC, 2013e.

¹⁸⁰ See Chapter 3 for further details.

¹⁸¹ See Chapter 3 for further details.

Table 4.1 also shows the proportion of each cost element in total costs and separates costs that are controllable by the retailer from costs that are not. Some costs are manifestly outside the control of the retailer. These include:

- the base cost of electricity for which the retailer is liable to AEMO;¹⁸²
- the cost of complying with Commonwealth and territory climate change programs;
- costs associated with energy lost in transmission and distribution;
- NEM fees payable to AEMO for operating the wholesale market; and
- the charges for the carriage of electricity bought by its customers over the transmission and local distribution networks.

Costs over which the retailer may have at least some degree of control include:

- hedging costs;
- energy contracting costs;
- retail operating costs; and
- the retail margin.

Applying this breakdown produces the striking result that, in the ACT, only about 15 per cent of a retailer's costs are, in any sense, within its control. It might be argued that hedging costs can only be reduced by assuming greater risk, through more exposure to the volatile spot market, which will lead to increases in costs elsewhere.¹⁸³ The retail margin provides a return on the capital employed in the business. Since retailing is not capital intensive, the scope to make economies in the use of capital are likely to be limited and the return required to be earned will be established in financial markets. If these arguments are accepted, the only place in which significant cost reductions might be achieved is in retail operating costs, and these only account for about 6 per cent of the retailer's costs – not much of a base on which to be achieving significant price reductions.

4.4.3 Impact of competition on costs

The previous section looked at the costs of an incumbent retailer, that is, one facing little or no competition. This section asks whether and how those costs might be affected by the introduction or intensification of competition. We identify two ways in which this might occur:

¹⁸² This is measured by the forward price because most retailers hedge their exposure to the spot market by purchasing forward contracts for electricity in the over-the-counter market or electricity futures on the ASX. Further details of the model used by the Commission to estimate energy purchase costs may be found in Chapter 3.

¹⁸³ The mechanisms by which this may occur are discussed in more detail below.

- Costs of competing for customers would be expected to increase as competition intensifies.
- Increasing the uncertainty of the environment within which a retailer operates may drive up costs in various ways.

Competing for customers

In the conventional textbook presentation of market dynamics, the most common way for one firm to win customers from another is to offer them a better deal, that is, a product of the same quality at a lower price. The effectiveness of such a strategy depends on consumers being aware of the offer and recognising that it gives them an opportunity to improve their welfare. As will be made clear in the discussion in section 4.5 below, the evidence is that these processes work somewhat less than perfectly in the electricity retail market.

In recognition of the fact that winning customers may require more than simply making them a better offer, it has long been recognised that there are costs associated with both winning customers and retaining them. Such costs are commonly referred to as customer acquisition costs (CAC) or, more generally, customer acquisition and retention costs (CARC). Part of the function of the competition allowance is to provide for the recovery of these costs, particularly those that a new entrant to the market will have to bear.

Strategies to win new customers may have several elements. In addition to formulating an attractive offer, they are likely to involve proactively marketing that offer to prospective customers. This may be done through advertising, which may provide information about the offer and attempt to persuade the customer that there are particular advantages to dealing with this particular retailer. More direct sales methods may also be employed, such as phone calls, emails and direct door-to-door sales campaigns. For present purposes, the key characteristic of all these elements of a marketing strategy is that they are costly and that the costs increase with the intensity of the campaign that is being mounted.

Clearly, if a retailer is experiencing an attempt by a rival to win customers in the retailer's market, it is likely to retaliate and attempt to retain its customers and perhaps win over some of its rival's customers. It was noticeable that, for example, in the early days of full retail competition in the ACT, the threat of entry by rival retailers sparked a very strong and effective campaign by the incumbent to retain its customers based on encouraging them to stay loyal to 'the local retailer'.¹⁸⁴

It is clear that, in a market where competition for customers intensifies, it is likely that all retailers' costs of acquiring and retaining customers will rise.

¹⁸⁴ GA Research (2010).

Costs of increased load uncertainty

The notion that competition may increase the riskiness of electricity retailing and hence increase its cost appears to have attracted little attention in the economics literature. There is, however, a vast literature on the impact of uncertainty on market outcomes.¹⁸⁵ The closest model to the discussion in this section is the model in Wilson (1975), which demonstrates that information acquisition by firms that face uncertainty creates economies of scale even when the underlying production technology is assumed to exhibit constant returns to scale.

Competition brings an extra source of risk for a typical electricity retailer due to the characteristics of the market. A typical electricity retailer, hedging in the forward markets, must determine hedging levels before knowing the actual quantity of electricity that its customers will consume in the relevant future period. More intense competition implies that the retailer and its rivals are fighting harder for market share. This must increase the uncertainty about how many customers the retailer will have in the relevant future period. If a rival poaches a sizable number of customers, the amount of electricity consumed by the retailer's remaining customers will be smaller than expected and will diverge from that used for planning and hedging purposes. This will leave the retailer having to dispose of an unexpectedly large quantity of unwanted electricity entitlements on the volatile spot market. Alternatively, if the retailer runs an unexpectedly successful campaign to recruit new customers, it can find itself having to purchase an unexpectedly large quantity of electricity on the volatile spot market.

The increased uncertainty about the volume of electricity that a retailer may be liable to supply, its load, as a result of increased competition might manifest in increased costs in any one or more of three areas:

- increased hedging costs;
- increases in the return the business is required to deliver to its owners; and
- increases in the costs of financing its trading in the wholesale market.¹⁸⁶

In the Commission's model of retailer hedging costs described in Chapter 3, allowance is made for variations in the load profile. The consequence of the kind of increase in uncertainty about a retailer's load profile described above would be to increase the parameters related to the load profile in this model and hence the hedging costs estimated by it.

The increased uncertainty engendered in the revenues and costs of the retailer by increased uncertainty about its load profile will result in increased uncertainty about its profit stream. Confronted by a more uncertain future flow of dividends, the owners of the retailer would be expected to demand a higher mean return. In the cost build-up in

¹⁸⁵ McCall (1971) is an early survey of this literature.

¹⁸⁶ A brief description of each of these is provided below.

Table 4.1, this would be realised as an increase in the retail margin of a retailer subject to intensified competition.

The increased trading in the spot market that a retailer subject to intensified competition is likely to need to engage in will increase the volatility of its cash flows. This will require the retailer to carry larger reserves of working capital or maintain larger lines of credit. Either will increase its costs of doing business.

No matter how a retailer chooses to deal with the increased load uncertainty resulting from the intensification of competition, its costs will rise. Consequently, the average and marginal cost of purchasing electricity from the wholesale market increases in concert with the degree of competition. Another way of thinking about this result is that costs are endogenous to market behaviour or that market structure matters for determining the costs of a typical retail electricity firm.

To see this, consider the following example. Suppose there is a typical retail electricity firm that has a fixed number of customers, 1,000 for example. These customers have a predictable but not fixed demand for electricity that varies randomly with some underlying stochastic process such as daily variation in weather. Alternatively, suppose that the number of customers is unknown, that it could either be 900 or 1,100 with equal probability. This second situation could be brought about by intensified competition whereby some subset of the consumers is now willing to switch retailers.

Now consider the impact of moving from the first to the second outcome. Each of the three cost elements identified above will be under upward pressure. Hedging costs rise as the typical electricity retailer must hedge against the contingency of being subject to the higher load even though the same average load is expected. The greater variation in customer numbers will result in greater variation in profit levels. The typical electricity retailer will have to hold greater reserves to finance the higher level of trading in the spot market that servicing a more uncertain load will require.

4.4.4 Summary

The range of activities undertaken by retailers is limited. Most of the costs incurred by a retailer in supplying electricity to its customers are beyond its control. Consequently, the scope to achieve reductions in costs on a scale that would have a significant impact on prices is also limited.

The electricity market through disaggregation has introduced a level of risk that previously had been managed within the integrated utilities. The dismantling of these utilities coupled with the introduction of full retail competition has introduced two new sources of cost for retailers. Both these sources generate costs that increase as competition intensifies.

Competition between retailers for customers demands the pursuit of marketing strategies that constitute a new source of costs for electricity retailing. The more intense the competition, the more will retailers spend on such marketing activity.

The unique features of the wholesale electricity market and the interaction of retailers with the settlement system expose retailers to significant risks. The retailer is exposed to the total demand of its customers at the relevant half-hour price but knows neither the demand nor the likely spot price. To manage these risks the retailer uses hedging strategies. These risks are amplified, and the costs of hedging increased, in competitive markets where retailers are competing for a largely fixed set of customers.

The implications of the limited scope for retailers to reduce costs and that intensified competition will increase those costs need to be carefully considered in our investigation of whether the introduction of a competition allowance will benefit customers in the retail electricity market in the ACT. The next section advances that investigation by asking what processes of adjustment are likely to be set in train by the introduction of such an allowance.

4.5 Introducing competition – the usual story and its caveats

4.5.1 The usual story

The basic outline of the general argument that there will be benefits from the introduction of competition goes along the following lines. We begin with a market in which a single firm enjoys a statutory monopoly.¹⁸⁷ If the firm is profit maximising, it will be producing that level of output where its marginal cost is equal to its marginal revenue and charging the price that just allows that level of output to be absorbed by the market. As a consequence, the firm will be earning a rate of profit above those available to firms operating in the competitive markets of the economy where firms will only achieve prices equal to marginal cost.¹⁸⁸

Now suppose the statutory restriction on other firms entering the industry is relaxed. The higher rate of profit available in the now unrestricted market will tempt other firms to enter. As long as the rate of profit remains above that available elsewhere, firms will continue to enter until price has fallen to equality with marginal cost. Thus the first benefit of competition identified by the AEMC is achieved.

Firms can enter the market in one of two basic ways: produce some output and offer it for sale at whatever the market will bear or offer to provide output at a lower price than the incumbent firm is currently charging and supply whatever is demanded. The former, quantity competition, was that posited by Antoine Augustin Cournot in his

¹⁸⁷ Statutory monopoly is a useful starting point because it provides a clear rationale for the monopoly being a monopoly and makes its removal an economically uncomplicated process.

¹⁸⁸ If the demand curve slopes down, marginal revenue will be less than price, which is equal to average revenue. Since the monopolist produces where marginal cost equals marginal revenue, it will be achieving a price greater than marginal cost. Marginal cost must, of course, cross marginal revenue from below.

classic analysis. The latter, price competition, was that posited by Joseph Louis François Bertrand in his.

In Bertrand's analysis it requires only one other firm to enter the market to bring price down to marginal cost, assuming that the incumbent adopts a price-competitive response to the new entrant. In Cournot's analysis, price asymptotically approaches marginal cost as the number of quantity-competitive new entrants increases, again assuming that the incumbent adopts the same competitive strategy as the new entrants.¹⁸⁹

In the new competitive equilibrium that results from removing the restriction on entry to the market, there is a continuing incentive for firms to reduce costs. A firm that achieves cost reductions can either enjoy a higher rate of profit at its chosen level of output or increase its market share by offering a lower price, or some combination of the two. This achieves the second benefit identified by the AEMC.

The third and fourth benefits identified by the AEMC follow from extending the idea of competition on price or quantity to other attributes of the good or service being sold in the market.

Kreps and Scheinkman (1983) resolved the conflicting stories of the Cournot and Bertrand models of oligopoly. One of the common criticisms of the Cournot model of oligopoly is that the firms are choosing quantity of output and not price as their strategic choice when competing in the market. The Bertrand model has firms choosing price, but it is often criticised because it assumes that the firms can meet the entire market and are not quantity constrained in any way. The Kreps-Scheinkman model of oligopoly addresses both of these criticisms by assuming that firms first choose their capacity and then compete on price. In their model the resulting equilibrium is identical to the standard Cournot model equilibrium. That is, firms choose capacities equal to the Cournot equilibrium quantities and then set prices equal to the resulting Cournot equilibrium price. Thus, the Kreps-Scheinkman model exhibits the relationship found in the Cournot model between number of firms and price equal to marginal cost.

While this general argument may be broadly applicable in a wide range of markets, its internal logic depends on a number of assumptions that might not be satisfied in all markets. For example, if the monopolist has a markedly superior technology for producing the good such that its profit-maximising monopoly price is less than the minimum marginal cost of any potential competitor, there will be no incentive for any competitor to enter the market when the statutory restriction on entry is removed. There are clearly a large number of such potential exceptions to the general argument, but our particular interest here is in those that might arise in the retail electricity market. Based on our discussion of the characteristics of the retail electricity market and the electricity retailing business in the last two sections, we identify the following:

¹⁸⁹ For a modern exposition of these classic nineteenth-century analyses, see Mas-Colell et al. (1995).

- costs of achieving or maintaining a share of the market that increase with the extent of that activity undertaken by competitor firms;
- costs of entry to the market;
- costs increasing with the intensity of competition for market share; and
- failure or slowness of consumers to respond to superior market offers (consumer irrationality).

4.5.2 Costs of achieving or maintaining market share

As noted earlier, it is widely accepted that there are significant costs attached to acquiring and retaining customers in a competitive retail electricity market. Moreover, as was demonstrated earlier, these costs will increase with the intensity of competition.

To see how this complicates the usual story, consider a situation like that presently applying in the ACT. Suppose we have a retail electricity market in which an incumbent retailer is so dominant that its customer acquisition and retention costs are negligible. That is, there is no potential competitor that constitutes a credible threat to its current market dominance. Now suppose, from a situation where no allowance has been provided for customer acquisition and retention costs, a competition allowance is introduced into the determination of regulated electricity prices. Further suppose that the allowance is sufficient to tempt some competitor retailers to enter the market and try to take customers away from the incumbent retailer.¹⁹⁰

Entry of the competitors will spark some response from the incumbent, and a complex series of dynamic interactions seems likely to occur.¹⁹¹ Rather than attempt the daunting task of tracking this set of interactions, let us suppose that they ultimately give rise to a situation in which market shares are broadly stable but spread sufficient widely for competition to be regarded as effective. At this point, regulation has ceased to be relevant and, according to COAG guidelines, should be removed. Let us now ask what can be said about prices and costs in this final situation compared with the starting point.

Unless a situation analogous to an implicit price cartel has developed among the retailers, in which case it would clearly be incorrect to conclude that competition was effective, all will be incurring some customer acquisition and retention costs as a result of continuing jockeying for market share. Since the incumbent retailer is now incurring customer acquisition and retention costs whereas it was not previously, other things

¹⁹⁰ If, as in most cases it is, the regulated price is a maximum price, this assumes that the incumbent retailer puts its prices up by the full amount of the increase in the regulated price brought about by the introduction of the competition allowance. An alternative that the incumbent retailer might find attractive is to put its prices up by a smaller amount so that they remain at a level that makes it unattractive for competitors to enter the market.

¹⁹¹ As previously mentioned, the last time a sequence of events like this began to unfold in the ACT, it was cut short by a very successful counter-campaign by the incumbent that caused the potential competitor retailers to suspend their marketing campaigns.

equal, its costs will have risen. At the same time, the pressures of competition may have induced retailers to reduce other costs. Whether efficient costs are higher or lower than in the initial situation turns on whether the increase in customer acquisition and retention costs is larger or smaller than the reduction that has been achieved in other costs. Whether prices are higher or lower depends also on whether any net increase in costs exceeds the gap between regulated prices and efficient costs that applied in the initial situation.

The decision whether to introduce a competition allowance in the ACT turns on judgements about these and related comparisons. In making these comparisons, it will also be necessary to assess how long the transition from the initial to the final situation may take and how long prices will need to be held above the level that would have applied had a competition allowance not been introduced. Nothing in the foregoing guarantees that equilibrium of the kind depicted there will come about as a result of introducing a competition allowance.

4.5.3 Costs of entry

In the usual story there are no costs to entering the market. Any opportunity to increase profit is treated as a sufficient motive for a supplier to enter a market. In most markets, however, there are entry costs. It has been noted above that the acquisition of customers can be a costly activity. A firm may be required to fulfil certain conditions in order to be able to operate in the market. As has been explained, electricity retailers are required to be licensed by the AER and to maintain deposits or guarantees with AEMO. These are national requirements, and any retailer operating anywhere in the NEM jurisdictions will already have fulfilled them. There may, however, be requirements that are specific to jurisdictions. The cost of fulfilling such requirements may deter a retailer operating in one jurisdiction from entering the market in another jurisdiction.

Since the acquisition of customers may take time, a supplier entering a new market may not make a profit from its operations immediately. If a supplier is to enter a new market, it must believe that it can recoup the costs of entry, including any losses sustained in acquiring a profitable position in the market, through its continuing operations. A supplier contemplating such a market entry cannot be certain, for example, of the strength of likely response from an incumbent supplier to its attempts to win their customers. The presence of uncertainties of this kind means that a supplier may need a substantial inducement in terms of expected profit opportunity before it will enter a new market. This may mean that an incumbent monopoly supplier may be able to charge a price above efficient cost even though there are no restrictions on market entry.

In the economics literature, some costs of entry have been identified as barriers to entry. McAfee et al. (2004) proposed a definition of an economic barrier to entry:

An economic barrier to entry is a cost that must be incurred by a new entrant and that incumbents do not or have not had to incur.¹⁹²

Under this definition the costs of setting up the administrative programs to deal with ACT-specific rules and regulations do not qualify as a barrier to entry as the incumbent has had to incur these costs. However, there is a distinction in this definition of barriers to entry between short-run and long-run effects. In the long run these costs will be sunk for all entrants and hence are not a barrier to entry. However, sunk costs may delay entry in the short run if there is uncertainty about the future benefits of entry. In this case not entering has an option value as firms can delay their entry and wait to make the decision in the future. McAfee et al. call this an ancillary barrier to entry if it reinforces other barriers to entry but does not on its own create a barrier to entry. Rather than become embroiled in a debate over semantics, we consider all costs of entry in a similar fashion, focusing on the scale and duration of the cost that any new entrant may need to bear to enter the market.

4.5.4 Costs being related to the intensity of competitive activity

In the discussion of the cost structure of an electricity retailer in section 3, it was noted that there were significant elements of cost, including customer acquisition and retention costs and hedging costs, that could be expected to increase with the intensity of competition. In other words, an electricity retailer's costs are linked to the level of competition. This is a violation of one of the basic assumptions on which the usual story rests, namely that a supplier's costs depend only on the quantity of the product that it supplies. As has been suggested above, when a retailer's costs depend not only on how intensely it competes but also on the strength of any competitive response from rivals in the market, it is likely to give rise to complex strategic behaviour by retailers. This will involve them considering the likely reactions of their rivals to any initiative they may take, as well as the immediate consequences of the initiative itself. Market dynamics in such situations can rapidly become complex and outcomes difficult to predict. Empirical evidence from other markets where this link between costs and the intensity of competition is also present is, therefore, of interest.

Neven et al. (2006) construct a theoretical model and conduct an empirical study of the airline industry in Europe using data for eight airlines over the period 1976–94. What makes their study interesting and relevant to the analysis in this chapter is that they assume in their paper that costs are endogenous to firm and market behaviour. The standard measure of a firm or market's performance is the price–cost margin, which is the difference between price and marginal cost divided by the price.¹⁹³ In a competitive market the price–cost margin should be equal to zero, whereas the price–cost margin should be highest for a monopolist. It is usually assumed that costs are exogenous to the behaviour of the firms; hence, the price–cost margin is a measure of the ability of

¹⁹² McAfee et al., 2004: 463.

¹⁹³ This is also known as the Lerner index. See Lerner (1934).

firms to raise prices above marginal cost. Therefore, the price–cost margin is a measure of market power.

Neven et al. find that the price–cost margin for the European airline industry at that time was consistent with the oligopoly equilibrium based on the number of firms in the market and their assumed firm behaviour. However, they also found that the prices were consistent with monopoly pricing. In their model they allowed for labour costs to be endogenous, and they found that wage bargains had bid up wages so that equilibrium prices for the oligopoly airline market were consistent with monopoly prices. This might indicate that increasing customer acquisition and retention costs, for example, could play a similar role in the retail electricity market.

4.5.5 Consumer irrationality

Consumers play an important, but often overlooked, role in ensuring that the introduction of competition follows the usual story and produces the benefits that it promises. Consumer rationality is often used as a portmanteau term that encompasses several distinct assumptions. First is the assumption that consumers possess full information about the market, including all offers currently available from retailers and the implications of accepting each of those offers for their welfare. In the case of electricity, for example, this would involve not only knowing the different tariff structures each retailer is offering, but also being able to calculate accurately the electricity bill that would result from applying that tariff to the customer’s pattern of electricity consumption. Second is the assumption that the consumer always acts in their own best interests.¹⁹⁴ In the above example, this would imply that the customer purchased her electricity from the retailer from whom she would receive the smallest bill.

There is a sizable literature in economics that considers imperfections in the behaviour of consumers at both the theoretical and empirical level. Before surveying this, it is useful to consider a simple version of the Bertrand model discussed earlier to gain some insight into the marked effects lack of consumer rationality can have on the market dynamics underpinning the usual story.

