



# ICRC

independent competition and regulatory commission

Draft report

## **Standing offer prices for the supply of electricity to small customers from 1 July 2017**

Report 1 of 2017, March 2017



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. Joe Dimasi is the current Senior Commissioner who constitutes the Commission and takes direct responsibility for delivery of the outcomes of the Commission.

The Commission has responsibilities for a broad range of regulatory and utility administrative matters. The Commission has 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. The Commission also has responsibility for arbitrating infrastructure access disputes under the ICRC Act. In discharging its objectives and functions, the Commission provides independent robust analysis and advice.

The Commission's objectives are set out in section 7 and 19L of the ICRC Act and section 3 of the *Utilities Act 2000*.

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

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

Level 8  
221 London Circuit  
Canberra ACT 2601

The Commission 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](http://www.icrc.act.gov.au) and its email address is [icrc@act.gov.au](mailto:icrc@act.gov.au).



## How to make a submission

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](mailto: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 the principles of openness, transparency, consistency and accountability. Public consultation is a crucial element of the Commission's processes. The Commission's preference is 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.

The Commission 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](http://www.icrc.act.gov.au).

Submissions on the draft report close on **28 April 2017**.

# Contents

<b>How to make a submission</b>	<b>iii</b>
<b>Executive summary</b>	<b>ix</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background to the investigation	1
1.2 ICRC Act: legislative requirements	2
1.3 Scope of the terms of reference	5
1.4 Structure of the draft report	5
1.5 Investigation timeline	6
<b>2 Commission’s regulatory approach and pricing model</b>	<b>7</b>
2.1 Introduction	7
2.2 Regulatory approach	7
2.3 Summary of draft decisions on the regulatory approach	11
2.4 Pricing model and price adjustment	11
2.5 Summary of draft decisions on the pricing model	40
<b>3 Analysis of efficient costs for 2017–18</b>	<b>43</b>
3.1 Introduction	43
3.2 Wholesale electricity cost	43
3.3 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs	50
3.4 Energy losses	53
3.5 Energy contracting costs	53
3.6 National Electricity Market fees	53
3.7 Retail operating costs	53
3.8 Energy Efficiency Improvement Scheme costs	54
3.9 Network cost allowance	56
3.10 Retail margin	56
3.11 Draft decision on cost elements	57
3.12 Impact on customers	59
3.13 Comparison of residential electricity prices across jurisdictions	60
<b>4 Annual recalibration and pass-through arrangements</b>	<b>63</b>
4.1 Annual recalibration method	63

4.2	Pass-through arrangement details	64
<b>5</b>	<b>Compliance with the terms of reference and the ICRC Act</b>	<b>67</b>
5.1	Compliance with the terms of reference	67
5.2	Compliance with the ICRC Act	68
<b>6</b>	<b>Next steps</b>	<b>71</b>
<b>Appendix 1</b>	<b>Terms of reference</b>	<b>73</b>
<b>Appendix 2</b>	<b>Submissions</b>	<b>75</b>
A2.1	Submissions on the issues paper	75
<b>Appendix 3</b>	<b>Derivation of the hedging cost</b>	<b>79</b>
<b>Appendix 4</b>	<b>Comparison of residential electricity prices across Australian jurisdictions</b>	<b>81</b>
A4.1	Recent reports comparing retail electricity prices	81
A4.2	Comparison of recent residential electricity prices across jurisdictions	85
	<b>Abbreviations and acronyms</b>	<b>87</b>
	<b>References</b>	<b>89</b>

## List of tables

Table ES.1	Draft decision on 2017–18 cost components	xii
Table 1.1	Indicative timeline for the retail electricity price investigation	6
Table 2.1	Commission’s draft decisions on the form of regulation	11
Table 2.2	Annual uplift factor, 2009–10 to 2017–18	22
Table 2.3	Draft decisions on the retail electricity cost-index model	41
Table 3.1	Quarterly forward wholesale electricity prices, 2016–17 and 2017–18 (dollars per MWh)	44
Table 3.2	Quarterly average load shape, 2016–17 and 2017–18	45
Table 3.3	Quarterly load shape, 2003–04 through 2016–17	46
Table 3.4	Quarterly load ratio, 2003–04 to 2017–18	47
Table 3.5	Quarterly load weights, 2003–04 to 2017–18	48
Table 3.6	Annual uplift factor, 2009–10 through 2017–18	49
Table 3.7	Energy purchase cost, 2016–17	49
Table 3.8	Energy purchase cost, 2017–18	50
Table 3.9	LRET and SRES data, 2017 and 2018	50
Table 3.10	LRET and SRES allowance, 2016–17 and 2017–18 (dollars per MWh)	53
Table 3.11	Forecast EEIS costs, 2017–18, \$ per MWh	54
Table 3.12	Draft decision on cost elements, 2017–18	57
Table 3.13	Estimated annual bill changes for residential customers, 2016–17 and 2017–18	59
Table 3.14	Estimated annual bill changes for non-residential customers, 2016–17 and 2017–18	60
Table 3.15	Comparison of retail electricity (single rate) prices, as at 22 February 2017	61

Table 4.1	Proposed annual recalibration of cost components	64
Table 5.1	Compliance with the terms of reference	67
Table 5.2	Compliance with section 7 of the ICRC Act	68
Table 5.3	Compliance with section 19(L) of the ICRC Act	68
Table 5.4	Compliance with section 20(2) of the ICRC Act	69
Table 6.1	Next steps in the retail electricity price investigation	71
Table A4.1	Retail electricity offers, September 2016	85
Table A4.2	Comparison of retail electricity (single rate) prices, as at 22 February 2017	86

## List of figures

Figure ES.1	Cost components in dollars per MWh as a share total cost 2017–18	xi
Figure ES.2	Components of the change in regulated retail electricity prices 2016–17 to 2017–18	xiii
Figure ES.3	ASX futures market data for wholesale electricity 1 July 2015 to 28 February 2017	xiv
Figure ES.4	LGC spot prices, July 2013 to February 2017.	xiv
Figure 2.1	The Commission’s current pricing model	13
Figure 2.2	ICAP OTC versus ASX forward prices, 2017–18	18
Figure 3.1	ASX futures market data for wholesale electricity 1 July 2015 to 28 February 2017	44
Figure 3.2	LGC spot prices, July 2013 to February 2017	51
Figure 3.3	STC spot prices, July 2013 to February 2017	52
Figure 3.4	Components of the change in regulated retail electricity prices 2016–17 to 2017–18	58
Figure 3.5	Cost components in dollars per MWh as a share total cost 2017–18	59

Figure A4.1	Estimated annual small customer electricity bills based on standing offers, 2014–15	82
Figure A4.2	Residential standing offer electricity bills based on annual consumption of 8,250 kWh	83
Figure A4.3	Breakdown of household electricity bills in select distribution zones, average of big three market offers on 2 August 2016	84

## List of boxes

Box 1.1	Section 7: ICRC Objectives	2
Box 1.2	Section 20(2): ICRC Functions	3
Box 1.3	Overarching objective	3
Box 1.4	Scope of the terms of reference	5
Box 2.1	The Commission’s weighted average price cap formula	8
Box 2.2	Current energy purchase cost model summary	16
Box 2.3	Current Large-scale Renewable Energy Target cost estimation equations	25
Box 2.4	Current Small-scale Renewable Energy Scheme cost estimation equations	26
Box 2.5	Current energy loss equation	28
Box 2.6	ACT energy efficiency scheme targets	33
Box 2.7	Energy saving obligation	33
Box 2.8	ACT Energy Efficiency Improvement Scheme cost estimation formula	35

# Executive summary

## Introduction

On 22 June 2016, the Treasurer signed terms of reference for a price direction for the supply of electricity by ActewAGL Retail to customers on its regulated retail tariffs for the period 1 July 2017 to 30 June 2020. The Independent Competition and Regulatory Commission (the Commission) released an issues paper on 24 October 2016 as the first step in the consultation process to determine retail electricity prices from 1 July 2017. The publication of the draft report and proposed price direction is the second step in the Commission's consultation process for this investigation.

This report sets out the Commission's draft decision on the proposed regulatory approach and methodology, components of the pricing model to calculate the draft decision on the price adjustment for 2017–18 and the proposed price direction. The Commission's draft decision has been made based on information up to 28 February 2017, and therefore only provides an indication of likely price increases for 2017–18. This will be expanded for the final report to 31 May 2017 as more data becomes available. The incorporation of more recent information is likely to result in a higher percentage price increase for the reasons explained below.

## Pricing methodology and cost components

The Commission's proposed pricing model determines the maximum average percentage change that ActewAGL Retail can apply to its suite of tariffs on an annual basis. It does so by estimating three main cost categories:

- The first category is the estimated costs that would be incurred by an efficient incumbent retailer in the same position as ActewAGL Retail. These include; retail costs, which comprise retail operating costs, Energy Efficiency Improvement Scheme (EEIS) compliance costs and retail margin. These costs make up 14.66 per cent of the total costs for 2017–18, which the retailer needs to recover.
- The second category is network costs, which include transmission and distribution costs. These costs are regulated by the Australian Energy Regulator (AER) and are passed through to the retailer and in turn to consumers. They make up 43.32 per cent of the total costs for 2017–18.
- The third category of costs is wholesale electricity costs, which comprise energy purchase costs, Large-scale Renewable Energy Target (LRET) and Small-scale Renewable Energy Scheme (SRES) costs, energy losses, energy contracting costs and National Electricity Market (NEM) fees. These costs comprise 42.02 per cent of ActewAGL Retail's total costs for 2017–18.

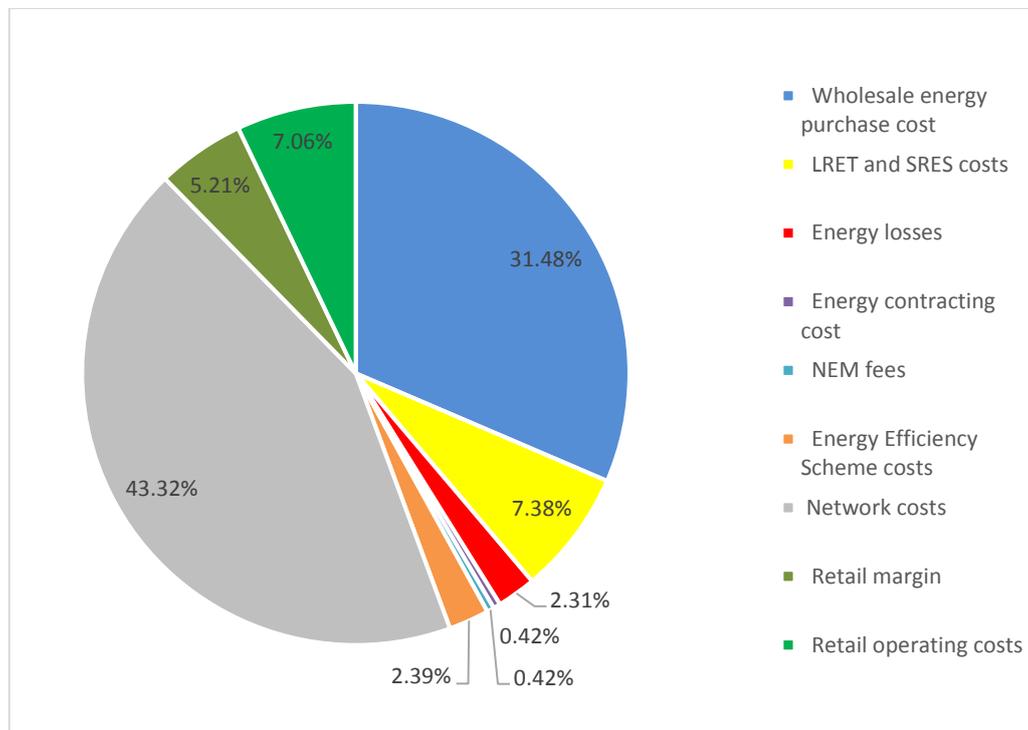
Wholesale energy purchase costs in the wholesale cost category represent the costs incurred by the incumbent retailer in purchasing electricity from the wholesale electricity market. The Commission's energy purchase cost model consists of a

forward price to represent the cost of purchasing electricity and an uplift factor that is applied to the forward price to reflect the retailer's hedging cost. The LRET and SRES costs represent the costs of complying with national environmental obligations imposed by the Australian Government. Energy losses component accounts for the costs associated with energy lost in transmission and distribution. Energy contracting costs represent the cost of managing an electricity trading desk. The NEM is managed by the Australian Energy Market Operator (AEMO), which is funded through NEM fees.

The network costs are equal to the sum of transmission and distribution charges paid by the retailer to transport electricity from generators to customer. Retail operating costs are the efficient costs incurred by the retailer in providing retail services to customers. The EEIS costs represent the costs of complying with the Australian Capital Territory (ACT) Government's energy efficiency scheme.

Figure ES.1 shows the proportion of each cost component in total costs for 2017–18. An analysis of these cost components shows that almost 88 per cent of the total costs are determined outside the control of the retailer, of which 74.80 per cent costs comprise the wholesale energy purchase cost and network costs.

The costs that the retailer cannot control and that are not regulated by the Commission include the cost of purchasing electricity from the NEM (except for the ability to implement different hedging strategies); the cost of complying with Commonwealth and Territory environmental obligations; costs associated with energy lost in transmission and distribution; NEM fees, energy contracting costs, and the network charges for the carriage of electricity bought by its customers. The main costs where the retailer has control relate to hedging, retail operating costs and retail margin allowance. However, as depicted in Figure ES.1, retail operating costs and retail margin allowance only account for 12.27 per cent of the total costs and hedging costs are a small but necessary component of energy purchase costs.

**Figure ES.1 Cost components in dollars per MWh as a share total cost 2017–18**

Source: Commission's calculations

### Draft decision on 2017–18 cost components

The Commission's draft decision estimates that given the data available up until 28 February 2017 the average nominal increase in ActewAGL Retail's basket of regulated tariffs for 2017–18 would be 10.90 per cent. This is equivalent to a real increase in the regulated retail price of about a 9.50 per cent. If wholesale prices continue to remain high the final decision could see even higher price increases.

Table ES.1 sets out the percentage in the cost components used to determine the draft maximum allowed change in the regulated retail electricity price for 2017–18.

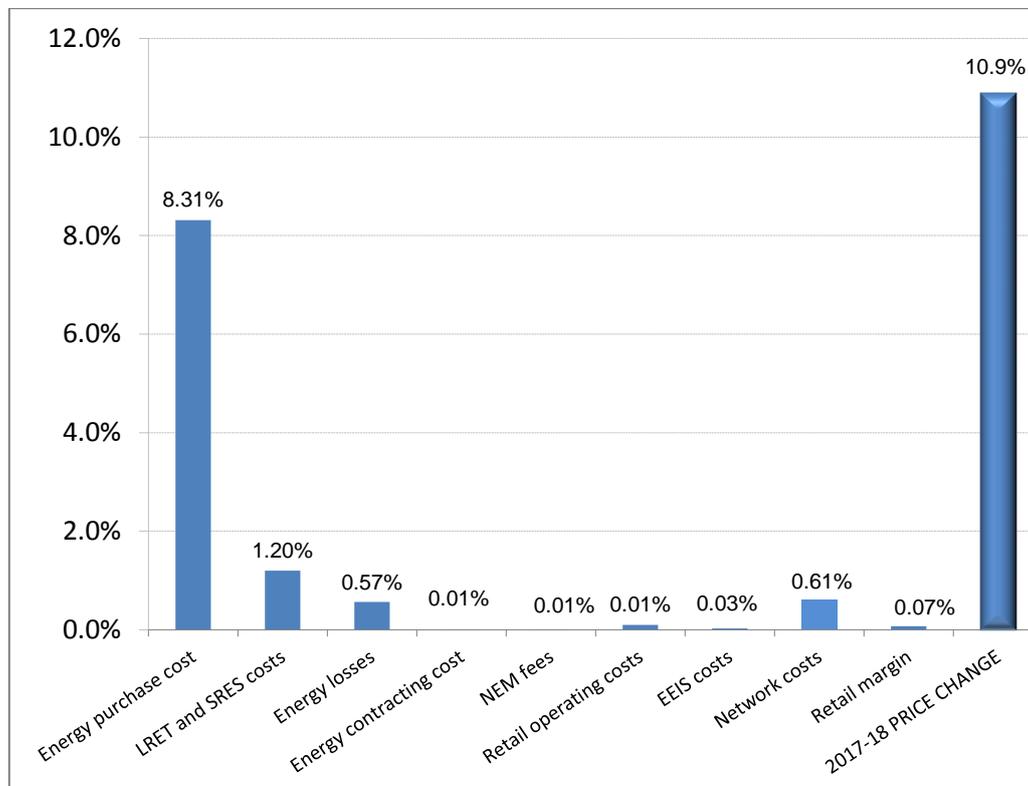
Table ES.1 Draft decision on 2017–18 cost components

	2016–17 (\$/MWh)	2017–18 (\$/MWh)	% change
Wholesale energy purchase cost	50.06	65.70	31.24
National renewable energy (LRET and SRES) costs	13.15	15.41	17.20
Energy losses	3.76	4.82	28.39
Energy contracting cost	0.87	0.89	1.28
NEM fees	0.87	0.89	1.28
<b>Total energy purchase cost</b>	<b>68.72</b>	<b>87.71</b>	<b>27.64</b>
Retail operating costs	14.56	14.75	1.28
ACT Energy Efficiency Improvement Scheme costs	4.93	4.98	1.14
<b>Total retail costs</b>	<b>19.49</b>	<b>19.73</b>	<b>1.24</b>
Network costs	89.28	90.42	1.28
<b>Total energy + retail + network costs</b>	<b>177.48</b>	<b>197.85</b>	<b>11.48</b>
Retail margin	10.73	10.86	1.28
<b>Total costs</b>	<b>188.21</b>	<b>208.72</b>	<b>10.90</b>

Note: The 2016–17 energy purchase cost amount has been recalculated from that contained in the 2016–17 price reset due to the adjustments to the forward price source (from ICAP data to ASX data) and averaging period (from 21 months to 23 months averaging period) and the Commission's desire to maintain comparability across adjacent years under the index approach.

Figure ES.2 shows the contribution of the various cost components to the total percentage change in prices from 2016–17 to 2017–18. It is clear that the single biggest driver of the price increase is the wholesale electricity purchase cost, driven by rapidly increasing forward prices. This is followed by the national renewable energy costs driven by Large-scale Generation Certificate (LGC) and Small-scale Technology Certificate (STC) prices.

The wholesale electricity purchase cost contributes 8.31 percentage points of the total change of 10.90 per cent. National renewable energy costs contribute 1.20 percentage points of the total change of 10.90 per cent. Together these two factors lead to an increase of 9.51 percentage points out of the estimated 10.90 per cent increase.

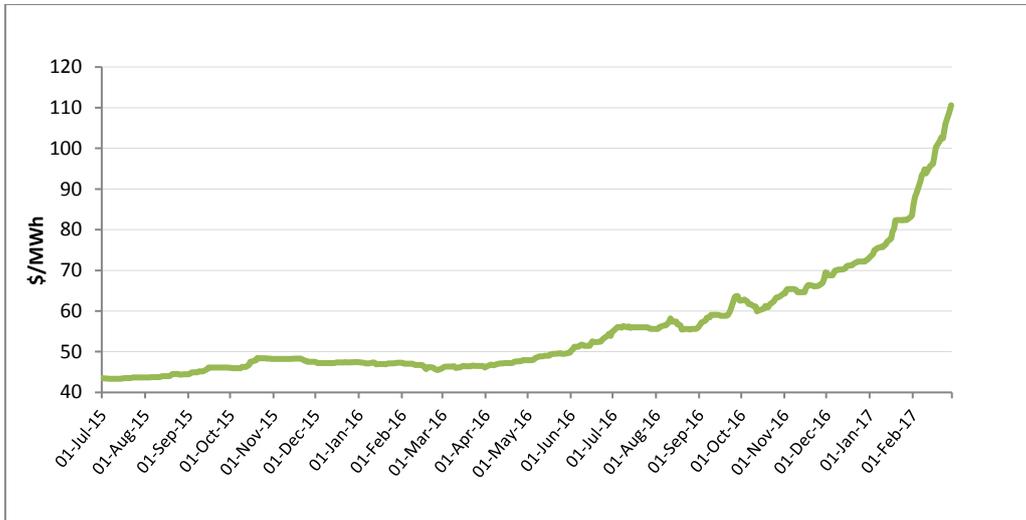
**Figure ES.2 Components of the change in regulated retail electricity prices 2016–17 to 2017–18**

Source: Commission's calculations

### State of the wholesale electricity market

As depicted in Figure ES.3, the daily forward price data has shown a significant upward trend since about April 2016. According to available data, this trend appears to continue exerting upward pressure on wholesale electricity prices.

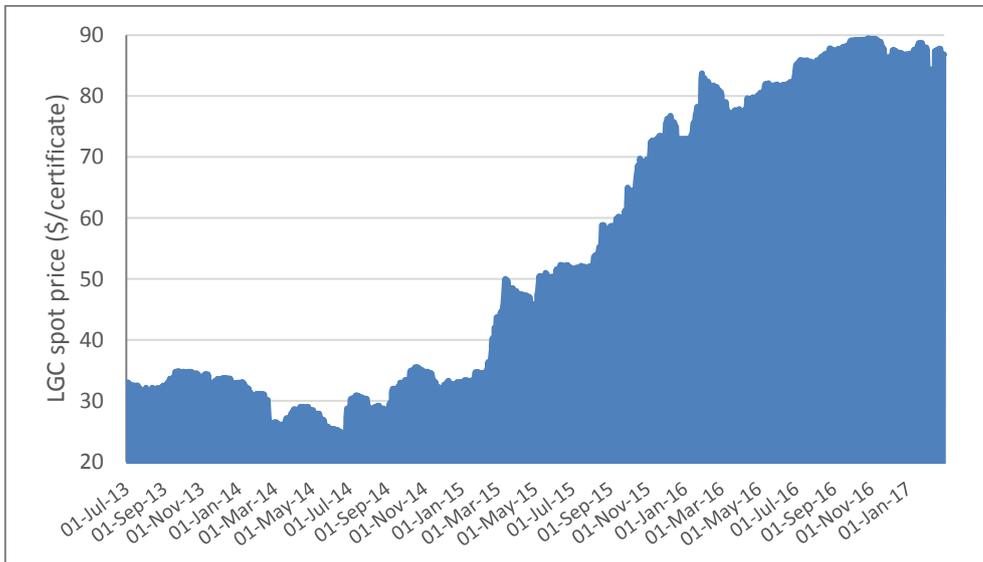
**Figure ES.3 ASX futures market data for wholesale electricity 1 July 2015 to 28 February 2017**



Source: Commission's calculations based on ASX data

Figure ES.4 shows daily LGC spot prices since July 2013. It shows that prices remain at historically high levels.

**Figure ES.4 LGC spot prices, July 2013 to February 2017.**



Source: ICAP data

If the forward prices and renewable certificate prices continue their upward trends, the Commission's final decision will need to reflect this continued rise of prices, which will potentially translate into a greater price increase for 2017–18 than is currently estimated.

Given these significant increases in wholesale prices, the Commission is exploring the implication of this large price increase for the Commission's determination of the retail margin. In this draft decision the Commission is proposing to adjust the margin. Rather than applying the margin to the much greater level of costs, it is proposing to limit the growth in the margin by the change in Consumer Price Index (CPI). The Commission is also not proposing to grant a competition allowance to the retailer although it will recognise reasonable costs of operating in the market. These components of the draft decision will mitigate the prospective price increases to a small degree.

It should also be noted that there is only a small component of the increase due to network costs. The Federal Court decision on the AER's appeal against the Competition Tribunal's decision to set aside 2015 distribution determinations for the New South Wales (NSW) and ACT distribution and network service providers may impact on this further. Depending on the outcome this may result in higher or lower network charges and this in turn will flow into regulated retail prices either by increasing or reducing them.

### **Impact on customers**

The annual impact on typical bills due to the estimated price increases in the draft decision ranges from \$112 for a small residential customer to \$271 for a large residential customer. In the case of non-residential customers, the impact ranges from \$300 for a small non-residential customer to \$1,060 for a large non-residential customer.

It should be noted that the draft report only provides an indication of likely customer impacts based on data up to 28 February 2017. This will be updated to 31 May 2017 for the final report. If wholesale costs of electricity remain high the incorporation of information up to 31 May 2017 is likely to mean larger impacts resulting from a higher percentage price increase.