A simple model

Consider a market populated by two identical firms and n identical consumers. Suppose each firm has constant unit costs of producing the product sold in this market equal to $\$c$ and that each consumer consumes one unit of the product if the price is no more than $\$1$ per unit and none otherwise. Unit cost, $\$c$, is assumed to be less than the consumer’s reservation price of $\$1$ per unit. If either firm charges a price in excess of $\$c$ per unit, the other firm has an incentive to undercut it and gain market share. Thus competition between the two firms will drive the price down to $\$c$ per unit. This is the

¹⁹⁴ On a strict definition, consumer rationality would imply only this second assumption.

classic Bertrand result that it takes only two firms operating in the market to produce a price equal to marginal cost.

Now suppose that half the consumers, $n/2$, rather than checking prices simply toss a coin to decide which firm to purchase from. Consequently each firm gets half of these “irrational” customers on average, $n/4$, provided only that it charges less than \$1 per unit. The profit made from these customers is higher, the higher is the price charged up to \$1 per unit. Suppose one firm decides to maximise the profit it makes from its share of the irrational customers by charging a price of exactly \$1 per unit.

Now consider the options open to the second firm. It could also charge a price of \$1 per unit. Confronted with identical prices being charged by each firm, the rational customers might also resort to coin tossing to determine who to buy from. In this case, each firm will gain half the rational customers on average. If, however, the second firm charges a price just a little less than its rival, all the rational customers would buy from it. It will make a smaller profit from the irrational customers by charging a lower price than \$1 per unit, but this will be more than offset by gaining the purchases of the half of the rational consumers previously purchasing from the first firm.

Confronted by this pricing strategy, the first firm can retaliate by undercutting the second firm, dropping its price below \$1 per unit by just a little bit more than the second firm. Again the loss of profit from the irrational consumers will be more than offset by gaining the purchases of all the rational consumers.

At first blush, it looks as though we are headed to a price of $\$c$ per unit as in the case of all consumers being rational. Suppose, however, that we have reached a situation where the second firm is charging a price equal to $\$(1 + 2c)/3$ per unit, which exceeds marginal cost. At this price, it is making a profit per customer of $\$(1 - c)/3$ and supplying three quarters of the market (all the rational customers and half the irrational customers). Its profits, therefore, are $\$n(1 - c)/4$. If the first firm were to revert to charging a price of \$1 per unit and give up chasing the rational consumers, it would make a profit per irrational customer of $\$(1 - c)$ and be supplying a quarter of the market (half the irrational customers). Its profits, therefore, would also be $\$n(1 - c)/4$. If, alternatively, it undercuts the second firm, it will make a smaller profit than the second firm is currently making and hence a smaller profit than it could make by charging \$1 per unit. Charging \$1 per unit is, therefore, the first firm’s best response to the second firm charging $\$(1 + 2c)/3$ per unit.

With the first firm deciding to charge \$1 per unit, the second firm is back in the position it was at the outset. Its best response is, as before, to set its price at just less than the first firm is charging. This allows it to keep all the rational customers and make a larger profit on every sale. Again as before, the first firm’s best response is now to undercut the second firm, thereby gaining the rational customers for only a small reduction in its profit on each sale. This process of successive undercutting will continue until one of the firms again reaches the price of $\$(1 + 2c)/3$ per unit when the

other firm will revert to a price of \$1 per unit. Absent any other factor, this cycle will repeat itself indefinitely.¹⁹⁵

This situation would be characterised by a high level of what is often called “churn” with large numbers of customers frequently moving from one firm to the other. Churn is sometimes used as a measure of the competitiveness of a market. By this measure this market would be judged highly competitive in spite of only having two firms. In terms of price outcomes for customers, however, the situation does not deliver the gains promised by the usual story. No customer ever pays less than $\$(1 + 2c)/3$ per unit and this price is only offered at one point in this endlessly repeating cycle. That means the price always exceeds marginal cost of \$c per unit and sometimes is close to the monopoly price of \$1 per unit.

It can be demonstrated that a similar result hold for any proportion of the market exhibiting irrational behaviour of this kind. As the proportion of irrational customers increases, the floor below which the price never falls increases. This is because the smaller the proportion of rational customers, the smaller is the gain from pursuing their custom and the higher the price one firm can charge before tempting the other to do so. When all customers are irrational, there are no rational customers to chase, and both firms charge the monopoly price of \$1 per unit. When the proportion of irrational customers is small, the floor price is close to marginal cost at \$c per unit. That is, a small amount of irrationality in the market causes churn and prices to be significantly above marginal cost for significant periods.

This simple example demonstrates how readily simple departures from complete “rationality” by consumers can disrupt the market dynamics underpinning the usual story.

Consumer behaviour that may superficially appear to be irrational can sometimes be explained by a deeper investigation into the circumstance in which the consumer is making her decision. Causes of apparently irrational behaviour can include imperfect information, search costs, switching costs and brand loyalty.

Imperfect information

In a complex market such as telecommunications with a myriad of tariff options being offered by retailers, consumers may have difficulty correctly evaluating the expected cost of each of the tariffs. Computational complexity may be a prime reason that there is the appearance of irrationality on the part of consumers in that market. It may be the case that the retail electricity market will follow the market for telecommunications services and some consumers will be faced with such complex choices that they make decisions that do not appear to be in their best interests. A brief perusal of the new

¹⁹⁵ In game theoretic terms, this simple example does not have a pure strategy Nash equilibrium but does have a mixed strategy Nash equilibrium.

AER website, www.energymadeeasy.gov.au, will illustrate how complex retail offers for electricity are becoming.

Imperfect information can also be used to explain why firms may wish to advertise.¹⁹⁶ If consumers have imperfect information about which firms are in the market, firms may advertise to inform consumers of their availability even when advertising is costly. Butters (1977) demonstrates that in a market for a homogenous good with imperfect information and costly advertising, equilibriums with price dispersion, similar to that in the simple example above, can occur.

In retail electricity markets where there are significant amounts of competition as measured by consumer switching, such as the market in Victoria, price dispersion continues to be evident. Imperfect information can explain this outcome. This is evidence that some consumers are paying more than the efficient price.¹⁹⁷ That is, the outcome promised by the usual story has not materialised.

Search costs

A variant of the case of imperfect information occurs when the information that consumers need is available but they have to search for it. This search activity is costly, requiring the consumer to commit time and perhaps other resources to the activity. Search models are commonly used to explain how prices can vary for a good that is otherwise homogeneous, contrasting with the single price that emerges from the usual story. Building on the original research of Stigler (1961) and Diamond (1971), it has been shown that prices can vary in equilibrium when consumers face a costly search to discover which firm offers which price. Burdett and Judd (1983) demonstrate that price dispersion can exist and be long-lasting even when all consumers are identical and all firms are identical, but consumers have imperfect information.

Switching costs

Switching costs occur when consumers who are currently purchasing a product from one supplier incur a cost to switch to another supplier. For example, if consumers perceive that there is time involved in switching electricity retailers, they will only switch if the gain from switching to a lower-price firm is expected to exceed the value of the time that must be spent to do so. If all consumers have switching costs, prices will diverge from efficient cost in equilibrium.¹⁹⁸ When switching telephone companies involved losing the old telephone number, some consumers may have been unwilling to bear the inconvenience costs such a switch would have entailed. The introduction of mandatory number portability for mobile phones is considered to have facilitated switching mobile phone carriers.

¹⁹⁶ Advertising in this sense is not to persuade consumers to purchase or to differentiate a firm's product from its competitor's product but merely to provide information about prices and availability.

¹⁹⁷ It could also be that some retailers are charging less than the efficient price, but such behavior is unsustainable and cannot explain the persistence of price dispersion.

¹⁹⁸ See Klemperer (1995).

Brand loyalty

Brand loyalty can deter a consumer from switching suppliers even when there are no switching costs. Brand loyalty can arise from consumer habit, for example.¹⁹⁹ It can also arise from a perception that a product or supplier has qualities seen as desirable that others do not, being locally produced for example. Brand loyalty is useful for explaining why firms with market power can continue to maintain this power over time even when faced with competition. If consumers are brand loyal then pre-existing market share is an asset and price dispersion can persist.²⁰⁰

Evidence

Given that full electricity deregulation has only occurred in the past few years in Australia, there is scant evidence about consumer rationality to be gleaned domestically. There have, however, been several studies of consumer behaviour in retail electricity markets in the United Kingdom. The role of consumer choice in the telecommunications market has also been studied.

If consumers have imperfect information and search is costly, it is possible that there will be price dispersion in equilibrium as was discussed above. Consequently, consumers who search may accept a price offer greater than the minimum price offer in the market. They do so because the cost of further searching exceeds the expected benefit of discovering a better offer. Thus, some consumers will rationally accept an offer that is worse than the best that they could obtain. An outcome that is not rational, however, is a consumer switching to another electricity retailer and paying more. Wilson and Waddams Price (2010) report on two studies in the United Kingdom of electricity consumers who switched from one retailer to another. While they find results consistent with search models, such as some consumers settling for prices above the minimum available price, the surprising result is that a sizeable number of consumers faced a higher electricity bill as a result of switching. In one study 20 per cent of consumers were worse off after switching electricity retailers. Recall the insight above that it only takes a few irrational consumers to move prices away from efficient cost.

There can be several reasons why consumers may make a choice that makes them worse off. One potential reason, which is termed mis-selling, is that consumers may be pressured to switch by salespeople. Another potential reason is that customers are unsure about their future electricity demand. Wilson and Waddams Price test for mis-selling and for the inability of consumers to properly gauge their expected electricity consumption but reject both of these potential explanations. In the end they can only attribute the adverse outcomes to decision error.

¹⁹⁹ See Wernerfelt (1991) and Klemperer (1995).

²⁰⁰ See Wernerfelt (1991).

4.5.6 Summary

This section has identified a number of factors that may call into question the relevance of the usual story to the retail electricity market. If we cannot rely on the usual story in determining whether introducing a competition allowance would benefit the electricity consumers of the ACT, a wider range of evidence must be marshalled in order to reach a conclusion. This task is undertaken in the next section.

4.6 Introducing a competition allowance in the ACT

4.6.1 Methodology

As we have seen, the market dynamics likely to be seen in a retail electricity market adjusting to the introduction of a competition allowance are going to be much more complex than those underpinning the usual story and not amenable to a general analytic approach. For similar reasons, direct attempts to quantify the costs and benefits of the introduction of a competition allowance are unlikely to be successful. This situation is similar to that confronting a competition authority in dealing with a proposed merger. In that case the issue is often whether the merger is or is not in the public interest. Here, based on the objective identified by the AEMC, our task is to determine whether the introduction of a competition allowance is in the long-term interests of the electricity consumers of the ACT.

The standard approach in merger analysis is to apply what is usually called ‘the with and without test’. The test is performed by comparing the situation judged likely to obtain if the merger goes ahead, ‘the with case’, against the situation judged likely to obtain if the merger does not proceed, ‘the without case’.²⁰¹ In making the judgements on which the results of the test hinge, the competition authority will take account of all the available economic evidence, both theoretical and empirical, bearing on the matters relevant to the merger. Thus, analysis of the with case evaluates the likely effect the merger will have on prices and efficiency as well as any impacts it may have on future entry of potential competitors or the likelihood of future collusion. The without case evaluates the market as it currently stands and attempts to chart its likely future evolution.

We intend to adopt a similar approach here. The with case corresponds to the introduction of a competition allowance in the ACT with the objective of ultimately being able to remove the regulated price. The without case corresponds to maintaining the present policy of requiring the incumbent retailer to offer a tariff to small customers, the regulated tariff, that is no greater than a maximum set by the Commission.²⁰² It should be noted that in the without case the incumbent retailer is free

²⁰¹ The Australian Competition and Consumer Commission's merger guidelines describe its with and without test. See ACCC, 2008: 13.

²⁰² Small customers are those that consume less than 100 MWh per year.

to offer whatever other tariffs it pleases and in both cases other retailers are free to enter the market at any time.

In order to proceed with this approach, we first need to clarify some issues in relation to the interpretation of the objective, particularly the meaning to be ascribed to the phrase ‘long-term interests’. This is done in the balance of this section. We then assemble some useful background information about the retail electricity market in the ACT to provide context for our analysis. We then consider the without case, maintenance of the status quo, having particular regard to the dangers that the AEMC and others have identified in prolonged regulation of a market. We then consider the with case and attempt to chart the possible evolutions of the ACT retail electricity market following the introduction of a competition allowance.

First we must consider the phrase ‘long-term interests’. We must decide how to assess the interests of the ACT community in the context of this analysis and what interpretation should be placed on the qualifier ‘long term’.

Since the measure in question, introduction of a competition allowance, affects only a small component of the lives and welfare of the ACT community, we are justified in focusing on a narrow component of that welfare, namely that likely to be most directly affected by the measure. That, of course, is the price of electricity, particularly the price of electricity to small customers. We should also have regard to maintaining the market-based provision of electricity retailing services to the ACT. Although the NEM rules include the possibility of appointing a retailer of last resort if necessary, this is not an outcome likely to enhance the welfare of the ACT community.

‘Long term’ could be interpreted in a range of ways. When economists speak of the long term, they usually have in mind some point in the, possibly far, future. To adopt this interpretation would lead to considering only the welfare of some distant descendants of the present community of the ACT. Although in some discussions this seems to be the interpretation given, the Commission is of the view that common sense and the statutory framework within which it operates weigh against adopting such an interpretation. The Commission will instead adopt an interpretation that recognises that a measure might reduce welfare in the immediate future but confer benefits at some later point. In recognising this possibility, the Commission will, however, expect that the benefits of the measure should outweigh its costs, where more distant costs and benefits are given less weight in the assessment than those accruing earlier.

The very nature of the process that the introduction of a competition allowance is supposed to set in train is that it is extended in time and that the occurrence of costs precedes the accrual of benefits. To quote the AEMC:

While it is important for the development of competition that a regulated price is high enough to allow new entrants to compete, the regulated price essentially provides an upper limit on prices. Typically, competitors will price below this regulated price, and so customers in a competitive market will have a choice of market prices that are lower.

Over time, competition means retailers will find ways to reduce costs and prices below the initial efficient cost level of the incumbent.²⁰³

In assessing this process an appreciation of the speed with which costs are replaced by benefits as well as the relative magnitude of each will be important. The faster this occurs the more favourable the assessment of the competition allowance will be.

4.6.2 ACT electricity market

Background

In Australia, retail prices were effectively regulated before the market was restructured given that each state operated its own fully integrated and state-owned electricity business.²⁰⁴ Restructuring the market by separating the integrated businesses into wholesale, network and retail businesses still meant that retail prices were set by the government or by newly created independent regulatory agencies.²⁰⁵

As competition was brought in, it was the large consumers of electricity who were first given the option of choosing their own electricity supplier. Over time and at different rates the five states and the ACT in the National Electricity Market have allowed full-retail contestability. As discussed in Chapter 1, Victoria was the first state to remove all price controls in 2009 and South Australia followed suit in 2012.²⁰⁶ The ACT Government has considered but has not yet removed full price control for small consumers in the ACT.

As noted earlier, there may be costs that a new entrant to the ACT retail market will have to bear that they would not have to bear entering another retail market in the NEM. Some of these costs relate to the need to set up the internal processes to deal with ACT Government regulations and requirements that differ from those of the other states in the National Electricity Market. Others relate to the unusual nature of the relationship between the incumbent retailer and its customers. In the ACT the impact of these costs may be magnified by the small size of the market because of the inability of a new entrant to spread these costs over large numbers of customers as is possible in other jurisdictions in the National Electricity Market.

The National Energy Customer Framework that was negotiated among jurisdictions within the National Electricity Market and commenced on 1 July 2012 is designed to harmonise retail market conditions across jurisdictions. For example, it makes a

²⁰³ AEMC, 2013: 19.

²⁰⁴ Regulation at that time was not performed by independent regulators because prices were set directly by the relevant government.

²⁰⁵ The Independent Competition and Regulatory Commission was formed in 1997.

²⁰⁶ The Queensland Government has announced its intention to remove price regulation in South East Queensland from 1 July 2015 subject to certain competition and administrative preconditions being satisfied at that time. New South Wales and Tasmania have not made any announcements about moving to full price deregulation.

national regulator, the Australian Energy Regulator, the body that licenses electricity retailers and regulates non-price issues. There remain, however, jurisdictional requirements that are specific to operating in the ACT electricity retail market.

Two ACT Government policies are particularly worth noting. These are the feed-in tariff scheme and the energy efficiency scheme. These schemes are designed to meet environmental and social goals determined by ACT Government policy.

The *Electricity Feed-in (Renewable Energy Premium) Act 2008* set up the scheme under which households and businesses could install solar roof-top panels to generate renewable energy which is fed into the distribution network. The scheme determined the rate at which consumers who installed photovoltaic panels were to be compensated for the electricity generated. These rates were guaranteed in nominal terms for 20 years under the legislation; however, there are multiple rates depending on the year of installation and rated capacity of the photovoltaic panels. The administration of the scheme is ACT specific. Thus, a potential entrant would need to set up the administrative systems to allow it to process the feed-in tariff component of retail consumers' bills. It is not envisaged that these costs would be high, but these are costs that a potential entrant would have to incur. ActewAGL Retail has already incurred these costs.

The *Energy Efficiency (Cost of Living) Improvement Act 2012* requires energy retailers to either undertake energy efficiency programs on behalf of their customers or pay a fee per tonne of carbon emitted for electricity sold in the ACT. Again, this is an ACT-specific scheme. The costs incurred by new entrants in the market are set so that they are roughly the same as those costs borne by ActewAGL Retail. There may, however, be administrative costs involved in participating that potential entrants would need to expend even if they sold no electricity in the ACT.

Another entry cost that a new entrant to the ACT market may need to bear is the cost of overcoming any brand loyalty that the ACT electricity customers feel towards the incumbent retailer, ActewAGL Retail. Brand loyalty is often mentioned as a barrier to entry in studies of the retail electricity markets such as the AEMC's review of competition performed in 2011. In its submission to the AEMC competition review, TRUenergy stated that:

It considered that the 'marketing and branding of Actew/AGL represents the most significant issue affecting competition in the retail market in the ACT...'²⁰⁷

ActewAGL (both Retail and Distribution) has a significant and long-term relationship with the ACT community and is part owned by the ACT Government.²⁰⁸ This

²⁰⁷ AEMC, 2011: 21.

²⁰⁸ It could be argued that many consumers do not appreciate the distinction between ActewAGL Retail and ActewAGL Distribution (or even ACTEW) and as such advertisements for ActewAGL without the qualifying Retail or Distribution further muddy this distinction and reinforce the level of brand loyalty.

relationship includes sponsorship and support for many events and organisations in the ACT that keep the name ActewAGL prominent in the community. There is evidence that many electricity consumers that have a long history of receiving electricity services from ActewAGL because of either the public ownership or the prominent community profile exhibit brand loyalty. For example, EnergyAustralia made a concerted push to enter the ACT market in 2007 and could capture only a small portion of the residential and small business retail electricity market.

If the level of brand loyalty for ActewAGL in general is high, this implies that ActewAGL Retail under retail competition without a regulated retail price will be able to raise prices higher than it could without brand loyalty and still maintain its dominant market share. The small size of the market and any ACT-specific costs, while not on their own barriers to entry, reinforce the brand loyalty barrier.

Current state of the ACT market

The ACT retail electricity market is the smallest in the NEM in terms of customer numbers and energy sales. In terms of line length only, the CitiPower distribution network in Melbourne is shorter. ACT electricity consumers enjoy the best level of service in terms of the lowest number of outages per customer and the least number of minutes of outage per customer.²⁰⁹

Unlike other states and territories, the ACT relies almost entirely on electricity generated outside its border. Electricity is transported to the ACT by the New South Wales transmission network operator TransGrid. Within the ACT electricity is distributed by ActewAGL Distribution, which holds the territory's only electricity distribution network licence. Like other distributors in the NEM, ActewAGL's charges are regulated by the Australian Energy Regulator.

As noted above, the ACT retail electricity market has been contestable since 1 July 2003. Since that time ActewAGL Retail has maintained its market dominance in the small customer (residential and non-residential) segment of the electricity market. Two factors are likely to have strongly influenced ActewAGL's dominance. First, ActewAGL was the incumbent retailer when the market was opened to competition. Second, ActewAGL was required by a condition of its licence to maintain a default contract for customers who did not wish to enter into a market contract for their electricity supply. These customers were called franchise customers. The Commission approved the tariffs which were included in the standard contract for franchise customers. As noted above, these arrangements have now been superseded by the introduction of the National Electricity Customer Framework.²¹⁰

²⁰⁹ AER (2012).

²¹⁰ Under NECF, all retailers are required to maintain standing offer tariffs. These are tariffs that the customer can move onto or off of without restriction. Retailers also offer contract tariffs that require that the customer enter into a contract with the retailer. In jurisdictions that have retained some price regulation, it is the standing offer tariff or tariffs of a nominated retailer that are subject to regulation.