Despite the likely significant price increase for 2017–18, recent reports comparing retail electricity prices across Australian jurisdictions suggest that the price that ACT customers pay for their electricity is considerably less than that paid by consumers in other jurisdictions. The most recent AER's State of the Energy Market Report found that electricity bills for customers on standing offers in the ACT are among the lowest in Australia. Supporting the same view, a report prepared by Get Up! Group found that the total annual bill in the ACT is the lowest of all NEM Jurisdictions. A recent report by Grattan Institute also noted the significant increase in electricity prices in Sydney, Melbourne, Brisbane and Adelaide over the past decade.



# 1 Introduction

## 1.1 Background to the investigation

The Independent Competition and Regulatory Commission is a statutory body set up to regulate prices, access to infrastructure services and other matters in relation to regulated industries. The Commission is responsible for setting regulated retail prices for the supply of electricity to small customers on ActewAGL Retail's regulated tariffs.

The Commission undertakes price investigations in accordance with sections 15, 16 and 17 under Part 3 of the *Independent Competition and Regulatory Commission Act 1997* (the ICRC Act), and issues price directions under Part 4 of the ICRC Act. The current price direction requires the Commission to determine the maximum prices that ActewAGL Retail can charge for its regulated retail tariffs from 1 July 2014 to 30 June 2017. Under that price direction, the Commission's most recent decision was to determine a real (inflation- adjusted) increase of 4.46 per cent in regulated retail electricity prices for 2016–17.<sup>1</sup>

On 22 June 2016, the Treasurer signed terms of reference under the ICRC Act for a price direction for the supply of electricity by ActewAGL Retail to customers on its regulated retail tariffs for the period 1 July 2017 to 30 June 2020.<sup>2</sup>

The Commission released an issues paper on 24 October 2016 as the first step in the consultation process to determine retail electricity prices from 1 July 2017. The Commission received six submissions on the issues paper, which are available on the Commission's website.<sup>3</sup> A summary of the submissions is provided in Appendix 2. 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. 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 2017.

---

<sup>1</sup> ICRC, 2016: 25-27.

<sup>2</sup> See Appendix 1 for a full copy of the terms of reference.

<sup>3</sup> [www.icrc.act.gov.au](http://www.icrc.act.gov.au).

## 1.2 ICRC Act: legislative requirements

### 1.2.1 Introduction

In carrying out its functions under the ICRC Act, the Commission has the following objectives set out in section 7 (Box 1.1).

**Box 1.1 Section 7: ICRC Objectives**

- (a) to promote effective competition in the interests of consumers;
- (b) to facilitate an appropriate balance between efficiency and environmental and social considerations;
- (c) to ensure non-discriminatory access to monopoly and near-monopoly infrastructure.<sup>4</sup>

When making a price direction, in addition to the terms of reference, the Commission is also required to have regard to the provisions set out in section 20(2) (Box 1.2).

---

<sup>4</sup> ACT Government, 1997: 8.

**Box 1.2 Section 20(2): ICRC Functions**

- (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.<sup>5</sup>

**1.2.2 Recent amendments**

A number of recent amendments to the ICRC Act, effective from 1 July 2016, are relevant to this investigation.

1. The ICRC Act now includes an overarching efficiency objective specific to the making of a price direction as set out in section 19L Part 4 (Box 1.3):

**Box 1.3 Overarching objective**

to promote the efficient investment in, and efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.

<sup>5</sup> ACT Government, 1997: 26–27.

2. Section 17(4)(a) requires the Commission, within 1 month after receiving the industry reference, to give each relevant person for the investigation written notice of the information it requires from the person in relation to the investigation, and the date, decided after consultation with the person, when the person must give the Commission the information.

In accordance with this new requirement, on 21 July 2016, the Commission sent ActewAGL Retail an information request requiring the provision of the following:

- (a) estimated EEIS costs for 2017–18 by 23 January 2017, and updated EEIS costs by 8 May 2017;
  - (b) the network cost allowance for the regulated load for 2017–18, following the approval of ActewAGL Distribution’s network charges by the AER; and
  - (c) regulated tariff customer numbers and electricity usage for the year to 31 March 2017 by 8 May 2017.
3. Section 18(5)(b) has also been amended to require the Commission, in the draft (as well as in the final) report, to produce a statement outlining the extent to which it has had regard to the key matters listed in section 20(2).

### 1.3 Scope of the terms of reference

The terms of reference require the Commission to consider the following matters in this investigation (Box 1.4).

#### Box 1.4 Scope of the terms of reference

1. The Commission must consider:
  - (a) The direct impact on electricity costs of government policies and pass through of costs and savings to regulated prices including, but not restricted to:
    - the ACT retailer obligations under EEIS;
    - the Commonwealth Government’s LRET and SRES; and
    - 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 for the period of the price direction.
2. The Commission must identify and report on the efficient costs of complying with the *Energy Efficiency (Cost of Living) improvement Act 2012* for the period that the determination is being made.
3. The Commission must identify and report on the cost allowance of the ACT Feed-in Tariffs (small and large scale) for the period that the determination is being made.
4. The Commission must release its final report within the period of 1 January 2017 to 7 June 2017, to provide sufficient time 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 from 1 July 2017.

### 1.4 Structure of the draft report

The remainder of this report is structured as follows:

- Chapter 2 sets out the Commission’s proposed methodology or form of regulation for the next regulatory period. It also describes the Commission’s cost index model by which the Commission proposes to determine the efficient costs for an incumbent retailer.
- Chapter 3 provides an estimate of the efficient costs of supplying electricity to customers on the regulated tariff in 2017–18.

- Chapter 4 describes the proposed procedure for setting the regulated retail price in 2018–19 and 2019–20 through the annual recalibration process, and sets out the details of the proposed pass-through arrangements.
- Chapter 5 summarises the Commission’s compliance with the terms of reference and the ICRC Act.
- Chapter 6 outlines the next steps in the investigation process.
- Appendix 1 reproduces the terms of reference.
- Appendix 2 contains a summary of submissions to the issues paper.
- Appendix 3 presents the equations describing the Commission’s energy purchase cost model.
- Appendix 4 provides a summary comparison of residential electricity prices for a number of Australian Jurisdictions.

## 1.5 Investigation timeline

The Commission proposes to adopt the timeline set out in Table 1.1.

**Table 1.1 Indicative timeline for the retail electricity price investigation**

Task	Date
Terms of reference signed	22 June 2016
Release of issues paper	24 October 2016
Submissions on issues paper close	30 November 2016
Draft report and proposed price direction	28 March 2017
Submissions on draft report close	28 April 2017
Public hearing	03 May 2017
Release of final report and price direction	June 2017

The closing date for submissions on the draft report is 28 April 2017. Written submissions received by the closing date will be considered in the development of the final report and the proposed price direction. The Commission is required under section 17(4)(b) of the ICRC Act to conduct a public hearing for all price regulation investigations. The Commission intends to conduct a hearing after the release of the draft report.

## 2 Commission's regulatory approach and pricing model

### 2.1 Introduction

This chapter sets out the Commission's draft decision on the form of regulation and pricing model. The main elements of the Commission's methodology or form of regulation comprise a price control mechanism, 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 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, beyond the control of ActewAGL, that occur after the price direction has been made.

This chapter also considers relevant issues raised in the six submissions that the Commission has received on the issues paper. The submissions were from ActewAGL Retail, AGL, Origin Energy, the Australian Energy Council, the Environment, Planning and Sustainable Development Directorate (EPSDD) of the ACT Government and the ACT Civil and Administrative Tribunal (ACAT). The Commission did not receive any submissions from individual customers.

### 2.2 Regulatory approach

The key elements of the Commission's proposed regulatory approach are described below. The Commission welcomes feedback on the proposed approach.

#### 2.2.1 Length of the regulatory period

As specified in the terms of reference, the price direction will be for the three-year period of 1 July 2017 to 30 June 2020.

#### 2.2.2 Form of price control

The Commission currently applies a weighted average price cap form of regulation to determine the maximum allowable average percentage change that ActewAGL Retail can apply to its suite of regulated tariffs.<sup>6</sup> This approach allows ActewAGL Retail to

---

<sup>6</sup> The sum of the proposed new tariffs on ActewAGL Retail's regulated tariffs (i.e. ActewAGL Retail's electricity plans for residential and small business customers) weighted over electricity prices for different price plans and customer groups with the weights based on revenues in the previous period (a Laspeyres price index) should be less than or equal to the maximum allowable percentage change determined by the Commission.

adjust individual prices, as long as the total adjustment does not exceed the maximum allowable percentage change for the overall price cap, as determined by the Commission.

**Box 2.1 The Commission’s 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; and

$Y^t$  is the maximum average percentage change in regulated retail tariffs determined in accordance with the Commission’s cost-index model.

**Issues paper submissions**

The Commission received two submissions on the weighted average price cap. ActewAGL Retail and the ACAT supported the Commission’s proposed decision to use a weighted average price cap.

**Commission’s consideration and 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. Further, no information has been presented to the Commission that suggests an alternative form of regulation is more appropriate.

The Commission proposes to continue to use a weighted average price cap approach to control regulated prices for the regulatory period commencing 1 July 2017 using the formula set out in Box 2.1.

### 2.2.3 Annual recalibrations

As specified in the terms of reference, the Commission is required to undertake two annual recalibrations for the regulatory period commencing 1 July 2017. The first will determine regulated retail electricity prices for 2018–19 and the second will determine prices for 2019–20.

The annual recalibration process involves updating the parameters of the retail electricity cost-index model to determine regulated retail prices. This process draws on, for instance, more recent forward price and load data relating to the wholesale cost of energy, updated network costs and the new estimates of green costs. A number of model components, such as retail operating costs and wholesale energy contract costs, are adjusted by the change in the consumer price index. The recalibration process can also incorporate additional costs from a pass-through event. Pass-through events are set out in the price direction. The annual recalibration process is described in detail in Chapter 5.

#### Issues paper submissions

In its submission to the issues paper for this investigation, ActewAGL Retail proposed that the annual adjustment mechanism should be calculated as an X-factor that is applied to the weighted average price cap formula.

The ACAT broadly supported the Commission’s current approach in relation to annual recalibrations updating the parameters of the retail cost index model.

#### Commission’s consideration and draft decision

The Commission maintains its view that regulated prices should be adjusted consistent with the Commission’s current practice of annually adjusting the benchmark cost of supplying electricity to customers for changes in wholesale electricity, network and retail costs. The Commission intends to calculate the individual cost components of its cost-index model for the price recalibrations for each year that will determine the maximum average allowed percentage change. Chapter 4 of this draft report sets out the details of the proposed annual recalibration process.

### 2.2.4 Cost pass-through arrangements

Pass-through arrangements typically apply to events that are unplanned, or whose extent is uncertain and that are beyond the control of the regulated entity. The Commission currently allows for pass-through arrangements for a range of regulatory change and tax change events.<sup>7</sup> Pass-through reviews for these regulatory and tax change events are undertaken as part of the annual recalibration process. The details are provided in Chapter 4.

---

<sup>7</sup> The details of the current pass-through provisions are contained in ICRC, 2014b: 39-43.

## Issues paper submissions

In its submission, ActewAGL Retail requested amendments to the cost pass-through provisions in the Price Direction and identified a potential cost pass-through application for the Power of Choice regulatory reforms to recover additional unavoidable costs that will arise within the regulatory control period 2017–20. ActewAGL Retail argued that the power of choice reforms are clearly regulatory rule changes and the circumstances where customers can opt out of smart meters are narrow. The submission further mentioned that the necessary policy directions have already been in place for the Commission to consider including the costs of installing and supporting smart meters in regulated retail prices.

In contrast, in the EPSDD’s view:

In a competitive market, the costs to install and support advanced meters should be recovered from customers via contractual arrangements, rather than through regulated tariffs.<sup>8</sup>

Supporting the same view, the ACAT argued that the cost of introducing smart meters should not be included in the standard regulated tariff, stating that:

The cost benefit analysis for a compulsory smart meters rollout in the ACT is unconvincing and there are limited financial benefits from time of use changes in usage, particularly for low income customers who cannot change when their house needs heating and are unlikely to be able to afford the emerging battery technology.<sup>9</sup>

## Commission’s consideration and draft decision

The AEMC’s final rule change of 26 November 2015 is designed to facilitate competition in the provision of certain metering services. Review of the rule change documentation suggests that the deployment of new smart meters and the billing of the costs for their installation is a matter to be agreed between retailers and their customers. Customers are given the scope to opt out from the installation of a new meter but with some exceptions.<sup>10</sup> The exceptions are that small customers are not able to opt out of receiving an advanced meter in maintenance replacement, fault and new connection scenarios or where the customer has a replacement meter and advises their retailer that a customer at the premises requires life support equipment. Under the current arrangements, when meters are replaced, the costs are recovered separately from customers through contractual arrangements and are not regulated by the Commission. This is expected to continue when new meters are deployed. In addition, it is recognised that the AEMC rule change will facilitate competition in the installation of meters. This interpretation is consistent with outcomes in a competitive market and means that the costs of installing and supporting smart meters should not be

---

<sup>8</sup> EPSDD, 2016: 2.

<sup>9</sup> ACAT, 2016: 4.

<sup>10</sup> AEMC, 2015: ix.

automatically included in standard regulated tariffs without a formal policy direction from Government.

The Commission therefore proposes not to amend the current pass-through provisions to include costs associated with Power of Choice reforms. The Commission intends to maintain its current pass-through provisions for the next regulatory period and calculate the pass-through amounts using the same principles that it currently applies.

## 2.3 Summary of draft decisions on the regulatory approach

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
<b>Length of regulatory period</b>	Three years (specified in the terms of reference).
<b>Form of price control</b>	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 2.
<b>Timing of price control</b>	As specified in the terms of reference, the Commission will undertake an annual recalibration of the parameters of the retail electricity cost-index model to determine regulated retail prices for 2018–19 and 2019–20.
<b>Cost pass-through arrangements</b>	The Commission proposes to maintain its current pass-through criteria.

## 2.4 Pricing model and price adjustment

### Introduction

This section details the Commission’s proposed approach in setting retail electricity prices for the next regulatory period. The Commission welcomes feedback on the approach.

The Commission’s pricing model determines the maximum average percentage change that ActewAGL can apply to its suite of regulated tariffs on an annual basis. It does so by estimating the individual cost components that would be incurred by an efficient incumbent retailer in the same position as ActewAGL Retail when providing electricity supply services to customers on the regulated tariff.

The Commission’s current pricing model relies on cost benchmarks for three main cost categories:

- wholesale electricity costs, which comprise energy purchase costs, LRET and SRES costs, energy losses, energy contracting costs and NEM fees;

- network costs, which include transmission and distribution costs and the ACT’s renewable energy feed-in-tariff schemes; and
- retail costs, which comprise retail operating costs, EEIS compliance costs and retail margin.

Once these three cost categories are estimated, they are added together to produce total costs to be recovered in dollars per megawatt hour (\$ per MWh). This cost is then used in conjunction with the total costs calculated for the previous year to produce a maximum allowable percentage change that ActewAGL Retail can apply under the weighted average price cap to its regulated retail tariffs for the first year of the next regulatory period.<sup>11, 12</sup>

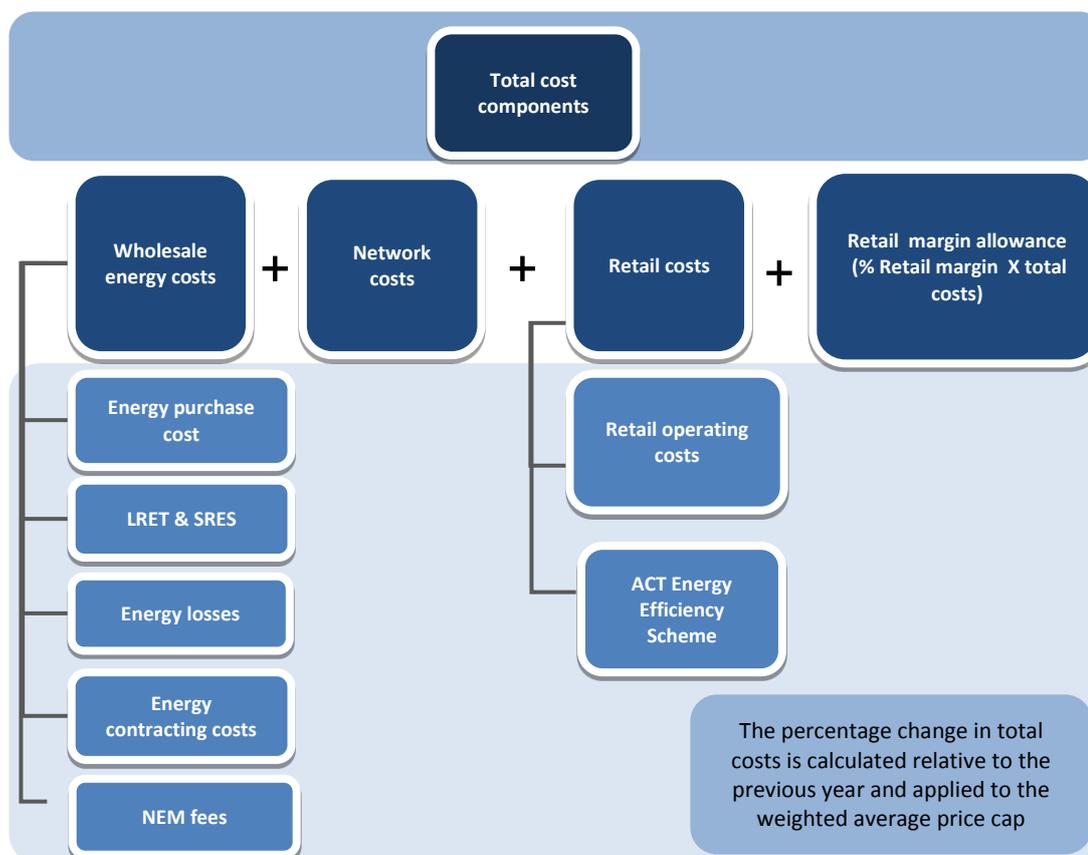
The Commission’s current pricing model is illustrated in Figure 2.1.

---

<sup>11</sup> The sum of the proposed new tariffs on ActewAGL Retail’s regulated tariffs (i.e; ActewAGL Retail’s electricity plans for residential and small business customers) weighted over electricity prices for different price plans and customer groups with the weights based on revenues in the previous period (a Laspeyres price index) should be less than or equal to the maximum allowable percentage change determined by the Commission. The details of the formula can be found in ICRC, 2014b: 8.

<sup>12</sup> Chapter 4 sets out the method by which prices will be set for the subsequent years of the regulatory period.

Figure 2.1 The Commission’s current pricing model



An analysis of these cost components shows that most costs are outside the control of the retailer, including the cost of purchasing electricity from the NEM (except for the ability to implement different hedging strategies), the cost of complying with Commonwealth and Territory environmental obligations, energy losses, energy contracting costs, NEM fees and network charges. These costs make up 87.73 per cent of the retailer’s total costs for 2017–18.

## Components of the current pricing model

### 2.4.1 Energy purchase cost

Energy purchase costs are the costs incurred by the incumbent retailer in purchasing electricity from the wholesale electricity market. The cost of paying for energy supplied through the wholesale energy market currently accounts for 31.48 per cent of the total cost of providing retail electricity services to customers who pay the regulated retail tariff in the ACT.

Due to the high volatility inherent in the wholesale electricity market, retailers hedge their exposure to risk by forward purchasing electricity in the contract market or by taking positions in the futures market. Forward contracts specify fixed prices for the

supply of electricity to the retailer. Hedging greatly reduces the risk of price volatility for the retailer, contributing to financial stability. The main risk is that wholesale market prices could spike to high levels. However, hedging to reduce price volatility and avoid price spikes entails costs that need to be allowed for in setting retail electricity prices.

The energy purchase cost component of the regulated retail price is a complex and significant part of the Commission’s retail electricity pricing model. As part of the 2014 review,<sup>13</sup> the energy purchase cost model was reviewed in detail, with particular attention paid to the hedging strategy incorporated in the model. The Commission reaffirmed its preference for a market-based approach for determining the energy purchase cost component over a hypothetical long run marginal cost approach and as opposed to calculating actual hedging costs of ActewAGL Retail. In a separate review, the AEMC has also recommended the use of a market based approach for estimating energy purchase costs.<sup>14</sup> A market-based approach reflects current market conditions and can be made relatively simple and transparent.

The market based approach adopted by the Commission estimates the cost of purchasing electricity based on forward prices, observed market outcomes and the assumption that the hedging strategy is conservative in ensuring there are minimal cash flow and financial viability risks. This is 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.

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 most likely have more forward contracts than it needs. The hedging strategy assumes that these excess entitlements to electricity are sold on the spot market.

The Commission’s energy purchase cost model consists of six components: the forward price, the load shape, the load ratio, the forward price margin, the quarterly load weights and the cost of carbon. The forward price represents the cost of pre-purchasing electricity to be delivered at a later date. The load shape and the load ratio are key drivers of the hedging cost.

The net cost of hedging is the difference between the cost of forward contracts and the revenue from the sale of contracts that are in surplus. This cost can be expressed on a per MWh basis as a forward price adjusted by an uplift factor, which depends on the forward price margin, load shape and load ratio.

The load shape reflects the extent to which the level of the load and the spot price move together and is measured by the ratio of the load-weighted spot price to the time-

---

<sup>13</sup>For more information, see ICRC, 2014a: 34-56 and ICRC, 2014b: 11-16.

<sup>14</sup> AEMC, 2013: 41.

weighted spot price. The spot price is normally positively related to the load as higher load typically requires higher cost sources of energy to be generated. The load shape has averaged about 1.1 or less in recent years.

The load ratio, also often described as the load profile, is measured by the ratio of peak load to average load. It affects hedging costs directly by impacting on the cost of hedging cover to avoid price risks associated with the peak load. The Commission uses the maximum value of the load ratio calculated since 2003–04 and adds an additional 0.1 to the highest ratio to allow for a more extreme event. This reflects a conservative hedging strategy that is considered appropriate. This conservative approach is considered to be reasonable because the distribution of wholesale electricity prices is not likely to be symmetric, i.e. the probability of very high prices is likely to be much higher than would occur with a symmetric normal statistical distribution. The load ratio has averaged about 2.3 in recent years

The cost in dollars per MWh of the hedging strategy that is incorporated in the Commission’s model can be expressed as:<sup>15</sup>

$$\text{Cost of hedging in \$ per MWh} = FP \times [LS \times (1 - M) + LR \times M]$$

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 shape and the load ratio, where the weight on the load shape is equal to 1 minus the forward premium (1-*M*) and the weight on the load ratio is equal to the forward premium (*M*). As noted, the load shape component captures the effect of load on spot prices, which in turn increases the cost of hedging. The load ratio component can be interpreted as allowing for an extreme effect and its impact will depend on the choice of the LR for the calculation. The forward price margin, set at five per cent, captures the observation that forward prices generally exceed average spot prices. The uplift factor has averaged about 1.2 in recent years.

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 estimated impact of the worst-case load scenario, accounting for second-order or more extreme moments of the load distribution.

The Commission’s current energy purchase model is summarised in Box 2.2.<sup>16</sup>

<sup>15</sup> Appendix 3 provides a mathematical derivation of this expression.

<sup>16</sup> A mathematical derivation of the hedging cost model is provided in Appendix 3.

**Box 2.2 Current 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 or mark up on the spot price;
- $LS_s$  denotes the load shape measured by the ratio of the load-weighted to time-weighted spot price;
- $LR_s$  denotes the load profile measured by the ratio between peak load and average load for the highest historical value, with a margin of 0.1 added for precautionary purposes;
- $C$  denotes the cost of carbon, which equals the price on carbon as mandated in legislation multiplied by the national carbon intensity factor. For the purposes of the model it is set to zero;
- $w_s$  denotes the quarterly load weight;
- the subscript  $s$  denotes the quarter; and
- $EPC$  without the subscript denotes the annual energy purchase cost.

**Forward price**

The forward price in the Commission’s model represents the cost of purchasing electricity. The Commission accesses two sources of forward prices: The Australian Stock Exchange (ASX) market data and over the counter (OTC) contract data from ICAP.<sup>17</sup>

The Commission used the ASX data prior to the 2012–14 regulatory period. While recognising that electricity retailers in fact entered into OTC contracts, the Commission relied on the ASX futures prices. This was based on the assumption that arbitrage between the ASX futures market and the OTC market ensured that the ASX futures prices were reflective of OTC contract prices. The introduction of a price on carbon in

<sup>17</sup> 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.

2012 changed the nature of the electricity contracting market, and the ASX prices were no longer an accurate representation of OTC contracts. Confronted by these issues, the Commission started using OTC carbon-exclusive contract data as the basis of the forward price of electricity for the 2012–14 price direction. The Commission continued to use ICAP OTC data in the current regulatory period.