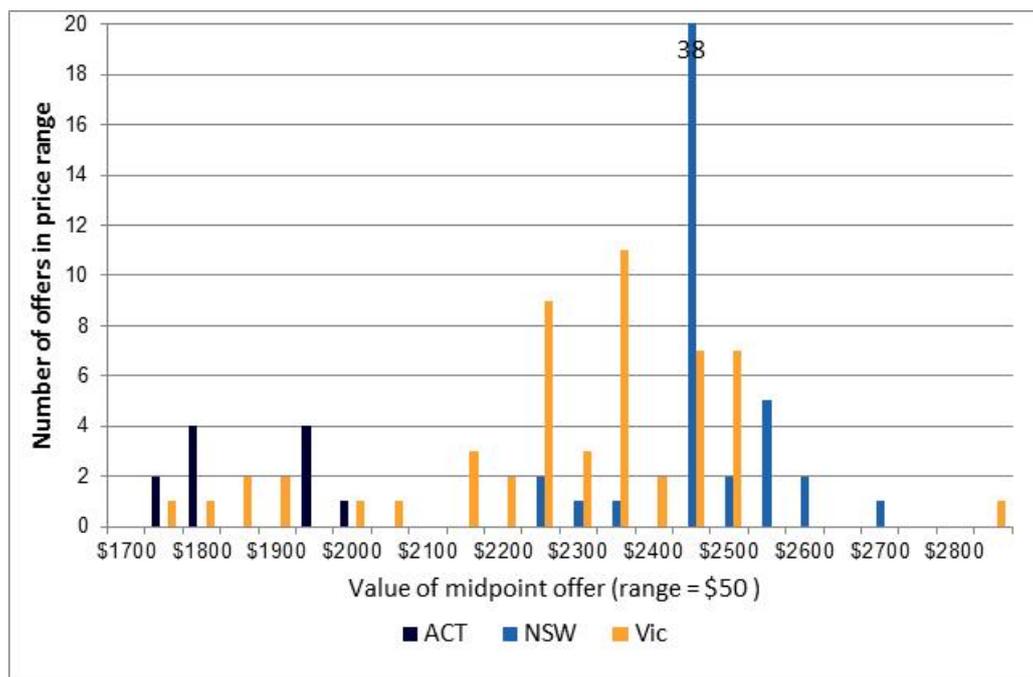
The fact that the ACT retail electricity market is highly concentrated is not of itself surprising. As the AER notes:

Three or fewer retailers account for more than 90 per cent of electricity market share in four of the six jurisdictions.²¹¹

The AER goes on to note that three energy retailers – AGL Energy, Origin Energy and Energy Australia – supply 77 per cent of small electricity customers in the NEM. Each of these retailers is licensed to operate in the ACT, and they each have a small number of customers. In the ACT, however, these three majors service less than 3 per cent of small customers.²¹²

Figure 4.2 and Figure 4.3 show the range of offers available to residential electricity consumers in the ACT, Sydney and Melbourne. To ensure comparability, the comparison uses an annual electricity load of 7,700kWh. Offers available are sourced from the Energy Made Easy website (ACT and Sydney) and the My Power Planner website (Melbourne).

Figure 4.2 ACT, Sydney and Melbourne retail electricity provider offers for single or declining block tariff plans



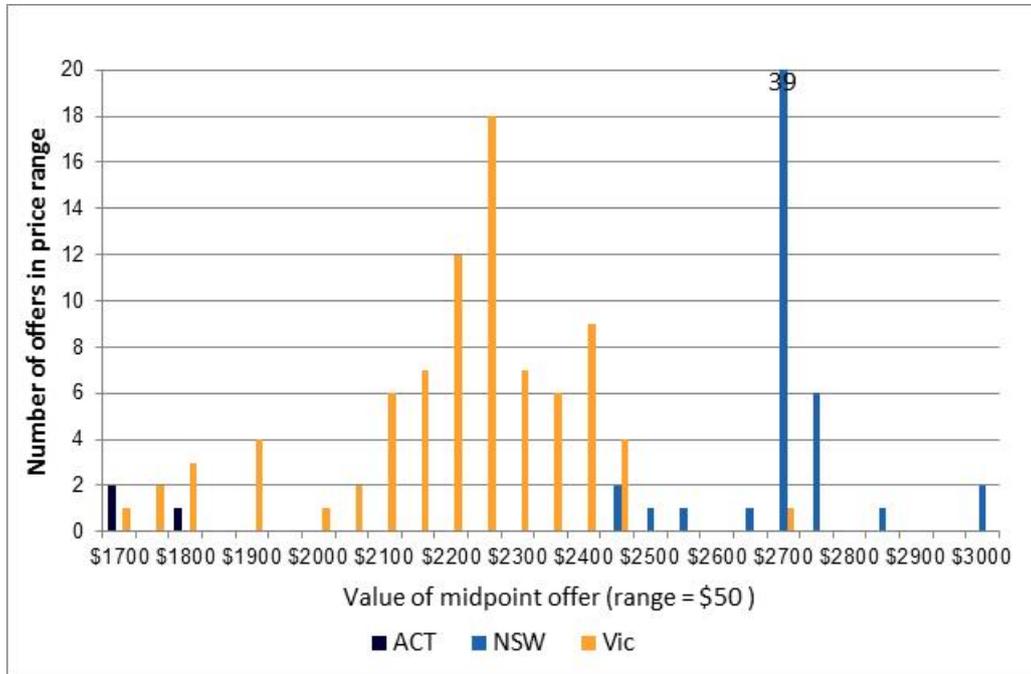
Sources: www.energymadeeasy.gov.au (ACT and Sydney (EA distribution area) offers); www.mpp.switchon.vic.gov.au (Melbourne CitiPower distribution area offers). Accessed mid-January 2014.

Note: Assumes annual energy use of 7700 kWh.

²¹¹ AER, 2013: 120.

²¹² This makes no allowance for AGL Energy’s 25 per cent participation in the ActewAGL joint venture.

Figure 4.3 ACT, Sydney and Melbourne retail electricity provider offers for time-of-use tariff plans



Source: www.energymadeeasy.gov.au (ACT and Sydney (EA distribution area) offers); www.mpp.switchon.vic.gov.au (Melbourne CitiPower distribution area offers). Accessed mid-January 2014.

Note: Assumes annual energy use of 7700 kWh 37 per cent at peak time, 13 per cent off peak and 50 per cent shoulder.

This review of electricity price comparator websites confirms that ACT residential electricity users have a limited number of retailers from which they can source their electricity and that the number of offerings they have to choose from is also limited. For example, ACT residential consumers have 14 service offerings: 11 single tariff and 3 time-of-use offerings while consumers in Sydney and Melbourne have 105 and 136 offerings, respectively, to select from.

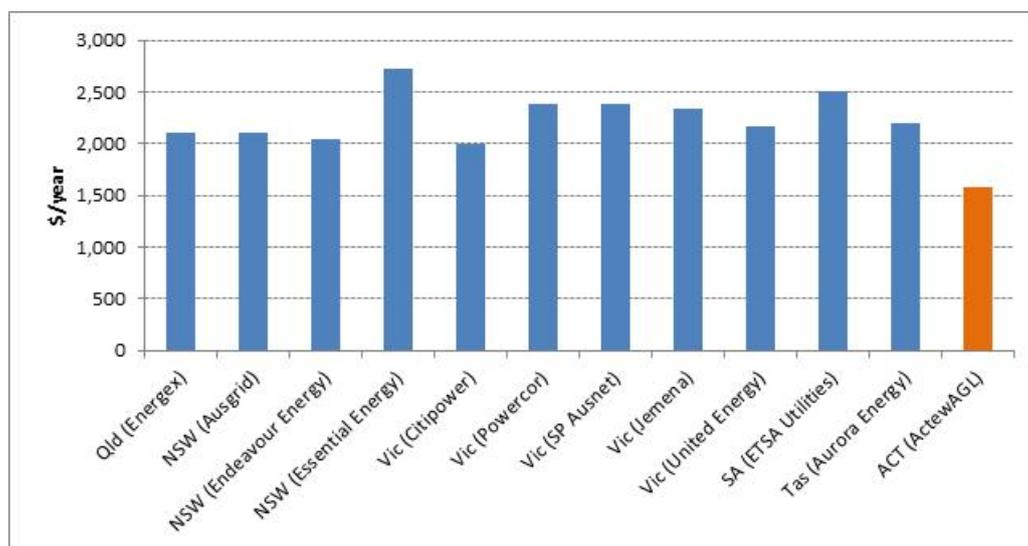
This review also indicates that the price that ACT residential electricity consumers pay for their electricity is less than that faced by consumers in Sydney and may be lower than that paid by consumers in Melbourne. The comparison shows that there is one service offer in Melbourne that is priced lower than any in the ACT: most of the offers in the Melbourne market are around an annual charge of \$2,230, which is above the highest offer charge for this load in the ACT.

The Commission notes that the figures are only indicative of the cost of electricity in the ACT, Sydney and Melbourne as retailers are prepared to offer discounts from the service offerings shown on the websites. Given this caveat, the Commission’s view is that the analysis indicates that electricity retailers in each of these markets have market offerings that will provide electricity at terms comparable to or below the price established by the Commission for ActewAGL Retail’s regulated standing offer tariffs.

Retailers compete not just in terms of price; they also offer service features such as varying contract length, certainty over the period of which the scheduled price is fixed, and discounts for direct debit payments and paying the bill on time. In addition to these service features, retailers offer a range of tailored plans that allow consumers to choose service features that best suit them. In the ACT, households that have a relatively low annual consumption of electricity can benefit by selecting a contract that includes a reduced daily supply charge offset by a relatively higher energy use charge. Households that consume a relatively smaller proportion of their electricity needs outside peak hours can benefit from being on a time-of-use tariff. This consideration of tariff offerings available to ACT consumers suggests that ACT consumers have reasonable choice in the types of plans available to them.

The Commission notes that ActewAGL in its annual reports presents its own analysis to demonstrate that its customers benefit from the lowest electricity prices in the country.²¹³ A similar analysis was recently undertaken by the AER, the results of which are shown in Figure 4.4. This shows that small customers in the ACT on standing offer tariffs pay less for their electricity than similar customers in other jurisdictions.

Figure 4.4 Estimated annual small customer electricity bills, based on standing offers, 2013–14



Source: AER, 2013: 130.

Note: The annual bill is based on a customer on the standing offer using 6,500 kWh of electricity per year.

The form of regulation adopted by the Commission allows ActewAGL to offer a suite of regulated tariffs to its residential and small business customers. Consumers can choose a plan that suits their needs, which means that even where residential consumers use the same amount of energy in a year, they will not pay the same

²¹³ See, for example, ActewAGL, 2013d: 38.

effective price for that energy. For example, customers consuming 8000 kWh on regulated tariffs could pay between \$1,815 and \$1,871 for their electricity.

It is apparent from this review of available tariffs that, in addition to supplying standing offer customers, ActewAGL also offers market contracts to small customers in the ACT. ActewAGL is, in fact, the dominant supplier to the contract segment of the market. The review indicates that the price terms for these market contracts appear to be more favourable than those for comparable standing offer customers.

ActewAGL's published tariffs and its discount offers suggest that the regulated tariff basket is not set at such a low level that it inhibits discounting or the structuring of tariffs to take account of the price sensitivity of different customers. It can also be observed from the AER price comparator website, www.energymadeeasy.gov.au, that at least one of ActewAGL's competitors is also willing to discount its standing offer terms to a price that is below the regulated price.

The Commission also notes that in the market for large customers, which consume around 49 per cent of total electricity supplied in the ACT, the effective market price is significantly less than the regulated price and that this part of the market has more active participant retailers than the small customer market.

In assessing the reasons for the limited growth of market contracts for small electricity customers, consideration needs to be given to the profitability of supply. It may be that while it is profitable to supply at the regulated price, the need to offer discounts to induce customers to move from the standing offer tariff will make supply unprofitable for a retailer. Without access to commercially sensitive data, the Commission is not able to form a view on this. That said, the Commission is able to rely on information provided in ACTEW'S 2013 Annual Report to Government, where it noted that:

ActewAGL continues to be a very profitable investment for ACTEW with joint venture income increasing by \$15.9m above the 2011–12 outcome;

and attributed the improved result to:

... increased volumes and customers in gas operations, and greater margins in electricity operations.²¹⁴

The latter point in particular indicates that discounting may not be having a significant effect on ActewAGL's profitability.

In summary, in the ACT:

- the retail electricity market is of a relatively small size compared to the other jurisdictions in the National Electricity Market;

²¹⁴ ACTEW, 2013: 13.

- 58 per cent of the electricity consumed in the ACT is purchased on contracted tariffs, which are unregulated;
- this includes 100 per cent of large customer consumption and 16 per cent of small customer consumption;
- ActewAGL Retail has more than 90 per cent of the small customer market and maintains a dominant position in both standing offer and contract markets for small customers;
- small customers on a regulated standing offer in the ACT pay less for their electricity than similar customers in other jurisdictions;
- small customers have a range of choices available as to retailer and tariff if they wish to move onto unregulated contract tariffs;
- prices are clearly not too low, because the incumbent retailer is profitable; and
- prices may be above the efficient costs of the incumbent retailer, but not so far above as to encourage the entry of competitors.

4.6.3 The without case: Continuing regulation

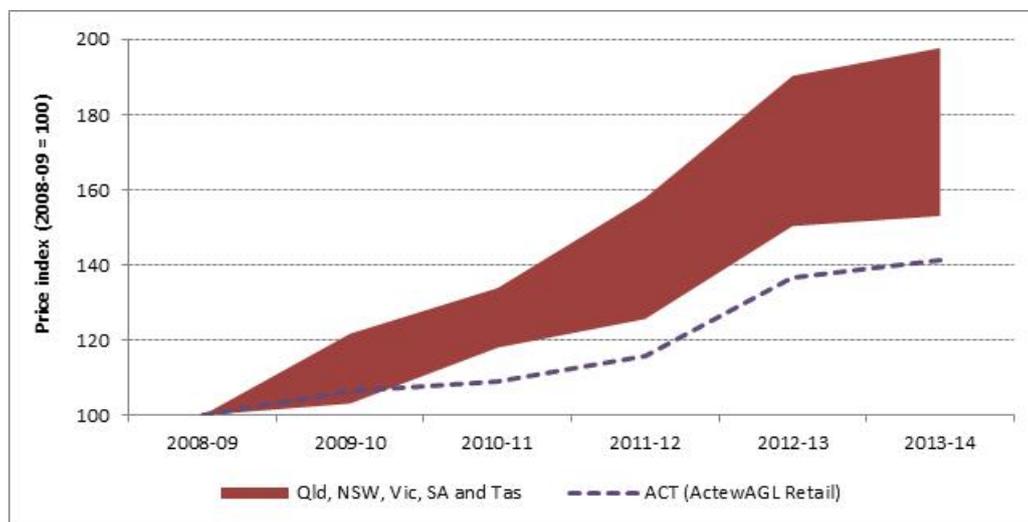
Having established the context in which the with and without cases are to be compared, we first consider the without case: maintenance of the status quo. We begin by looking at market-related developments before considering whether continuing regulation itself might reduce community welfare.

Market-related developments

The trend in regulated standing offer prices, previously franchise tariffs, in the ACT relative to the movement in corresponding prices in other jurisdictions is shown in Figure 4.5. This plots prices in index number form, with prices in 2008–09 set equal to 100. This chart shows that prices have increased at disparate rates across the other jurisdictions and that ACT prices have increased much less rapidly than those in other jurisdictions.

The largest component of the cost of supplying retail electricity is the energy purchase cost, which is established in various markets, most importantly the wholesale electricity market, and the network charges regulated by the AER. Provided wholesale and hedging markets remain competitive, ACT retail electricity prices should not increase relative to those in other jurisdictions. Maintaining price regulation in the ACT small customer retail market will not impact the competitiveness of the wholesale electricity market. Network charges are regulated by the AER, and it will set these charges in line with the efficient cost of supplying network services. Given the relative age of the network and its customer density, distribution charges in the ACT, which account for the bulk of network charges, are likely to remain benign relative to those of other jurisdictions.

Figure 4.5 Standing offer price changes, 2008–09 to 2013–14



Source: AER, 2013: 130.

The only factors that are specific to the ACT are the costs of ACT-specific environmental policies, such as the feed-in tariff and the energy efficiency scheme, and the retail cost and retail margins set for the incumbent retailer by the Commission. Since these together account for less than 13 per cent of retailers' costs in the ACT, retail price developments here are likely to continue to be dominated by the same basic drivers as those impacting other jurisdictions.

The one new factor that has emerged in the last year is a move by other jurisdictions either to include a competition allowance in the determination of regulated prices or remove regulation.²¹⁵ In the without case, this would be a point of difference between the ACT and other jurisdictions that could see the gap in prices widen.

In June 2012, there were 11 retailers servicing customers in the ACT market: seven retailers made sales to small customers, both residential and non-residential, and 10 retailers made sales to large customers. Six retailers supplied both the small and large customers. At that time ActewAGL supplied 97 per cent of small customers.

The dominant position of ActewAGL has not changed in the 12 months since the establishment of the National Energy Customer Framework. Data supplied by the AER indicates that the number of small electricity customers is continuing to grow in the ACT, while the number of large customers has declined, and that ActewAGL has attracted a larger number of residential customers. The number of retailers competing for the small non-residential customer has increased, and other retailers appear to have been successful in gaining customers in this segment of the market.

²¹⁵ These developments are discussed in more detail in section 4.7.

Given the dominance and profitability of ActewAGL, it is difficult to see why this position should change. One of the major national electricity retailers, AGL Energy, has a substantial interest in ActewAGL Retail, so its motivation to seek a larger share of the ACT market in its own right is likely not great.²¹⁶ Both EnergyAustralia and Origin have operated in the market for some time and, with the exception of EnergyAustralia for a period in 2007, neither appears to be actively seeking to expand its market share.

The form of regulation applied by the Commission means that ActewAGL can offer a choice of tariff types to its standing offer customers. Consumers can then assess which of these types of tariff best meets their requirements. Consumers who access the ActewAGL website or the Energy Made Easy website will observe that market contracts are set on the basis of discounts from the tariff basket approved by the Commission.

EnergyAustralia, in accordance with the requirements of the NECF, has a small customer standing offer which has default terms for its customers in the ACT. The daily standing charge and the energy cost are higher than those offered by ActewAGL, EnergyAustralia does, however, offer a substantial discount to customers who sign up for its market contract. This means that the effective cost of the market contract is likely to be less than that of accepting the standing offer with the regulated tariff.

These developments suggest that ACT consumers will continue to have access to a variety of terms and conditions on which they can purchase electricity.

In its ‘State of the energy market’ report, the AER provides data on customer complaints. This data indicates that a smaller percentage of ACT electricity customers make complaints about their service than in any other NEM jurisdiction except Tasmania.²¹⁷ Also, in Queensland, New South Wales, Victoria and South Australia the trend in customer complaints is rising, whereas in the ACT the trend over the last five years is downward. This does not mean that ACT customers are averse to making complaints. In relation to the retail gas market, complaints by ACT customers are at levels comparable to those in other jurisdictions; moreover, the trend in those complaints is rising. As the AER notes, the majority of complaints relate to billing and, in a market where there is limited movement of customers between retailers and most customers have accepted the regulated standing offer, the likelihood of billing errors is likely to be minimised.

²¹⁶ ActewAGL is a joint venture between AGL Energy, Jemena Pty Ltd and the ACT Government, with shares of 25, 25 and 50 per cent, respectively. ActewAGL operates four businesses in distribution and retail of electricity and gas. It is not apparent how the profits from the different business activities are shared between the joint venturers. AGL Energy’s interests appear to be primarily in the retail side of the joint venture.

²¹⁷ AER (2013).

Dangers of regulation

We now turn to the question of whether there are other dangers in regulation itself that need to be considered in the without case. The AEMC summarised its view thus:

The AEMC considers that regulated prices will always be an imperfect substitute for prices determined by the competitive process of a market, and are likely to impose costs and distortions that would not otherwise be present.

The specific concerns identified by the AEMC were that:

- Regulation may lead to prices that are either too high or too low.
- Retailers operating in an unregulated market are more likely to accurately identified the services and service qualities desired by their customers.
- Regulation may interfere with the delivery of ongoing investment to underpin customer reliability.

In addition, concern is sometimes expressed about the possibility of regulatory capture.

As Joskow (2008) explains, utilities regulation is focused on setting prices that reflect efficient service delivery with a clear concern that without regulation, the utility would exploit consumers through excessive prices. However, regulation cannot mimic the world of competition, as the regulator faces incomplete information; information asymmetry, where the business knows more about itself than the regulator who is charged with setting the price and service standards. Because the regulator is in possession of only incomplete information about the regulated business, there is a danger that it may set prices above or below the efficient level. In the first case the business will make excessive profits and customers will be paying in excess of the efficient cost of producing the service. In the second, the business will not be economically viable and will cease to operate.