The current price direction prescribes forward prices based on a simple average over a 23-month period. This averaging period was originally adopted on the basis that prudent retailers typically hedge well in advance of the year in which they supply customers. This period was applied in calculating the 2014–15 forward price.

However, due to a lack of liquidity in the contract market in July and August 2013, ICAP only started reporting price data for 2015–16 contracts from 2 September 2013. This had the practical effect of limiting the averaging period to a maximum of 21-months for the 2015–16 price reset. In order to maintain comparability across adjacent years, a 21-month averaging period was also applied in the 2016–17 price reset.

### **Issues paper submissions**

The Commission received two submissions on the choice between two sources of forward prices: the ASX market data and OTC contract data from ICAP.

ActewAGL Retail believes that it is appropriate for the Commission to return to using the exchange traded ASX forward price data averaging over a 23-month period. Their submission noted that the Commission’s current model is able to capture the significant rise in the forward price for wholesale electricity in 2016–17.

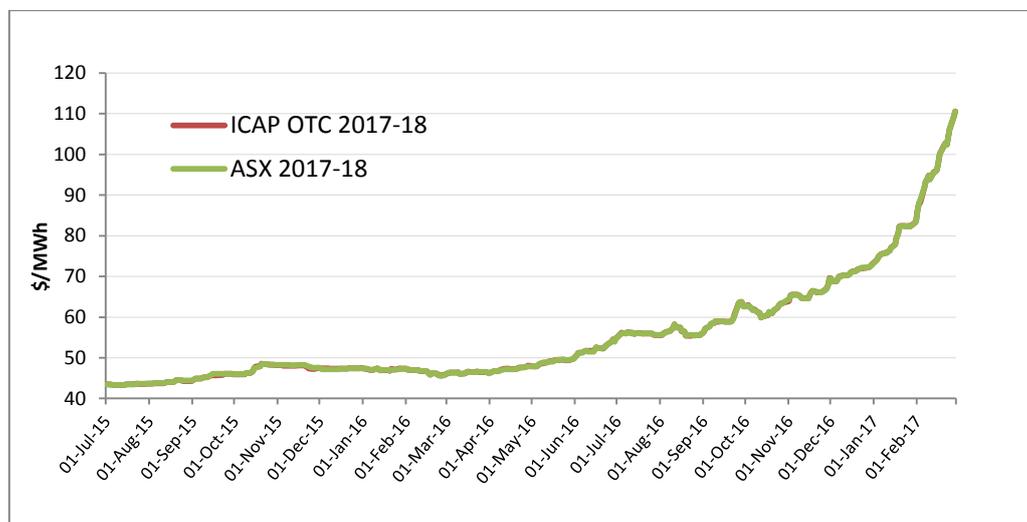
Origin Energy, in its submission, commented on the method of averaging. Origin Energy suggested the ICRC review the merits of utilising a trade-weighted average instead of a simple average to reflect trades that occur in the market.

### **Commission’s consideration and draft decision**

The Commission’s general preference is to use the exchange-traded ASX market data instead of OTC contract data due to the lack of transparency inherent in the OTC market. Figure 2.2 shows that following the removal of the carbon price from 1 July 2014, both data series have moved together with the ASX data being reflective of OTC contract prices.<sup>18</sup> This implies that the use of the ASX data, instead of OTC data, would not make a significant difference in the outcome. Consequently, the Commission’s draft position is to return to the ASX forward price data averaging over a 23-month period.

---

<sup>18</sup> The ASX data for 2017–18 is NSW implied base strip data.

**Figure 2.2 ICAP OTC versus ASX forward prices, 2017–18**

Source: ASX Energy and ICAP data.

The Commission believes that it remains appropriate to determine energy purchase costs based on a simple average of forward price data for three reasons. First, the Commission’s view is that a 23-month period is a relatively long period containing a sufficiently large number of daily observations to reliably reflect an actual purchasing window of a prudent retailer. The Commission believes that a time weighted or a simple average spot price is representative and reflective of the market.<sup>19</sup> Second, the Commission undertook a dedicated review of the design of the energy purchase cost model as part of its 2010 investigation. Since then, the Commission has broadly maintained its energy purchase cost model based on a simple average of forward price data. Third, the Commission’s approach usually compares cost components in the current year with the previous year. In order to be consistent with the approaches of the previous price determinations, the Commission therefore intends to continue to determine its energy purchase cost based on a simple average of forward price data.

### Removal of cost of carbon component

The Commission’s current pricing model incorporates an adjustment to the wholesale energy purchase cost to account for the cost of carbon. The national carbon-pricing

<sup>19</sup> Other elements of the energy purchase cost model, which are applied to the forward price also capture the true market behaviour. For instance, 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. The load ratio takes account of more extreme shocks. The forward price margin captures the market observation that forward prices generally exceed average spot prices.

scheme was abolished effective from 1 July 2014. Since then, the cost of carbon has been treated as zero in the pricing model.

### **Issues paper submissions**

ActewAGL Retail believes that the carbon cost component should be removed from the pricing model.

In contrast, in the ACAT’s view, the cost of carbon component should be retained initially set at zero because:

It is very possible that a carbon cost will be imposed on electricity generation in the course of this price determination, albeit with a name other than ‘carbon tax’ or ‘emissions trading scheme’.<sup>20</sup>

### **Commission’s consideration and draft decision**

There are two possible approaches that the Commission could follow for 2017–20. First, the Commission could continue the current approach of setting the carbon cost equal to zero. Second, the carbon cost component could be removed from the pricing model. As the outcome in either case would be the same, the Commission proposes to continue the current approach of setting the carbon cost equal to zero.

### **Hedging strategy and uplift factor**

The Commission’s current energy purchase cost model incorporates a conservative hedging strategy in estimating the cost of purchasing wholesale electricity by a prudent incumbent retailer. The current hedging strategy assumes that the incumbent retailer purchases enough forward contracts to reduce to a negligible level the possibility of having insufficient forward cover to meet demand in any trading interval. The Commission’s model adjusts the forward price by an uplift factor, based on the foregoing conservative assumption, to ensure that the retailer is adequately compensated for the market risks that it faces in purchasing electricity. The uplift factor takes account of first and higher order variability in the wholesale cost as a result of both standard and more extreme variability in the load profile. The strategy also assumes that excess forward contracts can be sold on the spot market.

However, the model does not explicitly take account of any interplay between renewable energy obligations and the hedging strategy an efficient retailer may undertake. Particularly would a hedging strategy change in the situation where the effective price of renewable energy paid by that retailer is determined under a scheme that sets a contract price that the generator receives? If that price is passed fully through to consumers via retailers does this in effect reduce price volatility for retailers (see section 2.4.8)?

---

<sup>20</sup> ACAT, 2016: 3.

A key mechanism for implementing the ACT’s 100 per cent renewable energy target is the large scale feed in tariff legislation, supported by the reverse auctions that have been used to purchase renewable energy.<sup>21</sup> The ACT’s large scale renewable energy scheme (LRES) requires ActewAGL Distribution to pay a feed in tariff to an eligible renewable energy generation business on a monthly basis for the ‘eligible electricity’ generated. The payments made by ActewAGL Distribution are based on a ‘contract for difference’ basis. This means ActewAGL Distribution pays the generator, for each delivered MWh, the difference between the generator’s feed in tariff price and the spot price of that MWh in the wholesale market in the relevant wholesale market pool. This occurs for each 30 minute trading interval and is aggregated and paid monthly in arrears. If, over the course of a month, the wholesale spot price is below the feed in tariff price, ActewAGL Distribution will pay the generator a top up amount. If the wholesale market spot price is higher than the feed in tariff amount, ActewAGL Distribution will be paid the difference, and the costs or savings are passed on to all ACT electricity consumers through their retail suppliers.

This mechanism in effect reduces the volatility of prices that both the generator and a retailer and its customers face. If price volatility is reduced for the retailer this raises the issue of how its hedging strategy and associated costs are affected. The reduction in price volatility for the generator may not be perfectly aligned with the reduced volatility for the retailer because different regional wholesale pool prices may apply (e.g. the retailer faces spot prices in the NSW pool and a generator in South Australia faces spot prices in the SA pool) and there may be timing effects as well but there may still be a material effect on volatility that needs to be recognised. However, there may also be secondary effects as the increasing market share of renewables impacts on the bidding behaviour of the various generation sources. Note also that the ACT LRES is separate and additional to the Commonwealth schemes which directly impact on retail costs without affecting price volatility in the way that the ACT schemes do.

### **Issues paper submissions**

In its submission on the issues paper, ActewAGL Retail noted that the Commission’s current approach to calculating hedging costs underestimates the efficient costs incurred by retailers. ActewAGL argued that, while the Commission’s model is based on a simple swap only hedge approach, retailers in practice use more complex hedging structures such as a combination of base swaps, peak swaps and caps.

ActewAGL Retail pointed out that the Commission’s uplift factor is bounded within the range of 0.6 to 1.44 whereas a retailer’s layered hedge structure delivers outcomes between 0.87 and 1.35. Comparing actual uplift factors for 2005–06 to 2015–16, ActewAGL claimed that the long run average uplift factor is 2.2 per cent higher than

---

<sup>21</sup> <http://www.environment.act.gov.au/energy/cleaner-energy/how-do-the-acts-renewable-energy-reverse-auctions-work>

Commission’s numbers. Therefore, ActewAGL Retail proposes that an allowance of at least two per cent should supplement the Commission’s existing calculation.

### **Commission’s consideration and draft decision**

The Commission acknowledges that retailers are exposed to substantial risk in purchasing electricity from the volatile wholesale electricity market. The Commission’s hedging strategy is primarily designed to protect a prudent retailer from the substantial costs associated with spot price spikes inherent in a volatile market. When developing its hedging strategy, the Commission 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.<sup>22</sup> The Commission believes that it remains appropriate to adopt a cautious approach when determining energy purchase costs, including giving further consideration to the potential impact of ACT’s LRES.

The Commission’s current hedging strategy applied in the energy purchase cost model is conservative as it ensures that retailers are not exposed to any upside spot market risk. The primary reason for adopting this approach is the precautionary principle. In its 2010 methodology paper, the Commission explicitly stated that it would take a precautionary approach to estimating the purchase cost of electricity.<sup>23</sup> 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. The Commission’s conservative hedging strategy is based on an estimate of the likely worst case outcome based on historical information. The Commission is not suggesting that ActewAGL Retail adopt this strategy or that it is the option that a retailer might adopt when balancing its overall risk management portfolio. However, it does represent a precautionary view of the costs of hedging, particularly if some of the price risks is dampened by LRES obligations.

To reiterate, the Commission’s calculation is based on a hypothetical hedging strategy of a retailer that hedges to avoid any upside spot market risk. It does not cover the actual hedging strategy or actual hedging costs associated with holding different portfolios of hedge contracts with a wide range of financial derivatives and caps, nor does it take account of the ACT Government’s LRES.

To be clear, it is recognised that retailers are still purchasing all their energy in the wholesale spot market and employing various hedging strategies, however, the existence of the ‘contract for difference’ payments associated with the ACT LRES does appear to reduce the effective price volatility that a retailer would face in the absence of the LRES. This issue has not been previously raised but has become more apparent as the ACT LRES has increased in importance. The Commission welcomes

---

<sup>22</sup> For detailed information, ICRC, 2014a: 34-56 and ICRC, 2014b: 11-16. See ICRC, 2010: full technical paper for more details of the development of the Commission’s hedging strategy.

<sup>23</sup> ICRC, 2010b: 22.

comments on how the ACT’s LRES may affect the price and volume volatility that retailers face and in turn impact on the hedging model that the Commission is using.

While this issue needs to be explored further, the Commission agrees with ActewAGL 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. While allowing for swaps and caps in the model could provide extra cover for the retailer, the Commission’s view is that simple swap only hedging approach satisfies both the long run risk while avoiding low short run cash flow worst-case outcomes. The Commission’s simplified method for deriving an electricity purchase cost allowance provides a convenient and transparent method for estimating the cost associated with holding different portfolios of hedge contracts. The Commission’s hedging strategy, which has been applied since its development, is considered to be indicative of the cost of a range of more sophisticated strategies.

Table 2.2 reports the annual load shape and ratio and resulting uplift factor over the period 2009–10 to 2016–17.<sup>24</sup> It shows that the uplift factor has trended down from 2012–13 reflecting a reduction in hedging costs on average. The Commission believes that the uplift factor will vary over time with actual market conditions and any changes in retailer’s hedging costs are broadly captured by the changes in the uplift factor.