Even if the regulator is able to access the actual costs incurred by a monopoly service provider, these may not be reflective of efficient costs if the business is not seeking to maximise its profits. As Sir John Hicks remarked in his justly famous review of the theory of monopoly:

The best of all monopoly profits is a quiet life.²¹⁸

The implication is that a monopolist has reduced incentives to expend effort to identify the profit-maximising level of output. Leibenstein (1966) theorised that firms and especially monopolists did not necessarily profit maximise, but in a different sense from Hicks. Monopolists in Leibenstein's view did not necessarily minimise costs. He called this deviation from profit maximisation X-inefficiency and provided several causes for this outcome as well as anecdotal evidence to support this theory. Among the causes for X-inefficiency are reasons relating to incomplete contracts and agency

²¹⁸ Hicks, 1935: 8.

problems due to disutility of effort. Leibenstein expected that firms that face little or no competition are more likely to experience X-inefficiency.

In the ACT, the Commission has been particularly concerned to ensure that the incumbent retailer remains viable. The form of regulation, as described in Chapter 2, which employs a cost-index model, ensures that all the major costs that the retailer confronts are accurately reflected in the price set. This price is reset annually to reflect changing conditions in the various relevant markets. The hedging model employed by the Commission, described in section 3.4, is deliberately conservative. Other costs that the Commission must estimate are assessed having regard to national benchmarks. As noted in the previous section, according to the assessment of its major shareholder, the incumbent retailer in the ACT is earning a good return.

Given the way the Commission sets prices, as described above, it is very likely that prices are set above efficient cost. It is, however, unlikely that they are set very far above efficient cost because otherwise more retailers would have been attracted to make more serious efforts to win a share of the ACT retail market. Introducing a competition allowance would, of course, push prices even further above efficient cost. Whether that produces a sufficient return to the community in the longer term to justify such action is a question we turn to in the next section.

In regard to the provision of services and service quality desired by the customers, the evidence from the AER survey cited above does not support the assertion made by the AEMC. Electricity retailing in the ACT scores particularly well in that survey and markedly better than in Victoria, which deregulated its electricity market in 2009, and in New South Wales, which recently introduced a competition allowance and is considering deregulation.

It is generally acknowledged that industry-specific regulation brings with it the risk of regulatory capture. For example, Makkai and Braithwaite (1992) state:²¹⁹

There are three empirically distinct forms of capture: identification with the industry, sympathy with particular problems that regulated industries confront in meeting standards and absence of toughness.²²⁰

The regulatory capture theory asserts that regulators do not maximise social welfare but instead skew their decisions towards one of the interest groups affected by regulation. For example, the study by Jarrell (1978) was one of the first and that of Lyon and Wilson (2012) one of the most recent to demonstrate that there is evidence that the start of electricity regulation in the United States in the early twentieth century was motivated by the integrated electricity suppliers. That is, they found evidence that regulators were captured by the regulated businesses.

²¹⁹ See also Carlton et al., 2007: 3 and the earlier work of Grabosky et al. (1986).

²²⁰ Makkai et al., 1992: 61.

While the historical evidence may show that regulators were captured by the businesses in the market, it may be the case that regulators are now being controlled or overridden by governments at times to keep prices down.²²¹ The recent experience in Queensland where the Queensland Government reduced the residential price of electricity below that set by the independent regulator, the Queensland Competition Authority, is one example. The most notorious example occurred in California in 2000. It is common to use this event as a cause célèbre for the pitfalls of regulation of the retail electricity market. For example Simshauser (2010) asserted:

It goes without saying that setting regulated retail prices as the ‘price to beat’ does not fit neatly with a deregulated wholesale market. The most abrupt evidence of this occurred during the Californian energy crisis in 2000.²²²

While there are lessons to learn from the California experience, it is not clear that this experience provides any evidence for blanket deregulation of the retail electricity market. The events are described in more detail in Appendix 5.

In the ACT, there is no evidence of regulatory capture. The terms of reference for reviews by the Commission provided by successive governments have always given the Commission freedom to make the determination it saw fit. The form of regulation and the cost index methodology used by the Commission are entirely transparent. Anyone who is prepared to collect the data required can replicate the Commission’s calculation of the cost index. Given these traditions, it would be very obvious if there were any deviation from them towards any form of industry capture.

In summary, while the dangers of regulation have no doubt manifested themselves at different times and in different places, there is no evidence that this is likely to occur in the ACT in the foreseeable future.

4.6.4 The with case: Introducing a competition allowance

We now turn to the consideration of the with case: adoption of a competition allowance in the setting of regulated retail prices for electricity in the ACT. As a counterfactual, assessment of the with case is bound to be difficult. That difficulty is compounded by the lack of a clear and widely accepted model of how the retail market may develop following the introduction of a competition allowance and the paucity of evidence about how markets have actually developed following the introduction of a competition allowance.

As section 4.5 demonstrated, once the specific features of the retail electricity market begin to be modelled, the usual story is seen as unlikely to apply to this market. The dynamics of an oligopolistic industry, where costs depend in part on the intensity of

²²¹ Indeed, it could be argued that governments are captured by consumer and voter special interest groups and consequently pass on this regulatory capture to the regulator.

²²² Simshauser, 2010: 7437.

competition and strategic behaviour is likely to be exhibited in the battle for market share, are likely to be beyond the analytical powers of even a beautiful mind.

There is the possibility that introduction of a competition allowance may fall at the first hurdle if the incumbent retailer puts up its prices by something less than the amount allowed following the introduction of the competition allowance. Following the introduction of the allowance, an incumbent retailer may decide that the long-lasting benefits of retaining incumbency are more valuable than the short-term benefits of higher profits immediately.

If prices do initially rise by the full amount of the competition allowance, it is not clear if there is enough scope within the cost structure of a typical retailer to effect economies sufficient to offset the effects of the higher costs of sustaining competition. If there are, it seems very likely that it will be some considerable time before they materialise.

Another possibility to consider is that, with a relatively small number of competitors, there is always the potential for collusion to occur. Collusion can occur in a variety of ways. Firms can covertly meet to agree to raise prices. There is also the possibility of tacit collusion where no agreement between the firms in a market is made, but the firms realise their joint profit-maximising outcome. Finally firms can share the market through refusing to enter other firms' geographic areas. Collusion could emerge from the dynamics of strategic behaviour. If the mature retail electricity market contains just a few firms, the likelihood of collusion will be greater. This collusion does not have to involve adoption of the monopoly price; it could involve raising prices by modest amounts above the otherwise equilibrium price in the absence of collusion.

The evidence from the introduction of a competition allowance or its equivalents, such as a customer acquisition and retention cost, is not encouraging. Prices certainly seem to rise in the short term, but whether they will ultimately fall below the level they would otherwise have reached is a matter for conjecture. Neither does the experience of complete deregulation offer much comfort. As noted in Figure 4.5 above, prices in all other jurisdictions have risen faster than in the ACT. All other jurisdictions have during this period either adopted some form of competition or deregulated completely.

While the AEMC cites evidence of increased levels of competition in jurisdictions that have introduced some form of competition allowance, it does not provide any evidence that this increased competition has delivered the benefits it asserted would flow.

Looking to other similar markets might also provide some indication of how the with case may develop. The ACT deregulated its retail gas market in 2003–04. At that time, gas prices in the ACT stood at about 93 per cent of those in New South Wales. In the subsequent decade, retail gas prices in the ACT rose by about 83 per cent while those in New South Wales rose by about 66 per cent. By the end of the decade, the retail price of gas in the ACT had surpassed that in New South Wales by about 4 per cent.

In summary, we are far less confident about how the with case may unfold than we are about the without case. Although not entirely certain, it seems very likely that prices will be significantly higher in the early years under the with case, with the prospects for an eventual decline uncertain for both timing and magnitude.

4.6.5 Prospects for change

Before moving to our final evaluation of the competition allowance, it is worth noting that there are some developments that could change our assessment of the two cases and, possibly, lead to a different conclusion. The situation should, therefore, be monitored for signs of change.

One of the reasons for imperfect consumer behaviour in retail electricity markets may be the lack of experience in participating in these markets. For a long time consumers have had no choice of electricity retailer. Consumers are only now learning how to be ‘good’ electricity consumers in terms of improving market efficiency. Thus, one might expect that consumers may become more discerning in their choice of electricity retailer over time as they learn more about the operation of the changed market. The length of the transition phase may, however, be long, as Waterson (2003) points out. This may provide a role for governments to educate consumers about competition in retail electricity markets and to reduce search and switching costs. The Australian Energy Regulator’s introduction of its retail electricity market offer website is clearly an attempt to reduce search costs.²²³

A less clear-cut issue is the role that increased vertical integration, with the emergence of businesses active as both generators and retailers, may play in modifying the behaviour of retailers and customers. While vertical integration provides natural hedging for generators and retailers in the wholesale electricity market, the result that it is welfare enhancing depends on there being perfect competition in the wholesale and retail markets. When some level of market power in either the wholesale or retail market is included in the analysis, there is no consensus on the welfare effects of vertical integration. Mansur (2007) finds pro-competitive effects, while Gans and Wolak (2012) find anti-competitive effects. Ultimately it is the effect of vertical integration on the retail price that is of most interest. While Gans and Wolak focus on the effects on retail prices, Mansur (2007) and Bushnell, et al. (2008) focus only on wholesale prices.

Nelson and Simshauser (2013) claim that vertical integration or long-term supply contracts are necessary to provide sufficient incentives for there to be investment in generation capacity. If this is the case, the long-term evolution of the market may involve a growing level of vertical integration. In the long run, if a retailer must be vertically integrated into generation, the electricity market could look very different. Small independent retailers would potentially disappear if they cannot match the lower hedging costs that vertically integrated firms enjoy. Thus, there may be a trade-off

²²³ See www.energymadeeasy.gov.au.

between ensuring sufficient generation capacity and increased market power from a few vertically integrated electricity retailers.

Overall, the effects of vertical integration are ambiguous. This is a relatively new area of analysis in the electricity market and no settled theory has been developed.

4.7 Conclusions

In this section we review issues paper submissions and developments in other jurisdictions before presenting the Commission's conclusion.

4.7.1 Issues paper submissions

The Commission received a number of submissions in favour of including an allowance over and above efficient costs to support competition either through an explicit competition allowance or the inclusion of customer acquisition and retention costs.

AGL stated that:

In AGL's view, it is fundamentally contradictory to have a policy of FRC and continued price regulation based on benchmark costs which precludes the entry of competition in the market.²²⁴

AGL also makes the case that customer acquisition and retention costs should not be excluded, as the Commission stated in its issues paper, on the basis that retail operating costs are based on an incumbent rather than new entrant retailer. AGL stated that:

IPART and QCA's approaches have shown that this definition of a retailer does not mean that CARC and headroom allowance should be excluded.²²⁵

ActewAGL Retail made no comment about a specific competition allowance to promote competition. It maintained its view presented in previous price investigations that customer acquisition and retention activities impose legitimate costs in a competitive electricity market that should be incorporated in the benchmark cost build-up by the Commission.²²⁶

EnergyAustralia argues that the limited number of retailers servicing small customers:

²²⁴ AGL, 2013c: 3.

²²⁵ AGL, 2013c: 4.

²²⁶ ActewAGL Retail, 2013c: 20.

provides a strong indicator that regulated prices have been suppressed to unsustainable levels resulting in retailers, who compete strongly in other jurisdictions, avoiding the regulated segment of the ACT market.²²⁷

EnergyAustralia supports the explicit recognition of a component to allow competition either through a competition allowance or customer acquisition and retention costs above and beyond general operating costs. EnergyAustralia states:

We feel strongly that in order to secure optimal outcomes for consumers in the medium to long term it is necessary to allow for acquisition and retention costs in the coming pricing determination.²²⁸

Origin urged the Commission to consider creating an allowance to encourage further development of competition in the ACT.²²⁹

In contrast, the ACT Government did not support a competition allowance, stating that:

As noted in the Issues Paper, I do not support the position taken by the Australian Energy Market Commission (AEMC) that retail electricity price regulation should include a financial contribution to support competition, because this impost would be passed onto consumers, without a corresponding benefit.²³⁰

ACAT also rejected the need for a competition allowance or customer acquisition and retention costs, stating that:

There should be cogent evidence that competition in the ACT market would lead to a long term reduction in retail prices before such an allowance is accepted. Outcomes in other Australian energy markets do not provide the relevant evidence.²³¹

4.7.2 Recent regulatory decisions

New South Wales

In its most recent determination in 2013, which set prices from 2013 to 2016, IPART was required to ensure that regulated retail tariffs were set at a level which supports the continued development of competition in the retail electricity market.²³² IPART chose to determine a separate allowance for customer acquisition and retention costs as the mechanism to support the development of competition. IPART determined an

²²⁷ EnergyAustralia, 2013b: 4.

²²⁸ EnergyAustralia, 2013b: 8.

²²⁹ Origin, 2013: 6.

²³⁰ ACT Government, 2013c: 2.

²³¹ ACAT, 2013: 3.

²³² IPART, 2013b: 1.

allowance ranging from \$7.74 per MWh for EnergyAustralia customers to \$13.32 per MWh for Origin Energy (Essential Energy) customers, as shown in Table 4.2.²³³

Table 4.2 IPART final determination on customer acquisition and retention costs, 2013–14 (\$2012–13)

Residential and small business customers on the regulated tariff	EnergyAustralia	Origin Energy (Endeavour Energy)	Origin Energy (Essential Energy)
Customer acquisition and retention cost (\$ per MWh)	7.74	8.75	13.32

Source: IPART, 2013b: 98, 110.

Queensland

In its 2013 determination on regulated retail electricity prices for 2013–14, QCA was required by its terms of reference to have regard to the effect of determination on competition in the Queensland retail electricity market.²³⁴ In this regard the QCA determined an allowance for customer acquisition and retention costs of \$44.25 per customer for 2014–15 by adjusting its 2012–13 allowance for inflation.²³⁵

Tasmania

In May 2012 the Tasmanian Government announced that it would introduce full retail competition from 1 January 2014. As part of this reform the Tasmanian Government proposed the sale of Aurora Energy customers in two bundles. In June 2013 OTTER determined a regulated or standing offer electricity price to apply from 1 January 2014 for those customers choosing not to enter into a market retail contract.

However, on 26 September 2013, the Tasmanian Government announced changes to its reform proposals, deferring the sale of Aurora’s customer base and opening the retail electricity market to full competition from 1 July 2014. Aurora will therefore remain as the sole regulated offer retailer for the near future. As a transitory arrangement, from 1 January 2014 all small customers will have the option of entering into a market retail contract with Aurora or can remain on a regulated contract. In light of the changes to the regulatory reform process, OTTER amended its determination in December 2013.

In its amended decision on total retail operating costs, OTTER stated that it:

was mindful of ensuring that prices did not restrict competition but were set at an efficient level based on the amount of competition that could occur.²³⁶

²³³ IPART, 2013a: 97.

²³⁴ QCA, 2013b: Appendix A.

²³⁵ QCA, 2013b: 50.

²³⁶ OTTER, 2013b: 7.

Further, as the Tasmanian Government reforms were directed at creating a competitive generation market in Tasmania, once constraints on competition were lifted, OTTER had no reason to doubt that the incumbent retailer would face the same costs and risks as retailers face in the competitive retail markets within the National Electricity Market. Consequently, it included a customer acquisition and retention cost component. OTTER determined the level of customer acquisition and retention costs with reference to that provided by IPART in its most recent decision, but with a transition to the full amount from 1 January 2014 to 30 June 2016. As shown in Table 4.3, OTTER determined a customer acquisition and retention cost allowance that transitions from \$6.24 to \$42.00 per customer by 2015–16.

Table 4.3 OTTER final determination on customer acquisition and retention costs, from 1 January 2014 (\$2012–13)

	1 Jan 2014 to 30 Jun 2014	2014–15	2015–16
Customer acquisition and retention cost (\$ per customer per year)	6.24	42.00	42.00

Source: OTTER, 2013a: 68; OTTER, 2013b: 8.

4.7.3 Commission's consideration

In carrying out its functions under the ICRC Act, which includes making a price direction, the Commission is required to have regard to the objectives set out in section 7 of the ICRC Act. The first objective, which requires the Commission to promote effective competition in the interests of consumers, is germane to the discussion about a competition allowance.

The Commission notes the support of ActewAGL Retail, AGL, EnergyAustralia and Origin for introducing an allowance over and above efficient retail operating costs in order to facilitate competition in the ACT retail electricity market. There is nothing in these submissions that goes beyond the arguments made by the AEMC, which have been subject to thorough analysis in the earlier sections of this chapter. The Commission also notes that these views contrast directly with those of the ACT Government and ACAT.

The Commission recognises that regulators in jurisdictions such as New South Wales and Queensland have provided for competition allowances in regulated retail prices in their 2013 determinations. The Commission notes that both IPART and the QCA were required by their terms of reference from their respective governments to set prices with the express intention of fostering competition. The ACT Government has placed no similar requirement in the Commission's terms of reference for this price investigation, and moreover has stated in its submission to the issues paper that it does not support a competition allowance.

Looking at the results of the with and without test, we find in the without case (maintenance of the status quo) that:

- The evolution of prices in the ACT will be driven by the same forces as in the recent past, with the prospect of ACT prices remaining the lowest in Australia.
- Large customers will continue to make extensive use of negotiated contract tariffs.
- Small customers will continue to enjoy a useful range of choice of tariffs, both regulated and unregulated.

In the with case (introduction of a competition allowance), we find that

- It is highly probable that retail electricity prices will be higher for some indefinite period into the future.²³⁷
- Prospective welfare gains in the longer term are highly uncertain as to timing and magnitude.

Based on the analysis and evidence presented above, the Commission considers the introduction of a competition allowance to be a high-risk strategy because there is a strong possibility that any benefits it may produce will be long delayed and therefore of little present value. There is also a distinct possibility that it will not produce benefits even in the long term.

The Commission considers that all customers in the ACT, large and small, are well served by the retail electricity market as it has developed here. As noted earlier, that customers agree with this assessment is reflected in the satisfaction survey conducted by the AER. Given that little fault has been found with the without case, currently or prospectively, the Commission sees little to be gained from engaging in the high-risk strategy that the with case involves.

4.7.4 Draft decision

Drawing on all the analyses and conclusions presented above and having considered stakeholder views on the matter, the Commission has concluded that introducing a competition allowance at this time is not in the interests of ACT electricity customers. The Commission therefore proposes to continue its practice of not including such an allowance in the calculation of its cost index for the next regulatory period.

In coming to this view, the Commission acknowledges that the National Electricity Market is in a continuing state of development and that conclusions that are sound now will not necessarily be so in years to come. For that reason, the Commission is of the view that the monitoring of market developments should be maintained and, should conditions change markedly, further consideration of the issues analysed here may be warranted.

²³⁷ If prices are not higher in the immediate future, the competition allowance will not have proved effective in providing the headroom sought.

5 Analysis of efficient costs for 2014–15

5.1 Introduction

This chapter sets out the efficient costs of supplying electricity to customers on standard retail contracts in 2014–15, the first year of the next regulatory period using the Commission’s retail electricity cost-index model described in Chapter 3. The chapter concludes with the Commission’s draft decision on the efficient costs and their constituent components for 2014–15 and the allowed percentage change that will apply in the weighted average price cap for 2014–15. Chapter 6 sets out the method by which prices will be set for the subsequent years of the regulatory period.

5.2 Energy purchase cost

5.2.1 Forward price

The forward price is calculated using carbon-exclusive contracting data provided by ICAP. The draft forward price for 2014–15 has been calculated over a 19-month averaging period. This will be expanded for the final report to a 23-month period from 1 July 2012 to 31 May 2014 as more data becomes available. ICAP provides annual financial year contract data, while the Commission’s energy purchase cost model is constructed on a quarterly timeframe. Because of this difference, the Commission has adopted a single annual forward price for the relevant financial year rather than individual quarterly prices.

Table 5.1 shows the forward prices for each calendar year quarter for the 2013–14 and 2014–15 financial years, as calculated by the Commission.

Table 5.1 Quarterly forward prices, 2013–14 and 2014–15 (dollars per MWh)

Year	Q3	Q4	Q1	Q2
2013–14	39.77	39.77	39.77	39.77
2014–15	41.98	41.98	41.98	41.98

Source: Commission’s calculations based on ICAP data.

5.2.2 Uplift factor

Load shape

The load shape captures the relationship between the spot price and electricity load. The load shape is calculated using New South Wales spot prices and the net system load profile for ActewAGL Distribution, both reported by AEMO.

The quarterly average load shape for 2012–13 and 2013–14 is shown in Table 5.2, and the underlying quarterly load shape data from 2003–04 through 2013–14 is presented in Table 5.3.