**Table 2.2 Annual uplift factor, 2009–10 to 2017–18**

Year	Load shape	Load ratio	Uplift factor
2009-10	1.158	2.127	<b>1.207</b>
2010-11	1.160	2.203	<b>1.212</b>
2011-12	1.153	2.215	<b>1.207</b>
2012-13	1.153	2.253	<b>1.208</b>
2013-14	1.141	2.316	<b>1.200</b>
2014-15	1.132	2.374	<b>1.194</b>
2015-16	1.125	2.474	<b>1.192</b>
2016-17	1.120	2.473	<b>1.188</b>
2017-18	1.117	2.510	<b>1.187</b>

Source: Commission’s calculations

Given the evidence and discussion presented above and subject to further examining the consequences for the Commission’s hedging model of the ACT LRES, the Commission maintains its view that the current hedging strategy broadly reflects the hedging costs incurred by an efficient retailer in the same position as ActewAGL Retail. The Commission believes that the current hedging strategy appears to satisfy both the long run risk objective while allowing for a low short run cash flow worst case outcome. Therefore, subject to the further consideration flagged above, the

<sup>24</sup> See ICRC, 2014a: 44-49 and ICRC, 2016: 12-14 for the Commission’s uplift factor equation and the related discussion on the subject.

Commission proposes to maintain its current hedging model for the next regulatory period.

### **Overarching energy purchase cost model conclusion**

Apart from reverting to the ASX data over a 23-month averaging period, setting the carbon cost equal to zero and considering the consequences for hedging of the ACT’s LRES, the Commission proposes to maintain its current model as previously described in this section.

#### **2.4.2 LRET and SRES 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. These obligations are separate to the ACT Government’s renewable energy target. 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 LGCs and STCs to the Clean Energy Regulator in percentages set by regulation each year.<sup>25</sup> The cost of meeting these national environmental obligations, which is the second most important cost component of the wholesale energy cost category, accounts for seven per cent of the total cost of providing retail electricity services to customers who pay the regulated retail tariff in the ACT.

The Commission’s methodology for estimating the cost of meeting these national obligations is summarised below.<sup>26</sup>

An electricity retailer is subject to an LRET obligation each calendar year, for which the cost of complying is calculated as the price of a LGC certificate multiplied by a renewable power percentage. The renewable power percentage (RPP) represents the proportion of a retailer’s total MWh of electricity purchased for which it is required to surrender LGCs. Similarly, the cost of complying with the SRES scheme is calculated as the price of a STC certificate multiplied by a small-scale technology percentage. The small-scale technology percentage represents the proportion of a retailers total MWh of electricity purchased for which it is required to surrender STCs.

The Commission applies a market-based approach for determining efficient LRET and SRES costs. The model determines LGCs and STCs prices based on publicly available spot price data averaged over an 11-month period. In calculating the forward LGC

---

<sup>25</sup>More information on the LRET and the SRES schemes can be found on the Clean Energy Regulator’s website: <http://www.cleanenergyregulator.gov.au/About/Accountability-and-reporting/administrative-reports/The-Renewable-Energy-Target-2012-Administrative-Report/The-Renewable-Energy-Target-explained>.

<sup>26</sup>Full details of the Commission’s approach can be found in the 2014 draft and final reports on Standing offer prices for the supply of electricity to small customers :ICRC, 2014a: 56-65; ICRC, 2014b: 20-21.

price, the Commission uses average historical forward price data as its best estimate of the forward price facing the electricity retailer for the coming year. The Commission sources LGC and STC forward 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 account for this, the Commission, based on its previous work, applies a 10 per cent per year holding cost added to the spot price.

LRET obligations accrue over a calendar year, while the Commission’s electricity cost-index model is based on a financial year. To adjust for 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.<sup>27</sup> The Commission uses the actual RPP for the first calendar year in question and the estimated RPP for the second year. Both figures are 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 five 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 2.3.

---

<sup>27</sup> The RPP is an annual target to achieve the national LRET target by 2020. The renewable power percentage to achieve the LRET target for 2016 is 12.75 per cent. The small-scale technology percentage set to achieve the 2016 SRES target is 9.68 per cent.

**Box 2.3 Current 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:

$$\text{LRET cost}_{2017-18} = \text{LW}_{2017} \times \text{LGCC}_{2017} + \text{LW}_{2018} \times \text{LGCC}_{2018} + \text{CA}_{2016-17}$$

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:

- $\text{LGCC}_{2017} = \text{RPP}_{2017} \times [\text{LGCspot}_{2017} \times (1 + \text{HC}) \times (1 + \text{OM})]$
- $\text{LGCC}_{2018} = \text{RPP}_{2018} \times [\text{LGCspot}_{2018} \times (1 + \text{HC}) \times (1 + \text{OM})]$

where the following are defined for each calendar year:

- RPP denotes the renewable power percentage for the calendar year;
- LGC spot 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 ten per cent;
- OM denotes the operating cost mark-up percentage, currently five per cent;

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 2.4.

**Box 2.4 Current 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:

$$\text{SRES cost}_{2017-18} = \text{LW}_{2017} \times \text{STCC}_{2017} + \text{LW}_{2018} \times \text{STCC}_{2018} + \text{CA}_{2016-17}$$

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:

- $\text{STCC}_{2017} = \text{STP}_{2017} \times [\text{STCspot}_{2017} \times (1 + \text{HC}) \times (1 + \text{OM})]$
- $\text{STCC}_{2018} = \text{STP}_{2018} \times [\text{STCspot}_{2018} \times (1 + \text{HC}) \times (1 + \text{OM})]$

where the following are defined for each year:

- STP denotes the small-scale technology percentage for the calendar year;
- STC spot 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 five per cent.

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

**Issues paper submissions**

ActewAGL Retail supported the Commission’s market-based approach for determining efficient costs for LRET and SRES schemes. ActewAGL Retail also noted the recent significant rise in the price of green certificates, stating:

The price of green certificates required to meet the renewable energy targets has seen dramatic price increase due to the perceived shortage of certificates...As a result, the

prices are expected to stay close to a maximum of almost \$93 as set by the tax effective penalty rate.<sup>28</sup>

### **Draft decision**

The Commission intends to maintain its current approach for calculating LRET and SRES cost components.

#### **2.4.3 Energy losses**

Some electricity is lost in transporting from generators to customers via transmission and distribution networks. Retailers purchase additional electricity to allow for these losses. The loss factors are calculated by the AEMO, and are used by all regulators to determine the energy loss allowances where regulated tariffs apply. The AEMO reports marginal and distribution loss factors for the forthcoming financial year.<sup>29</sup> The Commission calculates an adjustment factor combining the marginal and distribution loss factors applicable to the ACT.

As part of the 2014 review, two changes were made to the way the Commission estimates the costs of energy losses. The changes comprised the inclusion of NEM fees in the energy loss equation and the application of the distribution loss factor only to the LRET and SRES costs and NEM fees.<sup>30</sup>

---

<sup>28</sup> ActewAGL Retail, 2016: 14.

<sup>29</sup> This data is available from the AEMO website: <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Loss-factor-and-regional-boundaries>.

<sup>30</sup> Full details of the Commission’s approach can be found in the 2012 final report.

**Box 2.5 Current energy loss equation**

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

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

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; and
- MLF denotes the marginal loss factor applicable to the ACT.

**Issues paper submissions**

ActewAGL Retail supported the Commission’s methodology for calculating the energy losses component based on AEMO data.

**Draft decision**

The Commission proposes to maintain its current approach and calculate the cost allowance for energy losses using the formula in Box 2.5.

**2.4.4 Energy contracting costs**

Energy contracting costs represent the costs incurred by the incumbent retailer in managing an electricity-trading desk. The Commission estimated the energy contracting costs of the incumbent retailer in 2003, and has adjusted this component each year by the change in the CPI since then.

**Issues paper submissions**

ActewAGL Retail considers the CPI adjustment applied by the Commission to energy contracting costs to be appropriate.

**Draft decision**

The Commission proposes to maintain its current approach to estimating energy contracting costs by adjusting this component by the change in the CPI.

### 2.4.5 NEM fees

The NEM is managed by the AEMO, which is funded through user fees that are paid by customers. The Commission estimated the NEM fees of the incumbent retailer in 2003, and has adjusted this component to reflect the annual change in the CPI since then.

#### Issues paper submissions

ActewAGL Retail supported the current approach.

#### 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 CPI.

### 2.4.6 Retail operating costs

Retail operating costs are the efficient costs incurred by the retailer in providing retail services to its customers. In 2003, the Commission estimated the retail operating costs allowance based on the cost estimates provided by ActewAGL Retail and benchmark observations of other regulatory decisions.

As part of the 2014 review, two changes were made to the way in which retail operating costs are calculated. The first was to increase the per MWh allowance for 2014–15 to match New South Wales’ Independent Pricing and Regulatory Tribunal (IPART) benchmark. The second involved an ongoing adjustment in the per customer allowance each year by the change in the consumer price index.

The Commission’s current pricing model does not incorporate a headroom (competition) allowance.

#### Issues paper submissions

The Commission received a number of submissions on various aspects of the retail operating cost allowance.

A number of submissions argued that the retail operating cost allowance determined by the Commission is too low. ActewAGL Retail expressed its concern that:

The Commission’s current approach to determining retail prices results in prices below the efficient level that would allow full commercial cost recovery for an efficient mass-market new entrant.<sup>31</sup>

---

<sup>31</sup> ActewAGL Retail, 2016: 5

Supporting the same argument, Origin stated that:

The Competition in the ACT is not as effective as other jurisdictions and customers are not appropriately engaged in the energy market due to the risk that electricity tariffs will not reflect a retailer’s actual cost of supply.<sup>32</sup>

In AGL’s view:

The lower retailer participation in the ACT electricity market compared with other jurisdictions in the NEM and subsequent high market share of ActewAGL Retail are very strong indicators that the regulated price cap has been set too low for other retailers to compete.<sup>33</sup>

The Australian Energy Council proposed that the standing offer prices should be set at a level that reflects the true costs of operating in the market to allow retailers to compete.<sup>34</sup>

These submissions also argued for inclusion of customer acquisition and retention costs in the retail operating cost component. ActewAGL Retail believes that the Commission needs to revisit its decision to exclude customer acquisition and retention costs from total retail costs.

AGL in its submission claimed that the ICRC has misconstrued the purposes of both Customer Acquisition and Retention Costs (CARC) and headroom allowances. As they note:

They are not linked to start-up costs but are a fundamental component of a competitive retail electricity market<sup>35</sup>

Origin Energy disagreed with the ICRC’s proposal to exclude customer acquisition and retention costs from its calculation of retail costs.

The Australian Energy Council raised concerns about not incorporating any allowance to reflect customer acquisition and retention costs in the retail operating cost allowance of the Commission’s pricing model.

Although a number of submissions argued in favour of an allowance for CARC, the EPSDD of the ACT Government stated in their submission that:

[The EPSDD] do not consider that the inclusion of a competition allowance would be in the best interests of ACT electricity consumers. Competitive markets are not characterised by the inclusion of such allowances.<sup>36</sup>

---

<sup>32</sup> Origin, 2016: 1.

<sup>33</sup> AGL, 2016: 2.

<sup>34</sup> AEC, 2016: 1.

<sup>35</sup> AGL, 2016: 3.

<sup>36</sup> EPSDD, 2016: 2.

The ACAT opposed to any form of a headroom allowance, stating that:

It will simply result in a large retail price increase and then ‘competition’ among a few entrants who offer discount prices down to where the regulated tariff would have been in the first place. In the meantime, the vast bulk of inactive customers will simply pay more.

### **Commission’s consideration and draft decision**

Whether to include a competition allowance and an allowance for CARC was a matter of discussion in previous price investigations. The Commission examined this matter comprehensively as part of the Commission’s 2014 investigation, and maintained that the introduction of such an allowance in the ACT was not warranted because:

...there is a strong possibility that any benefits it may produce will be long delayed and therefore of little present value.<sup>37</sup>

As part of this investigation, the Commission has evaluated the benefits of introducing a CARC allowance. The Commission acknowledges that retailers incur costs relating to churn management and advertising for new customers, but maintains that it remains appropriate not to include a separate allowance in the calculations of its cost-index model for the next regulatory period for two reasons.

First, it is important to recognise that competition is a means of achieving efficiency with the ultimate objective of realising benefits in the long-term interests of consumers and not an ultimate objective in itself. It is not always economically beneficial to introduce competition in some markets and this is particularly the case if the end result is higher prices for consumers compared with a regulated monopoly situation. The definition of a natural monopoly is that it constitutes the lowest cost source of supply but a natural monopoly may need to be regulated to ensure it does not earn above normal commercial profits. If a natural monopoly does not exist and prices are higher than would be realised in a competitive market, or regulation sets too high a price, then competition can develop to realise the benefits of lower costs and prices. Advocates for a competition allowance need to show that the combination of a competition allowance and competitive forces will mean lower prices and not higher prices.

ActewAGL Retail’s standing offer prices for small customers are being regulated because of a concern that competition will not be effective in lowering prices. Inclusion of an additional CARC allowance will set regulated prices even higher. In the Commission’s view, the arguments in favour of higher prices to facilitate competition in the ACT, fundamentally contradict the efficient pricing outcomes in competitive markets. The Commission believes that an increase in prices resulting from a CARC allowance or a competition allowance could only be justified if prices will reduce to efficient levels over time and longer-term benefits from competition would more than offset the cost burden faced by small customers from including a

---

<sup>37</sup> See ICRC, 2014a: 97-142 for discussion on the Commission’s reasons for not introducing a competition allowance including an allowance for CARC.

competition allowance. The Commission considers there is little evidence to indicate that a competition allowance would realise net benefits.

Second, in determining the efficient benchmark costs of retail operations in 2003, the Commission estimated the retail operating cost allowance based on the cost estimates provided by ActewAGL Retail and benchmark observations of other regulatory decisions. The Commission’s cost structure underpinning the assessment of the retail operating cost allowance in 2003 comprised the costs of retail activities such as customer care and call centre operations, billing and charging, sales and marketing collection and defaults, administration costs and retail competition activities such as churn management and advertising for new customers.<sup>38</sup> As part of the 2014 review, the 2003 allowance was further increased to match New South Wales’ Independent Pricing and Regulatory Tribunal (IPART) benchmark. The 2014 revisions also included an ongoing adjustment in the per customer allowance each year by the change in the CPI. This suggests that the Commission via its allowed retail operating cost-structure, is currently allowing retailers to recover relevant costs relating to customer acquisition and retention.

Given these observations, the Commission maintains that introducing a competition allowance or CARC at this time is not in the long-term interests of ACT customers. The Commission therefore proposes to continue its practice of not including such an allowance in the calculations of its cost-index model for the next regulatory period.

#### **2.4.7 EEIS costs**

The ACT Government’s EEIS scheme places a mandatory obligation on all active retailers in the ACT to promote energy efficiency measures in households and small businesses. The EEIS Scheme, which was initially legislated to finish on 31 December 2015, has been extended for the period 2016 to 2020.

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 Territory-wide energy savings targets, shown in Box 2.6, and requires ACT electricity retailers to meet an individual savings obligation (Box 2.7).

---

<sup>38</sup> ICRC, 2003: 13.

**Box 2.6 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:

- 8.6 per cent of total electricity sales for the period 1 January 2017 to 31 December 2017; and
- 8.6 per cent of total electricity sales for the period 1 January 2018 to 31 December 2018

Source: Energy Efficiency (Cost of living ) Improvement (Energy Savings Target) Determination 2015 (No 1) (D12015-268)<sup>39</sup>

**Box 2.7 Energy saving obligation**

The basic equation is:

$$SESO_t = EST_t \times Sales_t \times EF_t$$

where

- $SESO_t$  denotes the supplier energy savings obligation for calendar year t (t CO<sub>2</sub>-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); and
- $EF_t$  denotes the emissions factor, which is the tonnes of CO<sub>2</sub> equivalent greenhouse gas emissions attributed to the consumption in the ACT of 1 MWh of electricity (t CO<sub>2</sub>-e).

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;
- efficient refrigerators to replace pre-1996 refrigerators; and
- standby power controllers.

<sup>39</sup>For more information, please see [http://www.environment.act.gov.au/energy/smarter-use-of-energy/energy\\_efficiency\\_improvement\\_scheme\\_eeis](http://www.environment.act.gov.au/energy/smarter-use-of-energy/energy_efficiency_improvement_scheme_eeis).

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 \$300 per tonne of carbon dioxide equivalent gas emitted per megawatt hour (t CO<sub>2</sub>-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 \$116 per t CO<sub>2</sub>-e.<sup>40</sup>

The Commission determines the EEIS cost allowance using the Commission’s methodology and cost estimates provided by ActewAGL Retail, subject to a forward-looking prudence and efficiency assessment. Since the Commission’s methodology relies on forecast and estimated costs in advance of the actual cost being incurred, provision is made for an ex-post adjustment.

---

<sup>40</sup> Section 11 of the Energy Efficiency Act requires the Minister to determine the energy savings contribution for tier 2 retailers.

The Commission currently estimates EEIS costs using the methodology set out in Box 2.8.

**Box 2.8 ACT Energy Efficiency Improvement Scheme cost estimation formula**

The basic equation that determines the EEIS cost estimate in dollars per MWh applied in the Commission’s electricity cost-index model is:

$$\text{EEIS cost}_{2017-18} = (\text{CM}_{2017} \times \text{LW}_{2017}) + (\text{CM}_{2018} \times \text{LW}_{2018}) + \text{CA}_{2016-17}$$

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); and
- CA is the cost adjustment from the previous financial year (dollars per MWh).

The determination of the cost per MWh for each calendar year is calculated as:

- $\text{CM}_{2017} = \text{CT}_{2017} \times \text{EF}_{2017} \times \text{EST}_{2017}$
- $\text{CM}_{2018} = \text{CT}_{2018} \times \text{EF}_{2018} \times \text{EST}_{2018}$

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); and
- EST denotes the energy savings target for the calendar year determined under the Energy Efficiency Act (percentage).

**Prudence and efficiency assessment**

As part of its 2014 price determination, the Commission assessed the prudence and efficiency of ActewAGL Retail’s EEIS costs, and found that ActewAGL Retail’s

forecast costs for 2014–15 were prudent and efficient. For this investigation, the Commission proposes to apply a similar forward-looking assessment of the prudence and efficiency of ActewAGL Retail’s forecast expenditure on the EEIS scheme.<sup>41</sup>

The proposed approach is described as follows.

ActewAGL Retail’s forecast expenditure on the scheme will be deemed prudent if ActewAGL Retail can demonstrate that it is reasonably necessary to meet its legislative requirements under the *Energy Efficiency Improvement Act 2012* (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 by establishing a cost ceiling above which the forecasts costs will be deemed inefficient.

### **Cost ceiling**

As discussed earlier, should a tier 1 retailer not meet its energy savings obligation, it is required to pay a penalty of \$300 per t CO<sub>2</sub>-e. This amount reflects 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 the costs associated with the EEIS scheme as there are a range of matters that are outside of ActewAGL Retail’s control that have cost implications.

### **Issues paper submissions**

ActewAGL Retail stated that the EEIS costs can be assessed for prudence in terms of the abatement mechanisms chosen by ActewAGL Retail to satisfy the scheme’s legislative requirements. In terms of productive efficiency in delivering the selected activities, ActewAGL Retail employs an open tender process to deliver an efficient cost outcome.

The EEIS includes a Priority Household Target (PHT) to ensure fair and equitable access for low-income households. ActewAGL Retail pointed out that its Energy Saving House Call programme was designed in line with the EEIS objectives to target and benefit low-income households.

---

<sup>41</sup> See, for more information, ICRC, 2014a: 151-154.

In ActewAGL Retail’s view, required future EEIS activities will focus more on encouraging energy efficient appliance replacements. ActewAGL Retail submitted that transitioning to appliance-based activities will affect adoption levels by low-income households. This implies that, unless the target for priority household participation is reduced or removed, the incentives to encourage participation of low-income households will need to increase. This will increase the total cost of delivering ActewAGL Retail’s EEIS obligations. ActewAGL Retail raised its concerns that it is facing the risk of not reaching abatement targets for priority households that will result in a significant cost increase through the imposition of shortfall penalty rates of \$300 per tonne. In ActewAGL Retail’s view, these factors are not factored into the Commission’s cost estimation for delivering the EEIS obligations.

In its submission to the issues paper, the EPSDD suggested that the Commission’s methodology should include further scrutiny of the abatement costs to ensure the scheme is being delivered at least cost to ACT electricity consumers:

It is critical that energy efficiency activities delivered under the scheme are cost effective. This will ensure that scheme costs passed through to customers are minimised... The Commission’s methodology should include further scrutiny of abatement activity costs delivered via competitive tender processes, including those undertaken by ActewAGL Retail and by tier two retailers who may voluntarily choose to participate in the scheme.<sup>42</sup>

The EPSDD further suggested that the EEIS cost allowance determined by the Commission’s methodology should be assessed with reference to benchmark costs in other jurisdictions.

### **Commission’s consideration and draft decision**

The ACT Government’s EEIS scheme sets a territory wide energy saving target. In order to meet EEIS obligations, retailers are required to implement eligible activities as specified by the ACT government. Before undertaking eligible activities in the compliance period, retailers are required to submit an annual compliance plan for the EEIS administrator’s approval under section 17 of the Energy Efficiency Act. This process is determined outside of the Commission’s control.

As previously mentioned, the Commission determines the EEIS cost allowance based on the cost estimates provided by ActewAGL Retail subject to a forward-looking prudence and efficiency assessment. The Commission’s approach is a cost-based method as it relies on the actual costs incurred by ActewAGL Retail in complying with the scheme. The Commission obtains details from ActewAGL Retail on its forecast abatement costs, and allows for an ex-post adjustment to account for cost differences between forecast and actual costs. The Commission’s cost-based methodology adequately compensates the actual costs incurred by ActewAGL Retail in complying with the scheme, irrespective of the nature of required EEIS activities, as long as the proposed costs are deemed efficient. In the Commission’s view, complying with the

---

<sup>42</sup> EPSDD, 2016: 2.

scheme is ActewAGL Retail’s responsibility, which is assessed outside of the Commission’s control. If ActewAGL Retail fails to comply with the scheme, it would be required to pay a penalty as per the *Energy Efficiency (Cost of Living) Improvement Act 2012*. The penalty and any costs associated directly with non-compliance would not be included in allowable costs for recovery through the regulated retail electricity prices.

The Commission proposes to maintain its current approach to estimating EEIS compliance costs for the next regulatory period. Under the proposed approach, ActewAGL Retail’s forecast expenditure will be deemed efficient if ActewAGL Retail can demonstrate that it is reasonably necessary to meet the EEIS obligation. As for the efficiency, the Commission will undertake a two-part efficiency assessment. First is an assessment of the robustness of the process and practices that ActewAGL Retail utilised in delivering the activities. This includes an assessment of the tender process, as suggested by the EPSDD. Second is establishing a cost ceiling above which costs will be deemed inefficient.

The Commission agrees with the EPSDD submission that it is instructive to compare the Commission’s determination with recent regulatory decisions in other jurisdictions, but acknowledges that the use of benchmarks can be only a guide as there are key differences between the schemes. While there are a number of jurisdictional schemes with similar characteristics to the EEIS, the key difference between these schemes and the ACT scheme is that the latter is not based on creating and trading certificates. For instance, under the New South Wales Energy Savings Scheme and Victorian Energy Efficiency Target Scheme, retailers are required to surrender an appropriate number of energy savings certificates or pay a financial penalty. Despite South Australia’s Retailer Energy Efficiency Scheme being a certificate-based scheme, it is important to note that South Australia no longer regulates its retail electricity market.

#### **2.4.8 Network costs**

The network costs are equal to the sum of transmission, distribution and jurisdictional charges paid by ActewAGL Retail. They are determined by the AER and released each year in June. The Commission passes through the AER’s final determination to the standard customer contract retail load.

#### **Feed-in tariff costs**

Under the *Electricity Feed-in (Large scale Renewable Energy Generation) Act 2011*, ActewAGL Distribution is required to pay the generators of eligible electricity a feed-in tariff payment amounting the difference between the generator’s feed-in tariff price and the value of that MWh in the wholesale market. As per the current scheme, if the market price is higher than the feed-in tariff amount, ActewAGL Distribution will be paid the difference and the savings are passed on the all ACT electricity consumers,

and *vice versa*.<sup>43</sup> Feed-in arrangements for small-scale generation is provided under the *Electricity Feed-in (Renewable Energy Premium) Act 2008*.

Feed-in tariff costs for large and small scale generation are currently identified as an ActewAGL Distribution’s obligation, and are determined as part of the AER’s network price determination.