Table 5.2 Quarterly average load shape, 2013–14 and 2014–15

Year	Q3	Q4	Q1	Q2
2013–14 (average 2003–04 through 2012–13)	1.120	1.096	1.246	1.125
2014–15 (average 2003–04 through 2013–14)	1.113	1.082	1.225	1.117

Table 5.3 Quarterly load shape, 2003–04 through 2013–14

Year	Q3	Q4	Q1	Q2
2003–04	1.251	1.043	1.192	1.104
2004–05	1.148	1.164	1.207	1.082
2005–06	1.114	1.149	1.360	1.145
2006–07	1.161	1.080	1.207	1.387
2007–08	1.134	1.075	1.105	1.100
2008–09	1.123	1.096	1.294	1.119
2009–10	1.086	1.254	1.254	1.109
2010–11	1.067	1.024	1.561	1.036
2011–12	1.047	1.032	1.035	1.043
2012–13	1.065	1.040	1.032	1.048
2013–14	1.045	0.943		

Source: Commission's calculations using data from AEMO load profiles and AEMO aggregated price and demand data files.

An implication of using carbon-exclusive over-the-counter contract prices is the need to base all load shape calculations after 1 July 2012 on the carbon-exclusive price. This ensures consistency within the assumptions underlying the energy purchase cost model. Hence, the cost of carbon has been subtracted from all half-hour spot prices before calculating the load shape for 2013–14 and 2014–15.

Load ratio

The load ratio for each quarter is calculated as the maximum of the observed ratio of the quarterly maximum load to the quarterly average load using AEMO data. As discussed in Chapter 3, to complete the calculation of the load ratio, the Commission adds 0.1 to the observed maximum to allow for the possibility of a higher peak.

The load ratio for 2013–14 and 2014–15 and the underlying load data is shown in Table 5.4. The table shows that a new maximum value of the load ratio has been attained in each of the past four quarters. This is driven by the reduction in the average load exceeding the reduction in the maximum load.

Table 5.4 Quarterly load ratio, 2013–14 and 2014–15

Year	Q3	Q4	Q1	Q2
2003–04	1.786	2.156	1.702	2.013
2004–05	1.828	1.905	1.724	2.108
2005–06	1.808	1.960	1.888	2.063
2006–07	1.768	1.801	1.885	2.148
2007–08	1.927	1.708	1.891	1.863
2008–09	1.746	1.821	2.250	2.061
2009–10	1.764	2.172	2.236	2.196
2010–11	1.754	1.975	2.440	2.115
2011–12	1.868	2.137	2.039	2.001
2012–13	1.815	2.489	2.469	2.261
2013–14	2.030	1.901		
Maximum 2003–04 through 2012–13	1.927	2.489	2.440	2.196
Maximum 2003–04 through 2013–14	2.030	2.489	2.469	2.261
Load ratio 2013–14	2.027	2.589	2.540	2.296
Load ratio 2014–15	2.130	2.589	2.569	2.361

Source: Commission's calculations using data from AEMO load profiles.

Load weights

Quarterly load weights are required to calculate the annual average energy purchase cost. The load weight for each quarter is equal to the historical average load in that quarter divided by the sum of the historical average load for all four quarters. The historical average load for a quarter is the simple average of the loads for that quarter for the period 2003–04 through 2013–14. The load used is the net system load profile for ActewAGL Distribution as reported by AEMO. The quarterly load weights for 2013–14 and 2014–15 are shown in Table 5.5.

Table 5.5 Quarterly load weights, 2013–14 and 2014–15

Year	Q3	Q4	Q1	Q2
2003–04	109.621	71.384	64.911	93.947
2004–05	108.849	68.535	65.910	90.063
2005–06	110.759	70.952	70.791	104.097
2006–07	109.656	70.494	70.773	95.027
2007–08	110.995	68.837	68.338	94.735
2008–09	114.401	67.694	70.945	96.657
2009–10	109.033	73.936	68.545	94.249
2010–11	111.748	66.593	63.059	94.546
2011–12	102.113	62.356	59.446	94.205
2012–13	101.811	59.272	58.250	85.369
2013–14	95.348	64.751		
Average 2003 through 2013	108.899	68.005	66.969	95.281
Average 2003 through 2014	107.667	67.710	66.097	94.327
Load weights 2013–14	0.321	0.201	0.197	0.281
Load weights 2014–15	0.321	0.202	0.197	0.281

Source: Commission's calculations using data from AEMO load profiles.

5.2.3 Cost of carbon

The cost of carbon is equal to the price on carbon multiplied by the emissions-intensity factor. AEMO calculates and reports the daily emissions intensity as the carbon dioxide equivalent intensity index measured in tonnes of carbon dioxide equivalent gas emitted per megawatt hour (t CO₂-e per MWh). The Commission has applied a 12-month averaging period up to 25 January 2014 for determining the draft emissions-intensity factor. This will be shifted to the 12-month period ending as near as possible to 31 May 2014 for the final decision as more data becomes available. The emissions-intensity factor is the average of the daily emissions intensity as reported by AEMO. The NEM daily emissions-intensity index has been used.

The price on carbon under the Clean Energy Act for 2014–15 is \$25.40. Table 5.6 presents the cost of carbon calculations for 2013–14 and 2014–15.

Table 5.6 Cost of carbon, 2013–14 and 2014–15

Year	Price on carbon (\$/t CO ₂ -e)	NEM emissions-intensity factor (t CO ₂ -e/MWh) ^a	Cost of carbon (\$/MWh)
2013–14	24.15	0.875	21.13
2014–15	25.40	0.866	21.99

Sources: *Clean Energy Act 2011*; AEMO data.

Note: The 2013–14 emissions-intensity factor has been recalculated from that contained in the 2013–14 price reset using a 12- rather than 14-month averaging period.

5.2.4 Energy purchase cost for 2013–14 and 2014–15

Table 5.7 shows the energy purchase cost calculated for 2013–14 in the Commission’s previous determination.

Table 5.7 Energy purchase costs, 2013–14

Components	Q3	Q4	Q1	Q2
Forward price (\$/MWh) (A) ^a	40.95	40.95	40.95	40.95
Load shape (B)	1.12	1.10	1.25	1.13
Load ratio (C)	2.03	2.59	2.54	2.30
Forward price margin (D)	0.05	0.05	0.05	0.05
Uplift factor (E = (1 – D) × B + D × C)	1.16	1.17	1.31	1.18
Energy purchase cost (\$/MWh) (A × E)	47.71	47.94	53.69	48.48
Annualised load-weighted EPC	Carbon-exclusive			49.15
	Carbon-inclusive			70.28

Source: ICRC, 2013e: 9.

Note: The 2013–14 energy purchase cost amount has been recalculated from that contained in the 2013–14 price reset due to the adjustments to the forward price and carbon emissions intensity factor averaging periods and the Commission’s desire to maintain comparability across years under the index approach.

Table 5.8 shows the calculated draft energy purchase costs for 2014–15. The quarterly load weights from Table 5.5 are multiplied by the quarterly energy purchase cost in Table 5.8 and summed to give the 2014–15 annual carbon-exclusive energy purchase costs of \$50.05 per MWh. The cost of carbon of \$21.99 per MWh was added to the carbon-exclusive amount to provide the 2014–15 carbon-inclusive energy purchase cost of \$72.04 per MWh. This represents an adjustment of \$1.76 per MWh from 2013–14.

Table 5.8 Draft energy purchase costs, 2014–15

Components	Q3	Q4	Q1	Q2
Forward price (\$/MWh) (A)	41.98	41.98	41.98	41.98
Load shape (B)	1.11	1.08	1.22	1.12
Load ratio (C)	2.13	2.59	2.57	2.36
Forward price margin (D)	0.05	0.05	0.05	0.05
Uplift factor (E = (1 – D) × B + D × C)	1.16	1.16	1.29	1.18
Energy purchase cost (\$/MWh) (A × E)	48.86	48.59	54.24	49.52
Annualised load-weighted EPC	Carbon-exclusive			50.05
	Carbon-inclusive			72.04

5.3 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs

The costs of complying with the national LRET and SRES requirements are calculated in this section using the market approach set out in Chapter 3. Key data inputs into the cost calculations are provided in Table 5.9.

Table 5.9 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme data, 2014 and 2015

	2014	2015
Renewable power percentage (RPP)	9.46%	10.52%
Average LGC spot price (\$/certificate)	36.14	33.03
Small-scale Technology Percentage (STP)	8.98%	8.49%
Average STC spot price (\$/certificate)	32.22	38.45
Half-yearly load weights	0.528	0.472

The draft LRET and SRES costs for 2013–14 and 2014–15 are summarised in Table 5.10.

Table 5.10 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs, 2013–14 and 2014–15, dollars per MWh

	2013–14	2014–15
LRET	4.44	3.98
SRES	5.10	3.54
Cost adjustment from previous year	2.12	–
Total cost	11.66	7.52

Source: Commission calculations from ICAP and ActewAGL Retail half-yearly load weight data.

The average price of LGCs for calendar year 2014 is \$36.14. The price of LGCs for calendar year 2015 is \$33.03 and increases to \$36.33 when adjusted by 10 per cent for the opportunity cost of holding certificates over a 12-month period.²³⁸ The RPP for 2014 is 9.46 per cent and estimated at 10.52 for 2015.²³⁹ Using the equation described in Chapter 3 generates a draft LRET allowance for 2014–15 of \$3.98 per MWh.

For the SRES, the average price of STCs for calendar year 2014 is \$32.22. The price of STCs for calendar year 2014 is \$38.45, which becomes \$42.30 when adjusted for the holding cost. The STP for 2014 is 8.98 per cent and is estimated at 8.48 per cent for

²³⁸ The average LGC price for the period 1 July 2013 to 31 January 2014 is used as an estimate for the draft report. This will be updated to the 11 month period from 1 July 2013 to 31 May 2014 for the final report. The same approach is taken to calculate the STC price.

²³⁹ <http://ret.cleanenergyregulator.gov.au/For-Industry/Liable-Entities/Renewable-Power-Percentage/rpp>.

2015.²⁴⁰ Using the equation described in Chapter 3 generates a draft SRES allowance for 2014–15 of \$3.54 per MWh.

The Commission's approach allows for a cost adjustment resulting from any difference between the actual 2014 STP and RPP and the forecast numbers used in the 2013–14 decision. The actual 2014 numbers will be released by the Clean Energy Regulator only in March 2014, and hence the Commission is not in a position to calculate this adjustment at present. For the purposes of the draft report, the adjustment is assumed to be zero.

The total draft LRET and SRES cost component to be included for 2014–15 is \$7.52 per MWh. This is \$4.13 per MWh less than the allowance for the previous year.

In response to an information request, ActewAGL Retail submitted its forecast LRET and SRES costs for 2014–15 to the Commission on 26 November 2013. ActewAGL Retail proposed a forecast cost of \$9.47 per MWh. As foreshadowed in ActewAGL Retail's submission to the issues paper, discussed in Chapter 3, this was based on using the Commission's methodology with two changes. The first was using a LGC cost of \$52.78 based on the long-run marginal cost of the LRET scheme determined by IPART in its 2013 final report for retail prices for 2014–15 in New South Wales rather than using the market price. The second change was applying the STC clearing house price of \$40 rather than the market price.

5.4 Energy losses

In the 2013–14 price adjustment the Commission calculated energy losses based on the 2013–14 distribution loss factor of 1.0490 and transmission marginal loss factor of 0.9971 reported by AEMO. Applying these factors to the energy purchase cost, LRET and SRES costs and NEM fees using the proposed formula described in Chapter 3 generates a 2013–14 energy loss cost component of \$3.84 per MWh.²⁴¹

AEMO will release the distribution and transmission loss factors for 2014–15 in April 2014. For the purposes of the draft decision the Commission will apply the 2013–14 loss factors. This generates a draft energy loss cost component of \$3.72 per MWh for 2014–15.

5.5 Energy contracting costs

The energy contracting cost allowance is adjusted by annual changes in the consumer price index. The Commission has calculated a draft allowance of \$0.84 per MWh for energy trading and management costs for 2014–15. This is based on an adjustment of

²⁴⁰ <http://ret.cleanenergyregulator.gov.au/For-Industry/Liable-Entities/stp>.

²⁴¹ ICRC, 2013e: 11.

the 2013–14 cost allowance of \$0.82 per MWh for a change of 2.45 per cent in the consumer price index.

5.6 National Electricity Market fees

The cost allowance for NEM fees is adjusted by annual changes in the consumer price index. The Commission will grant a draft allowance of \$0.84 per MWh for NEM fees for 2014–15. This is based on an adjustment of the 2013–14 cost allowance of \$0.82 per MWh for a change of 2.45 per cent in the consumer price index.

5.7 Retail operating costs

As discussed in Chapter 3, the Commission is proposing to grant a step-up in the retail operating cost allowance to rebalance the per MWh allowance with the per customer allowance had the Commission continued with its original adjustment approach.

The rebalancing entails two steps. The first is to convert the \$111.66 per customer that would have been allowed for 2013–14 had the original approach been applied into a value of \$11.96 per MWh. This figure is then adjusted by the annual change in the consumer price index, which yields a draft allowance of \$12.26 per MWh for retail operating costs for 2014–15. This represents a 7 per cent increase over the 2013–14 cost allowance of \$11.43 per MWh.

5.8 Energy efficiency scheme costs

5.8.1 Information

ActewAGL Retail provided the Commission with a confidential submission on EEIS compliance costs and processes in May 2013 for purposes of the 2013–14 price reset. The Commission asked ActewAGL Retail to provide updated information on the costs of complying with the EEIS and details of the activities and processes followed in meeting EEIS obligations for this price investigation. ActewAGL Retail provided the Commission with a confidential submission containing the required information in November 2013. This, together with the information contained in the May 2013 submission, has enabled the Commission to undertake a prudence and efficiency assessment using the approach discussed in Chapter 3.

Table 5.11 shows ActewAGL Retail's forecast abatement costs for the EEIS as at November 2013. ActewAGL Retail expects to spend about \$26.5 million over three years to abate 645,000 t CO₂-e at an average cost of \$41 per t CO₂-e. This is the same amount estimated in May 2013 by ActewAGL Retail and applied by the Commission in the 2013–14 EEIS cost allowance.

Table 5.11 ActewAGL Retail Energy Efficiency Improvement Scheme abatement cost forecast, 2013–15

	2013	2014	2015	Total
Compliance costs (\$ million, 2012–13)	\$6.82	\$10.14	\$9.51	\$26.47
Planned abatement (t CO ₂)	170,000	250,000	225,000	645,000
Abatement cost (\$ per t CO ₂ -e)	40.12	40.56	42.27	41.04

Source: ActewAGL Retail, 2013b: 7.

As shown in Table 5.12, applying the methodology set out in Chapter 3 to ActewAGL Retail’s forecast abatement cost generates an EEIS cost of \$4.92 per MWh.

Table 5.12 Forecast EEIS cost, 2014–15, \$ per MWh

Year	Cost allowance per tonne	Emissions factor	Energy savings target	Cost per MWh	Half-yearly load weights
Jul–Dec 2014	\$41.00	0.89	13%	\$4.74	52.8%
Jan–Jun 2015	\$41.00	0.89	14%	\$5.11	47.2%
2014–15 EEIS cost (\$ per MWh)				\$4.92	

Source: Commission’s calculations.

Having calculated the EEIS cost of \$4.92 per MWh for 2014–15 based on ActewAGL Retail’s forecast costs, the next step is to assess the prudence and efficiency of ActewAGL Retail’s proposed expenditure.

5.8.2 Prudence

The first question facing the Commission is whether it is necessary for ActewAGL Retail to spend money on the energy efficiency scheme. It is clear that ActewAGL Retail is legally obligated to undertake expenditure on the energy efficiency scheme under the Energy Efficiency Act. As such, the Commission’s view is that the decision to spend money is necessary and is therefore a prudent decision.

5.8.3 Efficiency

The second question is whether ActewAGL Retail has undertaken sufficiently robust expenditure decision-making processes in implementing the compliance activities required and there is no lower-cost alternative that could be substituted. As discussed in Chapter 3, the Commission has adopted a two-part efficiency assessment. First is an assessment of the robustness of the processes and practices that ActewAGL Retail utilised in delivering the activities. Second is benchmarking ActewAGL Retail’s costs against relevant jurisdictional energy efficiency schemes.

Expenditure processes

In its confidential submission, ActewAGL Retail provided detailed information on the processes it followed in making EEIS expenditure decisions. Examples of the evidence

provided by ActewAGL Retail to justify that its processes resulted in an efficient outcome follow:

- a rigorous and competitive tender process to select a contractor to implement the required EEIS field activities. This included a requirement to meet a set off mandatory criteria with bids evaluated on the basis of proposed solution, price, previous experience, risk and standard of submission;
- the payment of the contractor on a per-product-installed basis; and
- the adoption of best practice, such as methods to prevent premises from being targeted more than once by product installers and a robust system of providing evidence of compliant installations of eligible activities.

The processes followed by ActewAGL Retail also included the preparation of an annual compliance plan that it is required to submit to the EEIS administrator for approval under section 17 of the Energy Efficiency Act before undertaking eligible activities in the compliance period. ActewAGL Retail provided the Commission with a copy of its 2013 compliance plan, which describes the resources, systems, processes and eligible activities to be implemented to ensure ActewAGL Retail's compliance with its 2013 obligations.

The Commission has reviewed the information provided by ActewAGL Retail and can conclude that it is satisfied that ActewAGL Retail undertook a robust expenditure decision-making process to meet its EEIS compliance requirements.

Benchmarking

There are a number of jurisdictional schemes with similar characteristics to the EEIS, such as the Victorian Energy Efficiency Target scheme, the New South Wales Energy Savings Scheme, the South Australian Residential Energy Efficiency Scheme and the Queensland Gas Scheme. These schemes are broadly comparable with the ACT scheme in the sense that they create legal obligations on retailers to fund energy-saving activities. These obligations create an additional cost in supplying electricity to customers, which is passed on in retail prices. The key difference between the jurisdictional schemes and the ACT scheme is that the latter is not based on creating and trading certificates.

The Commission has found only limited useful information on actual costs of the jurisdictional schemes. Two of the schemes, however, have been subject to recent regulatory decisions.

New South Wales

The New South Wales Energy Savings Scheme establishes legislated annual energy savings targets for electricity retailers (and other participants). To meet their target, retailers are required to surrender an appropriate number of Energy Savings Certificates or pay a financial penalty.

In its 2013 retail electricity price determination, IPART estimated the costs of complying with the scheme. IPART estimated compliance costs using the financial penalty for non-compliance as the opportunity cost. Based on a compliance obligation of 4.75 per cent of annual liable electricity sales in 2013–14 and an after-tax base penalty price of \$38.70 per MWh, IPART estimated a compliance cost of \$1.84 per MWh for 2013–14. This rose to an indicative \$1.93 per MWh in 2014–15 based on a 5 per cent compliance target.²⁴²

Queensland

The Queensland Gas Scheme requires retailers to obtain and surrender sufficient gas electricity certificates to cover a prescribed proportion of their annual customer load or incur a penalty charge for each MWh shortfall. In 2013, the last year of the scheme, retailers were required to obtain certificates for 15 per cent of their electricity load. In its 2013 price determination, the QCA estimated the cost of retailer compliance with the Queensland Gas Scheme for 2013–14 to be \$0.25 per MWh. This was based on current market data from AFMA and the requirement for retailers to comply with the scheme for six months of the regulatory year.

The main conclusion to be drawn from the above is that the recent energy efficiency scheme regulatory decisions in New South Wales and Queensland do not provide a useful cost benchmark for the ACT scheme. Although on the face of it the schemes are similar in nature, they differ in a number of respects, such as the required energy savings target and the penalties for non-compliance. Moreover, neither IPART nor the QCA has assessed actual retailer costs as the Commission proposes to do and therefore neither provides any information in this regard. Nonetheless, it is instructive to compare the cost allowances provided in regulated prices across jurisdictions. It is clear from Table 5.13 that the cost allowance for the ACT scheme in 2013–14 is significantly higher than that provided in New South Wales and Queensland.

Table 5.13 Energy efficiency schemes cost allowance, 2013–14

2013–14 (current prices)	ACT ^a	New South Wales ^b	Queensland ^c
Cost allowance (\$ per MWh)	\$3.63	\$1.89	\$0.50

Notes: a Excludes the \$0.12 per MWh cost adjustment from 2012–13.
 b The IPART-determined amount of \$1.84 in 2012–13 dollars has been inflated to 2013–14 dollars.
 c The QCA determined amount of \$0.25 per MWh has been doubled to allow for a full-year comparison.

Cost ceiling

In the absence of useful available benchmarking information, the Commission proposes using the formula described in Chapter 3, to establish a cost ceiling above which it would deem expenditure to be inefficient. This cost ceiling can be calculated using the tier penalty rate of \$70 per t CO₂-e for non-compliance with the EEIS. Multiplying this number by the determined emissions intensity factor of 0.89 t CO₂-e

²⁴² IPART, 2013b: 85.

per MWh and the average energy savings target for the three-year EEIS period gives a ceiling of about \$7.06 per MWh.

Efficiency conclusion

The Commission's conclusion is that ActewAGL Retail's proposed abatement costs for the EEIS are efficient on the basis that:

- ActewAGL Retail undertook a robust expenditure decision-making process to meet its EEIS compliance requirements.
- The proposed costs are below the cost ceiling.

5.8.4 Cost adjustment from 2013–14

There is no cost adjustment proposed from 2013–14 as the abatement costs provided by ActewAGL Retail in May 2013 for 2013–14 have not changed.

5.8.5 Draft decision

Having reviewed ActewAGL Retail's proposed expenditure, activities and expenditure processes, the Commission is satisfied that ActewAGL Retail's forecast expenditure on the EEIS is prudent and efficient. The Commission therefore proposes a draft EEIS cost allowance of \$4.92 per MWh for 2014–15. This is 31 per cent more than the allowance of \$3.75 per MWh granted for 2013–14.

The Commission notes the comments made by ActewAGL Retail in its issues paper submission about the uncertainty in relation to the future costs of the scheme due to potential changes to the abatement factors.²⁴³ The Commission understands that the scheme administrator is contemplating changes to the abatement factors to match changes being undertaken in the Victorian scheme on which the ACT scheme is based. The Commission will consider any new information on this matter that arises after the draft report is released and make necessary adjustments in the final decision.

5.9 Network costs

Consistent with the discussion in Chapter 3, as network costs are unavoidable for all retail businesses, the Commission will in its final decision pass through the network costs determined by the AER.

ActewAGL Distribution submitted its Transitional Regulatory Proposal for 2014–15 to the AER on 31 January 2014.²⁴⁴ Under the electricity rules, this proposal excludes the recovery of jurisdictional scheme costs such as the feed-in-tariff scheme and the

²⁴³ ActewAGL Retail, 2013c: 28.

²⁴⁴ This proposal and other documents relating to the AER's distribution determination for ActewAGL Distribution may be found on the AER website: www.aer.gov.au/node/11482.

Utilities Network Facilities Tax. These costs will be factored into distribution tariffs when ActewAGL Distribution submits its network pricing proposal in April 2014.²⁴⁵ This has consequences for the Commission’s treatment of network costs in the draft report and its requirement to report on the costs of the ACT Government’s feed-in-tariff scheme. The latter is discussed in the next section.

ActewAGL Distribution’s indicative proposal does not capture jurisdictional scheme costs and, therefore, is not an accurate reflection of the network costs that will apply for 2014–15. For the purposes of the draft report, the Commission proposes to adjust network charges by the change in the consumer price index from 2013–14 to 2014–15. This proposal increases the 2013–14 network cost allowance of \$88.29 per MWh to \$90.45 per MWh for 2014–15.

The Commission expects that the AER will make a final determination of ActewAGL Distribution’s submitted network costs for 2014–15 in late April 2014. ActewAGL Distribution will subsequently submit its 2014–15 network pricing proposal to the AER for approval. The AER should publish its final approval in late May 2014. In the final report the Commission will update the network cost allowance following the AER’s decision.

5.9.1 Feed-in tariff costs

Introduction

The terms of reference for this price investigation require the Commission to identify and report on the cost allowance of the ACT feed-in tariff arrangements for the years or period for which the price determination is made.

A feed-in tariff is a financial payment mechanism that rewards householders and businesses that install renewable energy generation systems by paying a premium price for the electricity they generate and feed back into the local electricity grid.

The ACT Government has effectively implemented three feed-in tariff schemes, the first of which commenced on 1 March 2009:

- A small-scale scheme applies to residential and business customers installing micro-generators with less than 30 kilowatt (kW) capacity. The premium rate for this scheme is 45.7 cents per kilowatt hour (exclusive of GST).²⁴⁶
- A medium-scale scheme covers the installation of systems from 30 kW to 200 kW capacity. The premium rate for this scheme is 75 per cent of the micro-generator rate.

²⁴⁵ In its proposal, ActewAGL Distribution note that the proposed distribution tariffs are 13.6 per cent lower than network costs for 2013–14, but this calculation does not take account of jurisdictional scheme costs.

²⁴⁶ *Electricity Feed-in (Renewable Energy Premium) Rate Determination 2011 (No 1)*.

- A large-scale scheme dealing with installation of renewable generation systems greater than 200 kW capacity. The feed-in tariff for this scheme is determined through a competitive tender process.

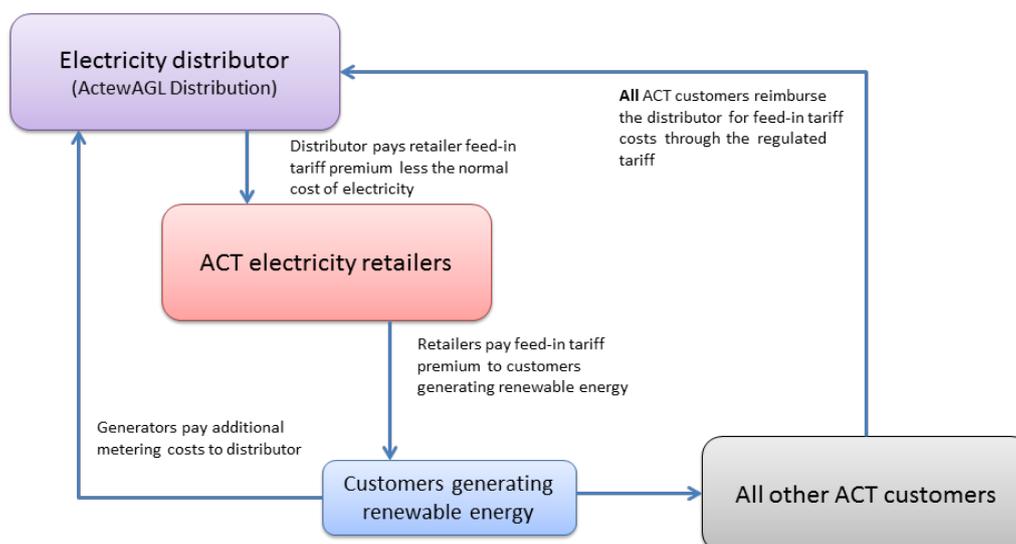
Under the *Electricity Feed-in (Renewable Energy Premium) Act 2008* electricity retailers are required to pay eligible participants in the first two schemes a premium rate for energy produced and exported to the grid. The retailer is required to pay the premium rate for a 20-year period. Electricity distributors are required to reimburse retailers for premiums paid to scheme participants less than the normal cost of electricity – determined by the Minister as 7.5 cents per KWh for the period 1 July 2013 to 30 June 2015.²⁴⁷ Distributors can recover any additional metering costs directly from scheme participants.

Under the *Electricity Feed-in (Large-scale Renewable Energy Generation) Act 2011*, which sets out the details of the large-scale scheme, electricity distributors are required to pay the feed-in tariff to generators for energy produced and exported to the grid. The feed-in tariff contract arrangements can apply for up to 20 years.

As such, ActewAGL Distribution bears the compliance costs associated with all three schemes. ActewAGL Distribution then passes the costs on to retailers as one component of network charges. As a component of network charges, the feed-in tariff costs are then included by the Commission in the regulated retail tariff payable by customers on standard retail contracts. This somewhat circular payment and cost recovery process is demonstrated in Figure 5.1, which shows the operation of the small- and medium-scale ACT schemes.

²⁴⁷ *Electricity Feed-in (Renewable Energy Premium) (Normal Cost of Electricity) Determination 2013 (No 1)*.

Figure 5.1 Operation of the small- and medium-scale ACT feed-in tariff schemes



Source: ICRC, 2010c: 2.

ActewAGL Distribution is required to report to the Commission on the number of renewable generators connected to the grid and the installed capacity of generators. As of 30 September 2013, ActewAGL Distribution reported a total of 14,244 renewable generators connected to the grid, with a total installed capacity of 39,461 kW.²⁴⁸

Electricity retailers are required to report to the Commission on the number of customers receiving feed-in tariff payments and the total premiums paid. As of 30 September 2013, retailers reported a total of 10,101 customers receiving payments, with payments totalling about \$36.6 million since the scheme started on 1 March 2009.²⁴⁹

Identifying feed-in tariff compliance costs

In its 2009 price determination, using the AER determination for the five-year ActewAGL Distribution price path from 2009 to 2014, the Commission estimated that ActewAGL Distribution's feed-in tariff costs were about \$27 per customer per year if spread evenly over the five years.²⁵⁰

As noted in the section above, ActewAGL Distribution's Transitional Regulatory Proposal for 2014–15 contains no information on jurisdictional scheme costs, including feed-in-tariff costs. As such, the Commission is not currently in a position to report on

²⁴⁸ ICRC, 2013a: 2; Note that ActewAGL Distribution is unable to distinguish between electricity generated under the ACT Government feed-in tariff schemes and electricity generated under proprietary renewable energy schemes operated by electricity suppliers. Consequently, reporting for electricity distribution covers all feed-in renewable energy schemes operating in the ACT.

²⁴⁹ ICRC, 2013a: 2.

²⁵⁰ ICRC, 2009: 23.

these costs. The Commission understands that ActewAGL Distribution will publicly provide this information in its forthcoming network pricing proposal. The Commission therefore proposes to detail feed-in-tariff costs in its final report in June 2014 to meet the terms of reference requirement.

5.10 Retail margin

The retail margin to be applied in 2014–15 was discussed in detail in Chapter 3. The Commission’s draft decision is to increase the retail margin from 5.4 per cent in 2013–14 to 5.7 per cent. Applying this margin to all of the cost categories of the retail electricity cost-index model generates a draft retail margin allowance of \$10.98 per MWh for 2014–15.

5.11 Draft decision on cost elements

Table 5.14 sets out the Commission’s draft decision on the cost components used to determine the maximum allowed change in the regulated retail electricity price for 2014–15, using the methodology set out in Chapter 3. The Commission’s draft decision provides for an average nominal increase of 1.18 per cent in ActewAGL Retail’s basket of regulated tariffs. This is equivalent to a real (adjusted for inflation) decrease in the regulated retail price of about 1 per cent.

Increases in the draft retail operating cost allowance, costs of the EEIS and the rise in the retail margin have been largely offset by a fall in the draft LRET and SRES costs.

Table 5.14 Draft composition of regulated retail electricity price adjustment, 2014–15

	2013–14 (\$/MWh)	2014–15 (\$/MWh)	% change
Energy purchase cost ^a	70.28	72.04	2.50
LRET and SRES costs	11.66	7.52	-35.46
Energy losses ^b	3.84	3.72	-3.15
Energy contracting cost	0.82	0.84	2.45
NEM fees	0.82	0.84	2.45
Total energy purchase cost	87.42	84.97	-2.81
Retail operating costs	11.43	12.26	7.26
ACT Energy Efficiency Scheme costs	3.75	4.92	31.09
Total retail costs	15.18	17.17	13.15
Network costs	88.29	90.45	2.45
Total energy + retail + network costs	190.89	192.59	0.89
Retail margin	10.31	10.98	6.50
Total costs	201.20	203.57	1.18

Notes: a The 2013–14 energy purchase cost amount has been recalculated from that contained in the 2013–14 price reset due to the adjustments to the forward price and carbon emissions intensity factor averaging periods and the Commission's desire to maintain comparability across years under the index approach.

b The 2013–14 energy losses amount has been recalculated from that contained in the 2013–14 price reset as a consequence of the proposed adjustments to the formula.

Table 5.14 is based on a carbon-inclusive energy purchase cost. If the price on carbon were removed with effect from 1 July 2014, the Commission has estimated that the energy purchase cost component would fall from \$72.04 to \$50.05 per MWh. This would result in a nominal fall in the regulated retail price of approximately 11 per cent in 2014–15.

5.12 Impact of the draft decision on customers

5.12.1 Carbon-inclusive case

Table 5.15 presents estimated increases in the 2014–15 electricity bills for a range of 'typical' residential customers resulting from the draft carbon-inclusive electricity price increase of 1.18 per cent.²⁵¹ A small customer may be representative of a single person living in an apartment, an average customer of a small family in a town house, and a large customer of a large family in a detached house. The annual impact on these typical bills due to the price increase ranges from \$13 for small customer to \$33 for a large customer.

²⁵¹ The Commission has no information on the reduction in electricity consumption that the Energy Efficiency Scheme has brought about and therefore cannot estimate the impact of the scheme on the bills of customers in 2014–15 who will benefit from this scheme.

Table 5.15 Estimated annual bill changes for residential customers, carbon-inclusive price, 2014–15

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2013–14 (\$)	Estimated annual bill 2014–15 (\$)	Change (\$)
Large	12,000	2,804	2,837	33
Average	8,000	1,959	1,982	23
Small	4,000	1,114	1,127	13

Table 5.16 presents estimates of annual bill increases for non-residential customers. The impact on a typical bill ranges from \$35 for a small non-residential customer to \$124 for a large non-residential customer.

Table 5.16 Estimated annual bill changes for non-residential customers, carbon-inclusive price, 2014–15

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2013–14 (\$)	Estimated annual bill 2014–15 (\$)	Change (\$)
Large	40,000	10,562	10,686	124
Average	25,000	6,750	6,830	80
Small	10,000	2,939	2,973	35

5.12.2 Carbon-exclusive price comparison

Table 5.17 presents estimated changes in the 2014–15 electricity bills for residential customers resulting from a carbon-exclusive electricity price fall of approximately 11 per cent. The annual impact on these typical bills due to the carbon-exclusive price increase ranges from minus \$121 for small residential customers to minus \$306 for a large residential customer.

Table 5.17 Estimated annual bill change for residential customers, carbon-exclusive price, 2014–15

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2013–14 (\$)	Estimated annual bill 2014–15 (\$)	Change (\$)
Large	12,000	2,804	2,498	-306
Average	8,000	1,959	1,745	-214
Small	4,000	1,114	992	-121

Table 5.18 presents estimates of annual bill changes for non-residential customers. The impact on a typical bill ranges from minus \$321 for a small non-residential customer to minus \$1,152 for a large non-residential customer.

Table 5.18 Estimated annual bill changes for non-residential customers, carbon-exclusive price, 2014–15

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2013–14 (\$)	Estimated annual bill 2014–15 (\$)	Change (\$)
Large	40,000	10,562	9,410	-1,152
Average	25,000	6,750	6,014	-736
Small	10,000	2,939	2,618	-321

6 Annual recalibration and pass-through arrangements

6.1 Annual recalibration method

As discussed in Chapter 3, the Commission is proposing to undertake two annual price recalibrations during the next regulatory period. The recalibration process will determine regulated retail prices for 2015–16 and 2016–17. This section sets out the details of the annual recalibration process, which is based on the Commission’s current annual adjustment process.

The Commission proposes the following process for each annual recalibration:

- ActewAGL Retail will submit to the Commission on or before 10 May prior to the regulatory year in question the following information:
 - calculation of costs associated with achieving environmental objectives for the year in question, including calculation of LRET, SRES and ACT energy efficiency scheme costs, and any proposed adjustments; and
 - full accounting of all proposed pass-through costs.
- ActewAGL Retail will submit to the Commission for verification the updated network costs for the regulated customer load as soon as they are approved by the AER.
- The Commission will determine the energy purchase cost component based on data available to 31 May prior to the regulatory year in question and energy losses based on AEMO data.

Based on this information, the Commission will determine the allowed percentage by which the weighted average price cap may adjust. The Commission will provide its direction to ActewAGL Retail by 7 June prior to the regulatory year in question. ActewAGL Retail will provide the Commission with its proposed schedule of regulated retail prices including the associated weighted average price cap calculations. The Commission will then, subject to an assessment that the proposals are consistent with the price direction, approve the proposed prices within two working days of receipt of the proposed schedule.

Table 6.1 shows the approach to calculating the individual cost components for the price recalibrations for each year that will determine the allowed percentage change. Approved pass-through amounts measured in dollars per MWh will be included as an additional component in the cost-index model as required. The Commission will inflate the dollar value of the pass-through amount into current dollars at the time of the recalibration using the Commission’s standard CPI adjustment formula.

Table 6.1 Proposed annual recalibration of cost components

Component	Method
Energy purchase cost (\$/MWh)	As determined by the Commission at the time of the recalibration using the energy purchase cost model
LRET and SRES costs (\$/MWh)	Estimates from ActewAGL Retail for the 2015–16 and 2016–17 years respectively, which are verified and applied using the Commission's methodology
Energy efficiency scheme	Estimates from ActewAGL Retail for the 2015–16 and 2016–17 years as required, subject to a prudence and efficiency assessment, with costs determined using the Commission's methodology
Energy losses (%)	Based on AEMO's estimates for 2015–16 and 2016–17 as appropriate
Energy contracting costs (\$/MWh)	Previous year's value adjusted by the change in CPI
NEM fees (\$/MWh)	Previous year's value adjusted by the change in CPI
Retail operating costs (\$/MWh)	Previous year's value adjusted by the change in CPI
Network costs (\$/MWh)	As determined and approved by the AER and applied by ActewAGL Retail to the standard retail contract customer load, and subsequently verified by the Commission
Cost pass-through (\$/MWh)	Cost pass-through verified by the Commission in current dollars as adjusted by the change in CPI
Retail margin (%)	5.7 per cent of total costs

The Commission proposes to use the weighted average price cap formula set out in Box 2.2 to control prices.

6.2 Pass-through arrangement details

As discussed in Chapter 3, the Commission is proposing to institute pass-through arrangements for the next regulatory period. The details of the proposed arrangements are set out below. For clarity, the arrangements are split in two: those for regulatory change and tax change events and those for a carbon price event.

For avoidance of doubt, pass-throughs can be positive or negative. A positive pass-through will increase regulated prices while a negative pass-through will decrease regulated prices.

6.2.1 Regulatory change and tax change events

Event description

Regulatory change events

A regulatory change event is a decision made on or after 31 May 2014 and before 30 June 2017 by any 'authority' (any government or any minister, agency or department, instrumentality or other authority of government and the Commission, the AEMC, the AER or AEMO) that has the extent of materially varying the nature, scope, standard or risk of providing services to regulated retail tariff customers, or the manner

in which those services are provided. A regulatory change event includes obligations in respect of:

- any customer hardship program;
- retailer of last resort events;
- environmental schemes, including the LRET and SRES schemes and the Energy Efficiency Improvement Scheme; and
- changes in distribution or transmission charges.

A regulatory change event does not include obligations in respect of:

- any decision, determination or ruling in relation to energy loss factors; and
- smart metering trials.

Tax change events

A tax change event means the imposition of a relevant tax, the removal of a relevant tax, or a change in the way a relevant tax is interpreted or calculated. A relevant tax is any tax, levy, impost, deduction, charge, rate, duty or withholding tax that is levied on ActewAGL Retail by any authority (as defined above) and is payable by ActewAGL Retail, other than:

- income tax and capital gains tax;
- stamp duty;
- AEMO fees;
- fees payable by ActewAGL Retail in respect of its retail licence;
- penalties, charges, fees and interest on late payments, or deficiencies in payments, relating to any tax; and
- any tax that replaces or is equivalent or similar to any of the taxes referred to above (including any state-equivalent tax).

Initiation and timing of review and price adjustment

ActewAGL Retail and the Commission may initiate a regulatory change or tax change pass-through event review. ActewAGL Retail may make an application to the Commission and the Commission may initiate a pass-through review for a regulatory change or tax change event when the Commission is undertaking the annual price recalibration process for 2015–16 and 2016–17.

Materiality threshold

A pass-through for regulatory change and tax change events will be made only where ActewAGL Retail incurs materially higher or lower costs in providing services to regulated retail tariff customers such that the aggregate impact of the pass-through event or events on costs is greater than 0.25 per cent of ActewAGL Retail's revenue from regulated retail tariffs in the 12 months to March of the most recent year.

Calculating the pass-through amount

General matters

The Commission will calculate the pass-through amount when considering a pass-through event as part of an annual recalibration process, having regard to the following matters:

- the implications for the efficient costs of ActewAGL Retail’s actions, including whether ActewAGL Retail has taken or omitted to take any action where such action or omission has increased the magnitude of the costs incurred;
- the need to ensure that ActewAGL Retail does not recover costs to the extent that provisions have already been made or otherwise taken into account;
- the need to ensure that ActewAGL Retail recovers only any actual or likely increment in efficient costs to the extent that such an increment is solely a consequence of a pass-through event;
- in the case of a regulatory change event, any costs that ActewAGL Retail has incurred prior to, but in preparation for, the occurrence of that regulatory change event; and
- in the case of a tax change event, any change in the way another tax is calculated, or the removal or imposition of another tax which in the Commission’s opinion is complementary to the tax change event concerned.

In addition:

- In considering any pass-through event, the Commission may consult with affected stakeholders to the extent the Commission considers appropriate.
- For the avoidance of doubt, the Commission will not have regard to the time value of money when establishing the amount of any pass-through.

Regulatory change and tax change event pass-through mechanism

For a regulatory change or tax change pass-through event that occurs during 2014–15 or 2015–16, when determining Y^t , the Commission will include the value of the pass-through event, which can be either negative or positive, in the cost-index model.

6.2.2 Carbon price event

High-level issues

Pass-through timing

One particular matter that may have implications for the timing of a pass-through event and consequent regulated retail price adjustment are the price variation requirements under the NECF. This matter was noted by ActewAGL Retail in its submission to the issues paper. It was also raised in AGL’s submission to the Australian Government’s carbon repeal consultation:

There are also other regulations governing the timing of retail price variations. For example, in the SA and NSW (which have transitioned to the National Energy Customer Framework) standing offer prices cannot be varied more than once every 6 months. This same provision applies within the Victorian energy retail regulatory framework.²⁵²

As discussed in Chapter 1, the NECF, which commenced on 1 July 2012, introduced a new set of national laws, rules, and regulations that govern the retail sale and distribution of energy to consumers. The national legislation is hosted by South Australia and is set out in the schedule to the *National Energy Retail Law (South Australia) Act 2011*. The ACT has applied the national energy retail laws from 1 July 2012 through the *National Energy Retail Law (ACT) Act 2012* and the *National Energy Retail Law (ACT) Regulation 2012*.

Section 23 of the schedule to the *National Energy Retail Law (South Australia) Act 2011* limits the variation of standing offer prices by retailers to only once every six months. Standing offer prices are defined as all of the tariffs and charges that a retailer charges a small customer for or in connection with the sale and supply of energy to a small customer under a standard retail contract. Section 23 notes that a standing offer price may be a regulated price under jurisdictional energy legislation. Section 14 of the *National Energy Retail Law (ACT) Act 2012* requires standing offer prices to be consistent with ICRC price directions for small customers.

There are two implications of this NECF requirement. The first is that there may be a delay in implementing any price change following the repeal of the Clean Energy Act. Consider the scenario where the Commission determines a carbon-inclusive regulated price from 1 July 2014 and the repeal bills are passed a few months later. Given that ActewAGL Retail would have varied its standing offer prices on 1 July 2014, the next price variation would only be permissible on 1 January 2015. As such, this may not meet the ACCC's expectations of a 'fairly immediate' price adjustment.

The second implication is that the Commission needs to ensure that the pass-through arrangements do not result in a price adjustment requirement under the price direction that conflicts with the NECF requirements. Not doing so could potentially place ActewAGL Retail in the untenable position of having to choose whether to face penalties for non-compliance under the ICRC Act or the national retail electricity law. The Commission considers that this matter is best addressed by ensuring that there is sufficient flexibility in the pass-through arrangements to avoid any timing conflicts.

Calculation issues

Another matter the Commission needs to consider in developing pass-through arrangements to deal with the price on carbon uncertainty, as noted by ActewAGL Retail in its submission to the issues paper, is how to calculate the pass-through.

²⁵² AGL, 2013b: 4.

A related matter that requires consideration is the uncertainty about the extent to which the cost of carbon paid by a retailer after 1 July 2014 will be recoverable under a retrospective repeal scenario. As noted above, this matter was raised by the ESAA in its submission on the issues paper. In its submission to the Australian Government's carbon repeal consultation, EnergyAustralia further noted that electricity purchased by retailers under carbon-inclusive contracts will require the price on carbon to be paid until the expiry of the contract irrespective of any legislative repeal. In relation to carbon-exclusive contracts, EnergyAustralia stated that:

Under a retrospective repeal scenario, contracts that settle up to the date of enactment of repeal will include a cost of carbon (in line with physical market bidding). For this cost of carbon to be refunded these contracts would require a deliberate reversal between parties. Aside from taking considerable time and administrative effort to achieve, there is nothing in the existing standard carbon pass-through clause to compel parties to reverse a contract and refund the cost of carbon.²⁵³

Commission's consideration

The Commission's view is that the simplest way to deal with a within-financial year carbon price event is for the Commission to directly adjust each element of ActewAGL Retail's basket of regulated retail tariffs by the percentage change in the output of the cost-index model resulting from applying a carbon-exclusive energy purchase cost.

The Commission has no basis to assess the impact of retrospective change in the price on carbon on ActewAGL Retail's contractual electricity purchase arrangements. Therefore the Commission does not propose to incorporate any pass-through amount related to potential refunding of carbon costs under a retrospective repeal scenario. Similarly, the Commission does not propose to consider any pass-through amount related to carbon-inclusive transactions that apply beyond the date the carbon-exclusive regulated retail prices apply in the ACT.

Given the NECF timing requirements, as part of within-financial year event, the Commission is limited to implementing the carbon-exclusive prices on 1 January 2015. If the price on carbon is removed before this date, the Commission faces the problem of whether to claw back any over payment by customers for the period between the date the carbon price is removed and the 1 January 2015. The regulated retail prices post 1 January 2015 should reflect the cost of providing regulated retail electricity services at that time. Clawing back any over payment would result in prices below cost. Given the fact that there is some competition in the ACT market and there are some small consumers on market contracts, pricing below cost may have negative consequences for these consumers and their retailers. Consequently, the Commission proposes not to take into account any potential over recovery in its proposed within-financial year adjustment mechanism.

²⁵³ EnergyAustralia, 2013a: 3.

Should the maximum average price change in the Commission's final decision be close to zero, the Commission could consider determining that there be no price change on 1 July 2014 but institute a once-off reset to take place as soon as the repeal legislation was passed. This alternative would be more attractive if the Commission had some degree of certainty that the legislative changes were likely to occur shortly after 1 July 2014. The Commission has not included this alternative in the proposed price direction, but is seeking stakeholder comments and proposes to give further consideration to this approach in its final report.

Should the timing of the legislative changes result in the Commission dealing with a change in the price on carbon arrangements as part of an annual recalibration process, no pass-through arrangements are required. This is because applying a price on carbon value of zero in the cost-index model will effectively remove the cost of carbon element.

Fallback position

Due to the level of uncertainty around how the repeal of the current legislation will play out in practice, and the added uncertainty around the Australian Government's replacement carbon reduction policies, the risk remains that the proposed pass-through arrangements will be unable to adequately cope with the legislative changes. To mitigate this risk, the Commission has included a trigger in the proposed price direction that will provide for the Commission to vary the price direction should the complexities of the new price on carbon arrangements overwhelm the pass-through mechanism. It should be noted that varying a price direction is no small matter and essentially requires the Commission to undertake the same process it would take when making a price direction.

Practical application

Event description

A carbon price event means any change on or after 31 May 2014 to the price on carbon arrangements set out in the Clean Energy Act.

Initiation and timing of review and price adjustment

The Commission may initiate a pass-through review for a carbon price event at any time. Where a pass-through event is approved by the Commission during 2014–15, 2015–16 or 2016–17, the Commission may require ActewAGL Retail to implement the outcome of a pass-through event at a particular date or in a particular manner. This will ensure that the timing of any price adjustment arising from a pass-through review is consistent with national retail electricity law requirements.

Materiality threshold

A carbon price event will not be subject to the materiality threshold.

Calculating the pass-through amount

General matters

In considering a carbon price pass-through event, the Commission may consult with affected stakeholders to the extent the Commission considers appropriate.

Carbon price event pass-through mechanism

For a within-year event, the Commission proposes to apply the formula set out in Box 6.1.

Box 6.1 Proposed carbon price event formula

The Commission will calculate the required percentage change using the formula below. ActewAGL Retail must then ensure that all of its regulated retail tariffs and their components are adjusted by this percentage change.

$$CA^t = \left(\frac{CETC^t}{CITC^t} - 1 \right) \times 100$$

where

- CA is the percentage adjustment due to the removal of the price on carbon to be applied to all components of ActewAGL Retail's standing offer prices;
- CETC is the total cost in dollars per MWh from the Commission's cost-index model using a carbon-exclusive energy purchase cost;
- CITC is the total cost in dollars per MWh from the Commission's cost-index model using a carbon-inclusive energy purchase cost.

7 Compliance with the terms of reference and the ICRC Act

This chapter first sets out how the Commission’s investigation complies with the terms of reference. Second, it considers how the proposed price direction, should it be adopted as the price direction at the conclusion of the price investigation, would comply with the provisions of the ICRC Act, and particularly the requirements of section 20(2).²⁵⁴ Third, it assesses the Commission’s proposed approach to regulating retail electricity prices against the set of principles the AEMC considers should guide the development of a method to set retail electricity prices.

7.1 Compliance with the terms of reference

Table 7.1 Compliance with the terms of reference

Clause	Requirement	Chapter	Comments
2	The price direction will be for the period of 1 July 2014 to 30 June 2017 with provision for annual reviews by 30 June 2015 and 30 June 2016.	2, 6	The proposed price direction applies for a 3 year period and provides for annual price recalibrations.
3.1a	The Commission must consider the impact on direct electricity costs of changes in government policies and pass through of those costs to regulated prices including, but not restricted to:		
i	the Commonwealth Government’s carbon pricing mechanism	2,3, 5, 6	The energy purchase cost model incorporates the cost of carbon. A carbon price pass-through event and price variation trigger has been proposed.
ii	Commonwealth and ACT retailer obligation energy efficiency schemes	3, 5	The prudent and efficient costs of the Act Government’s EEIS are included in the cost build-up.
iii	the Commonwealth Government’s Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme	3, 5	LRET and SRES costs are included in the cost build-up.
iv	any other schemes implemented to address climate change relevant to electricity pricing		N/A
3.1b	The Commission must consider the efficient and prudent cost of managing risk in the cost of purchasing electricity	3, 5	The energy purchase cost model incorporates a hedging strategy.
3.2	The Commission must identify and report on the cost allowance of the ACT feed-in tariffs (small and large scale) for the year(s) or period for which its determination is being	3, 5	The costs of the ACT feed-in tariffs will be identified and reported in the final report.

²⁵⁴ For avoidance of doubt, it is the price direction that the Commission makes at the conclusion of the price investigation, and not the proposed price direction, that is subject to the provisions set out in section 20(2) of the ICRC Act.

Clause	Requirement	Chapter	Comments
	made		
3.3	The Commission must identify and report on the efficient costs of complying with the Energy Efficiency (Cost of Living) Improvement Act 2012	3, 5	The costs of the ACT Government's EEIS are identified, assessed for prudence and efficiency and reported.
3.4	The Commission must produce its final report in time sufficient to allow ActewAGL Retail to make any necessary changes to its billing system and to provide information on the new tariff to customers for implementation effective 1 July 2014		This clause relates to the final report.

7.2 Compliance with the ICRC Act

7.2.1 Objectives

Table 7.2 Compliance with section 7 of the ICRC Act

Section 7	Requirement	Chapter	Comments
(a)	to promote effective competition in the interests of consumers	4	The Commission considered whether a competition allowance should be included in the regulated retail electricity price in the ACT in order to promote competition. The Commission concludes the introduction of a competition allowance in the ACT to be a high risk strategy because there is a strong possibility that any benefits it may produce will be long delayed, and therefore of little present value, and a distinct possibility that it will not produce benefits even in the long term.
(b)	to facilitate an appropriate balance between efficiency and environmental and social considerations	2, 3, 4, 5, 6	The Commission's retail electricity cost-index model is designed to recover the efficient costs of providing retail electricity services in the ACT. This includes the efficient costs of various environmental measures such as the price on carbon, the national LRET and SRES schemes and the ACT energy efficiency schemes. Social considerations are taken into account first by ensuring that the regulated price is based on efficient costs. The Commission also considers submissions from consumer rights organisations, and the ACT community considers the impacts of proposed price changes on customer electricity bills.
(c)	to ensure non-discriminatory access to monopoly and near monopoly infrastructure		N/A

7.2.2 Section 20(2)

Table 7.3 Compliance with section 20(2) of the ICRC Act

Section 20(2)	Requirement	Chapter	Comments
(a)	The protection of consumers from abuses of monopoly power in terms of prices, pricing policies (including policies relating to the level	2, 3,5	The Commission applies a weighted average price cap form of control to ActewAGL Retail's suite of regulated retail electricity tariffs. The price cap is based on the recovery of efficient costs. Together these actions protect consumers from the abuses of monopoly power in terms

Section 20(2)	Requirement	Chapter	Comments
	or structure of prices for services) and standard of regulated services		of prices.
(b)	Standards of quality, reliability and safety of the regulated services	3,5	The Commission's retail electricity cost-index model, and in particular the retail operating cost component, is designed to cover the efficient costs of providing retail electricity services. This includes the costs of meeting quality, reliability and safety standards. As a specific example, the payment of ancillary services fees, which is captured in the cost-index model, assists AEMO in providing for safe and reliable delivery of electricity to all consumers.
(c)	The need for greater efficiency in the provision of regulated services to reduce costs to consumers and taxpayers	3,5	The Commission's retail electricity cost-index model is based on the efficient costs of providing retail electricity services in the ACT. As an example, to determine the energy purchase cost allowance, the Commission has adopted an approach based on independent and verifiable market data and a range of assumptions based on industry standards to provide a reasonable estimate of the cost of purchasing wholesale energy from a competitive market pool.
(d)	An appropriate rate of return on any investment in the regulated industry	2, 3, 5	The Commission is proposing a retail margin of 5.7 per cent of the total efficient cost of providing retail electricity services. The Commission is confident that this provides an appropriate rate of return on investment in the retail electricity industry.
(e)	The cost of providing the regulated services	3, 4, 5	The Commission's retail electricity cost-index model is designed to recover the efficient costs of providing retail electricity services in the ACT. The Commission considers that the allowance granted for retail operating costs is a reasonable balance between the need to allow cost recovery and the need to require the incumbent to operate efficiently.
(f)	The principles of ecologically sustainable development	3, 5	The Commission's retail electricity cost-index model includes the efficient costs of various environmental measures such as the price on carbon, the national LRET and SRES schemes and the ACT energy efficiency schemes. These costs reflect to some extent the environmental costs incurred in the consumption of electricity that the Australian Government and ACT Government consider should be passed through to consumers.
(g)	The social impacts of the decision	3,4,5	Social considerations are taken into account first by ensuring that the regulated price is based on efficient costs. The Commission also considers submissions from consumer rights organisations and the ACT community and considers the impacts of proposed price changes on customer electricity bills. In addition, the Commission has had regard to the social impacts of its decisions by not including a competition allowance. This was on the basis that the Commission considers the introduction of a competition allowance in the ACT to be a high risk strategy because there is a strong possibility that any benefits it may produce will be long delayed, and therefore of little present value, and a distinct possibility that it will not produce benefits even in the long term.

Section 20(2)	Requirement	Chapter	Comments
(h)	Considerations of demand management and least-cost planning	3, 5	The ACT Government's energy efficiency scheme has a demand-management element. The costs of this scheme are accounted for in the cost-index model.
(i)	The borrowing, capital and cash flow requirements of people providing regulated services and the need to renew or increase relevant assets in the regulated industry	3, 5	The Commission's retail electricity pricing provides for the efficient costs of providing retail electricity services in the ACT. This includes a retail margin of 5.7 per cent of the total efficient cost. The Commission is confident that this provides sufficient room to meet the borrowing, capital and cash flow requirements and meet the retail industry investment requirements.
(j)	The effect on general price inflation over the medium term	3, 5, 6	The Commission ensures that only efficient costs are applied in the cost-index model. A number of components of the model are adjusted each year by the change in the consumer price index.
(k)	Any arrangements that a person providing regulated services has entered into for the exercise of its functions by some other person	3, 5	The recovery of energy losses in the cost-index model is mandated in the NEM framework and therefore meets the 20(2)(k) requirement.

7.3 Assessment against Australian Energy Market Commission best practice advice

Table 7.4 provides an assessment of the regulatory approach the Commission proposes to adopt to set prices for the next regulatory period against the principles recommended by the AEMC in its advice on best practice retail price methodology.²⁵⁵

Table 7.4 Assessment of the Commission's approach against the Australian Energy Market Commission principles

AEMC principle	Commission's approach
Cost efficiency	The Commission's retail electricity cost-index model estimates the efficient costs of the provision of retail electricity services in the ACT.
Cost reflectivity	The Commission's model reflects the underlying costs of supplying electricity to customers, including wholesale energy, network and retail costs, by largely relying on market data and industry benchmarks. Dynamic cost reflectivity is ensured through annual recalibrations of the parameters of the model.
Transparency	The Commission's approach is to use market information where this is available and to consider the publicly available analysis of other regulators in its decisions.
Open and consultative process	The Commission undertakes an open and consultative price investigation process. This generally involves public consultation on an issues paper, draft report and proposed price direction, and a public hearing. This consultation informs the development of the final report and price direction.
Predictability and stability	The Commission's broad pricing methodology has been consistent with a number of adjustments since its current approach was introduced in 2007.
Minimising the administrative burden	The Commission minimises the regulatory burden on regulated businesses and stakeholders by undertaking an open, consultative and transparent investigation process.

²⁵⁵ AEMC, 2013: 21–24.

AEMC principle	Commission's approach
Appropriate allocation of risk	The Commission's regulatory framework ensures that risks are appropriately addressed in a number of ways. The hedging strategy in the energy purchase cost model is extremely conservative in recognition of the asymmetric risk associated with setting the regulated retail price too low. Pass-through arrangements and price variation triggers provide for unexpected events.

Appendix 1 Terms of reference

Australian Capital Territory

Independent Competition and Regulatory Commission (Price Direction for the Supply of Electricity to Certain Small Customers) Terms of Reference Determination 2014

Disallowable instrument DI2014–10

made under the

Independent Competition and Regulatory Commission Act 1997 ('the Act'), Section 15 (Nature of industry references) and Section 16 (Terms of industry references).

1. Interpretation

In this instrument:

"*National Energy Retail Law (ACT)*" has the same meaning as in the *National Energy Retail Law (ACT) Act 2012*.

"*small customer*" has the same meaning as in the *National Energy Retail Law (ACT)*.

"*standing offer prices*" has the same meaning as in the *National Energy Retail Law (ACT)*.

"*ActewAGL Retail*" means the partnership of ACTEW Retail Ltd (ACN 074 371 20) and AGL ACT Retail Investments Pty Ltd (ACN 093 631 586).

2. Reference for investigation under Section 15

Pursuant to section 15(1) of the Act, I refer to the Independent Competition and Regulatory Commission (the 'Commission') the provision of a price direction for the standing offer prices for the supply of electricity to those persons who are a *small customer*, and who consume less than 100MWh of electricity over any consumption period of 12 consecutive months.

The price direction will be for the period of 1 July 2014 to 30 June 2017 with provision for annual reviews by 30 June 2015 and 30 June 2016. Pursuant to section 15(4) of the

Act, the price direction determined by the Commission under these terms of reference is to apply only to the authorised electricity retailer **ActewAGL Retail**.

3. **Terms of reference for investigation under section 16**

Pursuant to section 16(1) of the Act, I require that the Commission consider the following matters in relation to the conduct of the investigation:

1. The Commission should consider the following matters:
 - a. The impact on direct electricity costs of changes in government policies and pass through of those costs to regulated prices including, but not restricted to:
 - i. the Commonwealth Government’s carbon pricing mechanism;
 - ii. Commonwealth and ACT retailer obligation energy efficiency schemes;
 - iii. the Commonwealth Government’s Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme; and
 - iv. any other schemes implemented to address climate change relevant to electricity pricing.
 - b. The efficient and prudent cost of managing risk in the cost of purchasing electricity.
2. The Commission must identify and report on the cost allowance of the ACT Feed-in Tariffs (small and large scale) for the year(s) or period for which its determination is being made.
3. The Commission must identify and report on the efficient costs of complying with the *Energy Efficiency (Cost of Living) Improvement Act 2012*.
4. The Commission must produce its final report in time reasonably sufficient to allow **ActewAGL Retail** to make any necessary changes to its billing system and to provide information on the new tariff to customers for implementation effective 1 July 2014.

Katy Gallagher MLA

Acting Treasurer

2 February 2014

Appendix 2 Submissions

A2.1 Submissions on the issues paper

	Date received	Submitter	Key issues raised/information provided
1	8 October 2013	Mr Joe Wyder	Requested more detail on how the weighted average price cap is applied to residential tariffs.
2	15 November 2013	AGL Energy Ltd	<p>Supported the weighted average price cap.</p> <p>Recommended a maximum regulatory period of three years.</p> <p>Supported pass-through arrangements but with no materiality threshold.</p> <p>Supported pass-through arrangements to deal with the price on carbon uncertainty.</p> <p>Expressed a preference for the long-run marginal cost approach to determining energy purchase costs but had no major concerns with the Commission's continued use of a market-based model.</p> <p>Noted that hedging an entire load through a single market could not be considered a conservative hedging strategy.</p> <p>Suggested that increasing peakiness in the ACT load ratio due to the growth in solar rooftop systems should be reflected in the energy purchase cost model.</p> <p>Supported continued use of forward carbon-exclusive contract prices to provide flexibility to deal with the price on carbon uncertainty.</p> <p>Suggested that the Commission use long-run marginal costs rather than a market-based approach to estimate LRET costs.</p> <p>Does not support a market-based approach to estimate SRES costs.</p> <p>Contended that it is contradictory to have a policy of full retail contestability and price regulation based on benchmark costs that preclude entry of competition in the market.</p> <p>Argued that basing retail operating costs on an incumbent retailer is not incompatible with including an allowance for customer acquisition and retention costs.</p> <p>Suggested that due to diseconomies of scale, ACT retail operating cost benchmarks should be significantly higher than those determined in New South Wales and Queensland.</p> <p>Proposed that the retail margin be increased to 5.7 per cent to maintain consistency with regulatory benchmarks in New South Wales and Queensland.</p>
3	15 November 2013	Energy Supply Association of Australia	<p>Supported retail price deregulation.</p> <p>Supported setting regulated price at a commercial level which includes customer acquisition and retention costs.</p> <p>Expressed a preference for the long-run marginal cost approach to determining energy purchase costs.</p> <p>Requested that the Commission take into account NECF standing offer price timing requirements and risks associated with retrospective repeal of the price on carbon legislation.</p>
4	15 November 2013	EnergyAustralia Pty Ltd	<p>Noted that the limited number of retailers servicing customers on the regulated tariff is potentially due to price regulation of this segment of the market.</p> <p>Cautioned against using the New South Wales load shape for</p>

Date received	Submitter	Key issues raised/information provided
		<p>calculating the ACT energy purchase cost.</p> <p>Noted that price volatility may increase due to Australian Bureau of Meteorology predictions of higher-than-average summer temperatures.</p> <p>Disagreed with AEMC's market-based approach to determining energy purchase costs recommendation in favour of the long-run marginal cost approach.</p> <p>Disputed the findings of the Essential Services Commission's discussion paper on Victorian retailer margins.</p> <p>Supported the weighted average price cap.</p> <p>Recommended a two- to three-year regulatory period.</p> <p>Supported pass-through arrangements with an appropriate materiality threshold.</p> <p>Expressed the following concerns with the Commission's cost-index model:</p> <ul style="list-style-type: none"> • It is based on incumbent rather than new entrant retailer. • The energy purchase cost should reference a long-run marginal cost floor. • It does not include any competition allowance or headroom. <p>Supported a more conservative approach to hedging through an explicit volatility allowance in the cost build-up.</p> <p>Supported continued use of forward carbon-exclusive contract prices and pass-through arrangements to provide flexibility to deal with the price on carbon uncertainty.</p> <p>Suggested that the Commission use long-run marginal cost rather than a market-based approach to estimate LRET costs.</p> <p>Recommended that SRES costs be estimated at the \$40 clearing house price.</p> <p>Raised concerns that the Commission has developed a pessimistic view of competition in the ACT.</p> <p>Stated that the retail operating cost allowance should reflect diseconomies of scale and not be benchmarked against other larger jurisdictions.</p> <p>Stated that the retail operating cost allowance should include customer acquisition and retention costs.</p> <p>Suggested that EEIS costs should be based on tier 1 retailers (ActewAGL Retail) unless the compliance costs for tier 2 retailers are higher.</p> <p>Supported full pass-through of network costs.</p> <p>Recommended a retail margin of at least 5.7 per cent.</p>
5	15 November 2013 ActewAGL Retail Limited	<p>Recommended that the regulated retail tariff should be removed.</p> <p>Supported the AEMC recommendation that a stable and predictable regulatory framework should be applied.</p> <p>Supported the Commission's energy purchase cost model with an increase to the forward price margin.</p> <p>Supported a higher retail cost allowance on the basis that the ACT now has the lowest allowance, even before taking into account diseconomies of scale and customer and acquisition and retention costs.</p> <p>Supported continued use of forward carbon-exclusive contract prices and pass-through arrangements to provide flexibility to deal with the price on carbon uncertainty.</p> <p>Recommended that the retail margin be increased to at least 6 per cent in line with other jurisdictions.</p> <p>Proposed a maximum two-year regulatory period subject to</p>

	Date received	Submitter	Key issues raised/information provided
			<p>flexible pass-throughs and a predictable annual reset process.</p> <p>Expressed concern about the risks faced under price regulation related to the repeal of the price on carbon legislation.</p> <p>Disputed the findings of the Essential Services Commission's discussion paper on Victorian retailer margins.</p> <p>Supported the weighted average price cap.</p> <p>Supported pass-through arrangements with no materiality threshold.</p> <p>Sought assurance that the current pass-through formula can be applied in a neutral way to within-year pass-throughs.</p> <p>Recommended that the Commission include a specific carbon pricing mechanism pass-through arrangement.</p> <p>Maintained a preference for basing energy purchase costs on long-run marginal costs but recognises, in the interests of a transparent and stable regulatory framework, the Commission's previous preference to use a market-based approach.</p> <p>Raised concerns that the decrease in the calculated uplift factor from 2009–10 and the increasing difference between the forward price and the time-weighted spot price mean that the Commission's hedging approach is no longer conservative.</p> <p>Requested that the Commission reconsider its 5 per cent forward price margin assumption.</p> <p>Recommended that the Commission revert to using a 23-month averaging period for calculating the forward price and cost of carbon.</p> <p>Suggested that the Commission use long-run marginal cost rather than a market-based approach to estimate LRET costs.</p> <p>Recommended that SRES costs be estimated at the \$40 clearing house price.</p> <p>Expressed a clear preference for benchmark retail operating costs to be based on a new entrant, which should include an allowance for customer acquisition and retention costs.</p> <p>Recommended that the retail operating cost allowance should be \$114 to \$178 per customer when diseconomies of scale are taken into account.</p> <p>Raised concerns about the risks of an ex post prudence and efficiency assessment of EEIS costs.</p>
6	20 November 2013	ACT Civil and Administrative Tribunal	<p>Submitted that no allowance should be made in the energy purchase cost model simply for the possibility of an increase in price volatility in the future.</p> <p>Submitted that there has been little customer churn and insignificant costs in acquiring and retaining customers in the ACT in recent years.</p> <p>Stated that the purported benefits of competition in retail electricity markets in other jurisdictions are not well supported by actual experience.</p> <p>Submitted that decisions by other jurisdictional regulators should be treated cautiously as market conditions differ from those in the ACT.</p> <p>Rejected the inclusion of a customer acquisition and retention cost allowance.</p> <p>Submitted that there should be evidence that competition in the ACT market would lead to a long-term reduction in retail prices before a competition allowance is accepted.</p> <p>Supported the weighted average price cap approach.</p>

	Date received	Submitter	Key issues raised/information provided
			<p>Recommended a two- or three-year regulatory period.</p> <p>Supported the retention of the current materiality threshold for pass-through arrangements but recommended that the current set of allowable pass-through events be reduced.</p> <p>Supported the Commission's market-based approach to determining wholesale energy purchase costs rather than adopting a long-run marginal cost approach.</p> <p>Supported a market-based approach to determining LRET and SRES costs.</p> <p>Suggested that the Commission require the price reduction consequent on removal of the price on carbon to flow through to prices quickly.</p> <p>Submitted that the current retail margin should not be increased.</p>
7	21 November 2103	Origin Energy Ltd	<p>Argued that previous ACT determinations have materially understated the cost of meeting the small customer load.</p> <p>Noted that the lower volatility in New South Wales spot prices has lowered costs for only those retailers buying energy on a short-term basis.</p> <p>Submitted that considerable uncertainty remains in the market due to the carbon pricing issue, the impact of green schemes and changes in consumption and load shape due to embedded generation.</p> <p>Rejected the findings of the ESC report on retailer margins in Victoria.</p> <p>Supported the weighted average price cap approach.</p> <p>Recommended a two- to three-year regulatory period with annual reviews of wholesale costs.</p> <p>Supported pass-through arrangements including for the cost of carbon.</p> <p>Questioned the Commission's approach of not including customer acquisition and retention costs for an incumbent retailer.</p> <p>Supported basing energy purchase costs with reference to long-run marginal cost.</p> <p>Recommended that the Commission adopt an allowance for the costs of prudential requirements associated with bank guarantees for futures hedges.</p> <p>Supported continued use of forward carbon-exclusive contract prices and pass-through arrangements to deal with the price on carbon uncertainty.</p> <p>Suggested that the Commission use long-run marginal cost rather than a market-based approach to estimate LRET costs as there is insufficient liquidity in the LGC market.</p> <p>Noted that the Commission's allowance for energy contracting costs is significantly lower than that provided in New South Wales.</p> <p>Argued that standard retail operating cost allowance in the ACT is much lower than that provided in other jurisdictions.</p> <p>Urged the Commission to consider creating an allowance to encourage further development of competition in the ACT market.</p>
8	28 November 2013	ACT Government	<p>Stated that the ACT Government remained committed to retail price deregulation should effective competition emerge and be sustained in the ACT.</p> <p>Requested that the Commission make it clear that the Commission's discretion to set the length of the regulatory period does not limit the ACT Government's ability to deregulate price within the period that is determined.</p>

Date received	Submitter	Key issues raised/information provided
		<p>Did not support the inclusion of a competition allowance in regulated retail prices.</p> <p>Supported the Commission undertaking an ex post assessment of ActewAGL Retail's expenditure on the EEIS.</p> <p>Suggested that the Commission could consider and compare cost incurred by retailers administering similar schemes in other jurisdictions.</p>

Appendix 3 Energy purchase cost model formulas

This section describes the mathematical model the Commission applied in determining the energy purchase cost over the 2012–14 period.

The first step is to present the basic hedging equation as derived in 2010 and applied in 2010 and 2012:²⁵⁶

$$EPC_s = FP_s \times [(1 - M_s) \times LS_s + M_s \times LR_s]$$

where the following are defined for each quarter s :

- EPC_s denotes the carbon-exclusive energy purchase cost;
- FP_s denotes the forward price;
- M_s denotes the forward price margin;
- LS_s denotes the load shape;
- LR_s denotes the load ratio.

The portion in square brackets, $[(1 - M_s) \times LS_s + M_s \times LR_s]$, is the uplift factor for each quarter s . As part of the 2012 investigation, the Commission recast the original 2010 energy purchase cost model so that it was based on quarterly data.

The next step is to describe the determination of the load shape, the load ratio, and the forward-to-spot-price margin. Define the following for each half hour in each period:

- $L_{s,t}$ be the load in period s for the half-hour trading interval t ;
- $SP_{s,t}$ be the spot price in period s for the half-hour trading interval t ;
- FP_s be the forward price in period s for a ‘flat’ or ‘base load’ contract;
- \widehat{L}_s be the quantity of ‘flat’ forward contracts that have been purchased for period s ;
- \bar{L}_s be the average load in period s which is calculated by $\bar{L}_s = \frac{1}{T} \times \sum_{t=1}^T L_{s,t}$;
- \overline{SP}_s be the time-weighted average spot price in period s which is calculated by²⁵⁷ $\overline{SP}_s = \frac{1}{T} \times \sum_{t=1}^T SP_{s,t}$;
- this is contrasted with $\overline{\overline{SP}}_s$ which is the load-weighted average spot price, which is determined by $\overline{\overline{SP}}_s = \sum_{t=1}^T (SP_{s,t} \times L_{s,t}) / \sum_{t=1}^T L_{s,t}$.

Three ratios can be calculated from these defined variables:

²⁵⁶ See Appendix 4 for more detail.

²⁵⁷ In what follows, use of the term ‘spot price’ generally refers to the time-weighted or simple average spot price.

- the load shape, LS_s , defined as the ratio of the load-weighted spot price to the time-weighted spot price for period s : $LS_s = \frac{\overline{SP}_s}{SP_s}$
- the load ratio, LR_s , defined as the ratio of the hedged load to the average load for period s : $LR_s = \frac{\widehat{L}_s}{\bar{L}_s} + 0.1$
- the forward-to-spot-price margin, M_s , for period s , defined as the ratio of the forward price less the spot price to the forward price. In other words, it is the percentage by which the forward price exceeds the time-weighted spot price and is given by: $M_s = \frac{(FP_s - \overline{SP}_s)}{FP_s}$

The load weights, which are equal to the percentage of electricity consumed in each quarter, are calculated as:

$$w_s = \frac{\bar{L}_s}{\sum_{i=1}^4 \bar{L}_i}$$

where \bar{L}_s is the average load for each quarter s .

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where \bar{L}_s is the average load for each quarter s .

The load weights are applied to determine the annual carbon-exclusive energy purchase cost:

$$EPC = \sum_{i=1}^4 w_s \times EPC_s.$$

The following formula shows how the price on carbon is incorporated into this calculation:²⁵⁸

$$EPC^C = EPC + C$$

where C is the cost of carbon.

The cost of carbon is calculated as follows:

$$C = PC_t \times CIF_{t-1}$$

²⁵⁸ See Appendix 4 of ICRC (2012) for the full derivation of this equation.

where:

- PC_t is the price on carbon mandated in the legislation in year t;
- CIF_{t-1} is the national carbon intensity factor in year t-1.

Appendix 4 Derivation of the hedging cost

For the reasons explained in the text, the hypothetical hedging strategy that has been chosen comprises the retailer buying enough ‘flat’ or ‘base load’ contracts to cover any likely load and disposing of any contracts that turn out to be surplus to requirements on the spot market.

As explained in the text, taking out forward contracts in quarterly blocks permits allowance to be made for differences in the load profile in different quarters. For any given quarter we may define variables as follows:

L_t is the average load in half-hour trading interval t of the quarter in MW.

SP_t is the spot price in half-hour trading interval t in dollars per MWh.

FP is the forward price for a ‘flat’ or ‘base load’ contract for the quarter in dollars per MWh.

\hat{L} is the quantity of ‘flat’ or ‘base load’ forward contracts that have been purchased for the quarter in MW.

From which we may define the following summary measures for the quarter:

$\bar{L} = \frac{1}{T} \times \sum_{t=1}^T L_t$ is the average load

where:

T is the number of half-hour trading intervals in the quarter.

$\overline{SP} = \frac{1}{T} \times \sum_{t=1}^T SP_t$ is the time-weighted average spot price.

$\overline{\overline{SP}} = \sum_{t=1}^T (SP_t \times L_t) / \bar{L}$ is the load-weighted average spot price.

$LS = \overline{\overline{SP}} / \overline{SP}$ is the load shape.

$LR = \hat{L} / \bar{L}$ is the load ratio.

$M = (FP - \overline{SP}) / \overline{SP}$ is the forward premium on contracts.

Recognising that each trading interval is half an hour, the cost of the forward contracts purchased for each trading interval is then given by:

$\hat{L} \times FP / 2$.

The revenue from the sale of the contracts that turn out to be surplus in trading interval t is given by:

$$(\hat{L} - L_t) \times SP_t/2.$$

The net cost of hedging in trading interval t is the difference between these two amounts, which after rearranging becomes:

$$(\hat{L} \times (FP - SP_t) - L_t \times SP_t) / 2.$$

Summing over all the trading intervals in the quarter, the total cost of hedging for the quarter is given by:

$$\sum_{t=1}^T (\hat{L} \times (FP - SP_t) - L_t \times SP_t) / 2.$$

Separating out variables invariant to the trading interval index gives:

$$(T \times \hat{L} \times FP - \hat{L} \times \sum_{t=1}^T SP_t + \sum_{t=1}^T L_t \times SP_t) / 2.$$

Recalling the definitions of time-weighted average spot price and load-weighted average spot price and taking out T as a common factor gives:

$$T/2 \times (\hat{L} \times FP - \hat{L} \times \overline{SP} + \overline{SP} \times \bar{L}).$$

Recalling the definition of the load ratio and the load shape gives:

$$T/2 \times (\bar{L} \times LR \times FP - \bar{L} \times LR \times \overline{SP} + \overline{SP} \times LS \times \bar{L}).$$

From the definition of the forward margin we can deduce that:

$$\overline{SP} = (1 - M) \times FP.$$

Hence the total cost of hedging for the quarter is given by:

$$T/2 \times \bar{L} \times FP \times [LR \times M + LS \times (1 - M)].$$

Dividing by the energy supplied to customers over the quarter, which is equal to the average load, \bar{L} , multiplied by the duration of the quarter in hours, $T/2$, yields the cost of hedging in dollars per MWh namely:

$$FP \times [LR \times M + LS \times (1 - M)].$$

That is, the cost of hedging in dollars per MWh is equal to the forward price multiplied by an uplift factor, the term in the square brackets. The uplift factor is a weighted average of the load ratio and the load shape, where the weight on the load ratio is equal to the forward premium.

Appendix 5 The California energy crisis

Joskow (2001) provides an excellent description of the events that led up to the financial collapse of two large electricity retailers in California in 2001. A short review is all that is necessary here. California went through an extended deregulation process in the 1990s, which resulted in a deregulated wholesale market but essentially still regulated retail market. For a variety of reasons prices on the wholesale market rose substantially starting in mid-2000 to levels such that the average price was more than 10 times than the price two years earlier. The Government of California fixed retail prices for a period of four years at levels well below the highest wholesale prices for electricity. Thus, retailers were forced to pay for electricity at prices higher than what they could sell to their customers and the retailers became insolvent. Further, the rules of the market allowed for little opportunity for the retailers to hedge their risks in the wholesale market. These factors led to the financial downfall of two large California retailers.²⁵⁹

The California crisis is the most infamous example of the capture theory of regulation. There are three questions relating to the California electricity crisis worthy of review:

- Does the California experience translate to the situation in Australia?
- What is the primary lesson to learn from the California experience?
- Are failures of retailers, especially small ones, evidence of regulatory failure?

Regulators who set regulated retail prices in Australia have generally done so on a yearly basis. While each regulator in Australia uses a different model to determine the wholesale energy cost component, all of the models rely on actual wholesale prices and assume some degree of prudent hedging of the risks inherent in the wholesale market. If wholesale prices rise substantially, this will be factored into the resulting retail prices. It is highly unlikely that the board of a large electricity retailer would allow the retail business to operate in a fashion that exposed the retailer to significant wholesale market risks. Prudent retailers will hedge their wholesale market risks in the manner that they judge to be most efficient for their circumstances. The answer to the first question is that it is unlikely that any of the jurisdictions in Australia that still set a regulated retail tariff will experience anything close to the California crisis.

There is one primary lesson that can be gleaned from the California experience and that is that regulated retail prices need to be responsive to wholesale energy costs. While it is true that market design errors contributed to the problem, the California

²⁵⁹ The true social cost of the events in California was the cost of refusal to supply that occurred in response to the situation the retailers faced. For example, rolling blackouts imposed due to cost factors described are a form of quantity restriction that results in consumers losing their full surplus for the duration of blackout.

government's refusal to adjust retail prices along with other errors of judgement during the crisis exacerbated the problem. Retailers in California did not have access to contracting options available to Australian retailers and hence were more exposed to the wholesale price. Fixing the retail price for four years left the retailers with no ability to accommodate the wholesale price rises.

Several small electricity retailers have failed in Australia since the establishment of retail competition.²⁶⁰ There is no reason to attribute these failures to the regulatory arrangements. It is only natural in new markets for there to be failures. This is part of the evolutionary process of the market. Firms with business practices that are inefficient will exit the market; however, it is the notoriety of the failure of an electricity retailer that generates headlines. Given the relative calm in the wholesale electricity market currently, it may be tempting for a retailer to play the wholesale market and not hedge. If a retailer does this and fails, it is not evidence of a California-like event.

What happened in California is a cautionary tale, but that does not imply that there is any chance of a similar event occurring under regulation where the regulator allows retail prices to move commensurately with changes in the underlying wholesale costs of electricity. This does not prevent some commentators from frequently invoking the ghost of the California crisis to justify their preferred outcome.²⁶¹ This issue for the standing question is how much weight should be attached to this potential outcome when considering maintaining the status quo with limited competition headroom included in the regulated retail price.

²⁶⁰ Jackgreen Energy, which collapsed in 2009, is the most notable recent electricity retail failure in Australia.

²⁶¹ See Simshauser (2010); Simshauser (2012) and Simshauser et al. (2012).

Abbreviations and acronyms

ACAT	ACT Civil and Administrative Tribunal
ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFMA	Australian Financial Markets Association
Clean Energy Act	<i>Clean Energy Act 2011</i> (Commonwealth)
Commission	Independent Competition and Regulatory Commission
COAG	Council of Australian Governments
CPI	consumer price index
Energy Efficiency Act	<i>Energy Efficiency (Cost of Living) Improvement Act 2012</i> (ACT)
EEIS	Energy Efficiency Improvement Scheme
ESC	Essential Services Commission (Victoria)
ESCOSA	Essential Services Commission of South Australia
ICRC	Independent Competition and Regulatory Commission
ICRC Act	<i>Independent Competition and Regulatory Commission Act 1997</i> (ACT)
GWh	gigawatt hour
IPART	Independent Pricing and Regulatory Tribunal (New South Wales)
kW	kilowatt
LRET	Large-scale Renewable Energy Target
MWh	megawatt hour
NECF	National Energy Customer Framework

Abbreviations and acronyms

NEM	National Electricity Market
NERL	National Energy Retail Law
OTTER	Office of the Tasmanian Economic Regulator
QCA	Queensland Competition Authority
SCER	Standing Council on Energy and Resources
SRES	Small-scale Renewable Energy Scheme
STC	Small-scale Technology Certificates

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