### **Issues paper submissions**

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

### **Draft decision**

As network costs are unavoidable for all retail businesses, the Commission intends to maintain its current approach and pass through the network costs determined by the AER.

The Commission intends to further investigate the implications of the ACT’s large-scale renewable generation feed-in tariff scheme to determine whether the current scheme has any bearing on the retailer’s hedging strategy and thereby on its costs.

### **2.4.9 Retail margin**

The retail margin is a profit margin to provide a return to the investment made by the incumbent retailer in providing retail electricity services. Once all cost categories of the Commission’s cost index model are estimated, they are added together and multiplied by the retail margin to produce the retail margin allowance.

### **Issues paper submissions**

ActewAGL Retail and Origin Energy supported the current retail margin of 6.04 per cent.

### **Draft decision**

The current retail margin is 6.04 per cent. As part of the Commission’s 2014 price investigation, the benchmark retail margin was increased from 5.4 to 6.04 per cent drawing on research undertaken by the IPART in NSW.<sup>44</sup> This margin is meant to be calibrated in conjunction with the other cost components to ensure that the retailer is compensated for efficient costs and receives a normal commercial profit margin.

If retail costs and the components of the retail profit margin are actually increasing broadly in line with CPI increases but the margin is applied to a cost base that is increasing at a materially higher rate, then the dollar value of the retail margin will be increasing at a rate that exceeds what is needed to ensure reasonable cost recovery and

---

<sup>43</sup> <http://www.environment.act.gov.au/energy/cleaner-energy/how-do-the-acts-renewable-energy-reverse-auctions-work>.

<sup>44</sup> IPART, 2013: 94.

a reasonable profit margin. In the current circumstances energy purchase costs and national renewable energy costs are increasing at rates well in excess of the CPI or operating costs generally in the economy. If the current approach to allowing for a retail profit margin is applied, it seems most likely that ActewAGL Retail would receive too high a profit allowance from the regulated retail electricity price.<sup>45</sup>

Thus, the Commission proposes to index the nominal value of the 2016–17 retail margin by the change in the CPI. This assumes that the components of the retail margin move in line with the CPI so that the dollar value of the margin should be held constant in real terms. This means that in percentage terms the proposed margin declines from a mark up to be applied to other costs of 6.04 per cent to 5.49 per cent.

The Commission’s proposed approach to calculating the retail margin is intended to be symmetric so that the proposed adjustment, if warranted by reference to likely changes in the components of the retail margin, would operate in the same fashion if other costs declined materially.

The Commission believes that the proposed approach is broadly consistent with the ICRC Act, which requires the Commission to balance a number of considerations in determining an appropriate profit margin for ActewAGL Retail.

## 2.5 Summary of draft decisions on the pricing model

Table 2.3 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 2017.

---

<sup>45</sup>The proposed approach converts to a retail margin allowance of \$10.86 per MWh representing a 9 per cent decrease over the per MWh allowance of \$11.95 determined using the current approach.

**Table 2.3 Draft decisions on the retail electricity cost-index model**

<b>Component</b>	<b>Method</b>
<b>Wholesale energy costs</b>	
Energy purchase cost	Maintain the current energy purchase cost model with the ASX forward price data averaging over 23-month period subject to the Commission further examining the impact on the Commission’s hedging model of the ACT’s LRES.
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	Maintain the current approach as set out in Box 2.5.
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.
<b>Retail costs</b>	
Retail operating costs	Continue the current approach of adjusting retail operating costs by the annual change in the consumer price index, and converting this to a per MWh allowance at each annual price recalibration exercise.
ACT Energy Efficiency Improvement Scheme costs	Maintain the current methodology for estimation and prudence and efficiency assessment.
<b>Network costs</b>	
	Maintain the current approach of passing through the network costs determined by the AER.
<b>Retail margin</b>	
	Adjust the 2016–17 retail margin allowance in dollars per MWh by the change in CPI .



## **3 Analysis of efficient costs for 2017–18**

### **3.1 Introduction**

This chapter sets out the Commission’s determination of the efficient costs of supplying electricity to customers on standard retail contracts in 2017–18, the first year of the next regulatory period. It uses the Commission’s retail electricity cost index model described in Chapter 2.

Chapter 4 sets out the method by which prices will be set for the subsequent years of the regulatory period.

### **3.2 Wholesale electricity cost**

As explained in Chapter 2, the Commission estimates the wholesale electricity cost by developing and costing a benchmark hedging strategy that requires estimates of the forward price of energy in the wholesale electricity market and a risk premium or uplift factor to take account of the cost of hedging to reduce price volatility and minimise the risk of price spikes. To address these risks effectively the model assumes 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.

#### **3.2.1 Forward price**

The forward price of wholesale electricity is calculated using the ASX futures market price data. The draft forward price for 2017–18 has been calculated over a 20 month averaging period from 1 July 2015 to 28 February 2017. This will be expanded for the final report to a 23-month period from 1 July 2015 to 31 May 2017 as more data becomes available.

Table 3.1 shows the forward prices for each calendar year quarter for the 2016–17 and 2017–18 financial years. The 2017–18 forward prices show an increase of 31 per cent over the 2016–17 financial year.

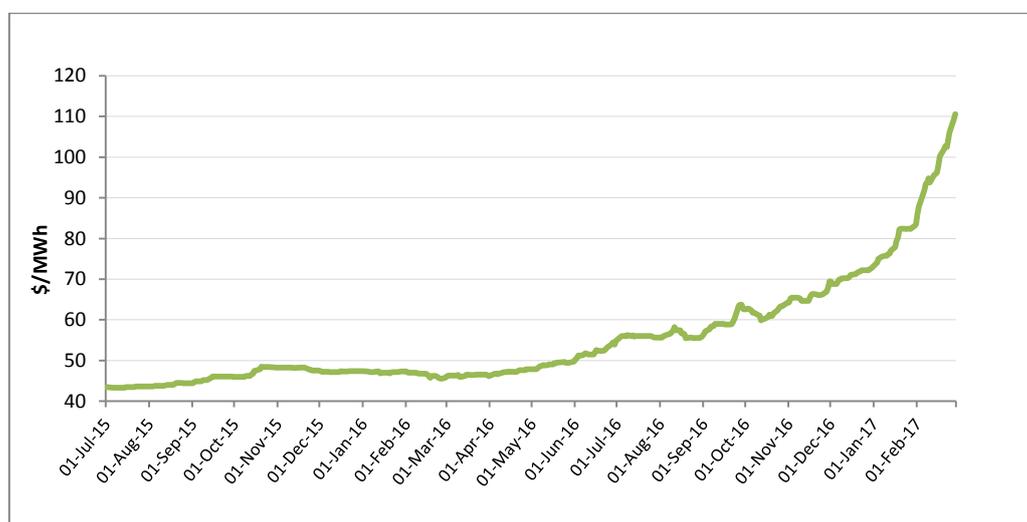
**Table 3.1 Quarterly forward wholesale electricity prices, 2016–17 and 2017–18 (dollars per MWh)**

Year	Q3	Q4	Q1	Q2
2016–17	42.16	42.16	42.16	42.16
2017–18	55.35	55.35	55.35	55.35

Source: Commission's calculations based on the ASX data.

Note: The 2016–17 quarterly forward prices have been recalculated from that contained in the 2016–17 price reset using ASX data averaged over a 23-months period. The respective forward prices in the 2016–17 price reset were calculated using ICAP data averaged over a 21-month period.

As depicted in Figure 3.1, the daily forward price data has shown a significant upward trend since about April 2016. According to available data, this trend appears to continue exerting upward pressure on wholesale electricity prices.

**Figure 3.1 ASX futures market data for wholesale electricity 1 July 2015 to 28 February 2017**

Source: Commission's calculations based on the ASX data

It is important to recall that the Commission's draft decision on the forward price is based on information up to 28 February 2017. This will be expanded to 31 May 2017 for the final report to capture new information and price movements beyond 31 January 2017. This implies that, if the forward price continues its upward trend, the Commission's final decision will reflect this continued rise of forward prices, which will potentially translate into a greater price increase for 2017–18.

### 3.2.2 Uplift factor

A key element of the Commission's current 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,  $M$ , set at five per cent, captures the observation that forward prices generally exceed average spot prices. The uplift factor is calculated as follows:

$$\text{Uplift factor} = [ (1 - M) \times \text{load shape} + M \times \text{load ratio} ]$$

As noted earlier in section 2.4.1, the Commission's current hedging model does not take account of the renewable energy obligations of jurisdictional schemes where the price of renewable energy is determined by contract rather than the wholesale electricity market. The Commission will review its approach to modelling hedging strategy to consider the implications of the ACT's large scale feed in tariff scheme for the hedging behaviour of an efficient retailer in the position of ActewAGL Retail.

### Load shape

The load shape captures the relationship between the spot price and electricity load. There is normally a positive relationship between the spot price and the load and this price effect has a first order effect in raising the cost of hedging. The weight on the load shape of  $1-M$  reflects the general effect of load on prices.

The load shape is calculated using NSW spot prices and the net system load profile for ActewAGL Distribution, both reported by the AEMO.

The quarterly average load shape for 2016-17 and 2017-18 is shown in Table 3.2 and underlying quarterly load shape data from 2003-04 through 2016-17 are presented in Table 3.3.

**Table 3.2 Quarterly average load shape, 2016-17 and 2017-18**

Year	Q3	Q4	Q1	Q2
2016-17 (average 2003-04 through 2015-16)	1.105	1.089	1.197	1.105
2017-18 (average 2003-04 through 2016-17)	1.106	1.078	1.189	1.109

Source: Commission's calculations using data from the AEMO load profiles and the AEMO aggregated price and demand data files.

**Table 3.3** Quarterly load shape, 2003–04 through 2016–17

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	1.044	1.070	1.054	1.033
2014–15	1.050	1.039	1.065	1.052
2015–16	1.077	1.090	1.096	1.157
2016–17	1.113	0.931		

Source: Commission's calculations using data from the AEMO load profiles and the AEMO aggregated price and demand data files.

### Load ratio

The load ratio component can be interpreted as allowing for an extreme effect and its impact will depend on the choice of the load ratio for the calculation. The weight of the forward price margin on the load ratio reflects the financial impact of requiring forward contracts to cover a price spike based on historic high loads relative to the average load.

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. 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 ratios for 2016–17 and 2017–18 and the underlying load data are shown in Table 3.4

**Table 3.4** Quarterly load ratio, 2003-04 to 2017-18

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	2.193	2.621	2.322
2014-15	1.939	2.757	2.236	2.153
2015-16	1.996	2.505	2.625	2.452
2016-17	1.965	2.146		
<b>Maximum through Q4 2015-16</b>	<b>2.030</b>	<b>2.757</b>	<b>2.621</b>	<b>2.322</b>
<b>Maximum through Q4 2016-17</b>	<b>2.030</b>	<b>2.757</b>	<b>2.625</b>	<b>2.452</b>
<b>Load ratio 2016-17</b>	<b>2.130</b>	<b>2.857</b>	<b>2.721</b>	<b>2.422</b>
<b>Load ratio 2017-18</b>	<b>2.130</b>	<b>2.857</b>	<b>2.725</b>	<b>2.552</b>

Source: Commission's calculations using data from the 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 2016-17. The load used is the net system load profile for ActewAGL Distribution as reported by the AEMO. The quarterly load weights for 2016-17 and 2017-18 are shown in Table 3.5.

**Table 3.5** Quarterly load weights, 2003–04 to 2017–18

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	59.536	60.486	84.287
2014–15	96.815	53.697	52.247	85.559
2015–16	100.400	53.046	58.531	81.687
2016–17	103.304	73.301		
<b>Average through Q4 2015-16</b>	<b>106.273</b>	<b>65.102</b>	<b>64.475</b>	<b>92.728</b>
<b>Average through Q4 2016-17</b>	<b>106.061</b>	<b>65.688</b>	<b>64.018</b>	<b>91.879</b>
<b>Load weights 2016–17</b>	<b>0.323</b>	<b>0.198</b>	<b>0.196</b>	<b>0.282</b>
<b>Load weights 2017–18</b>	<b>0.324</b>	<b>0.200</b>	<b>0.195</b>	<b>0.280</b>

Source: Commission's calculations using data from the AEMO load profiles.

### Uplift factor over time

Table 3.6 shows the annual load shape and ratio and resulting uplift factor over the period 2009–10 to 2017–18. The uplift factor has been falling since 2012–13 reflecting a reduction in hedging costs on average.

**Table 3.6 Annual uplift factor, 2009–10 through 2017–18**

Year	Load shape	Load ratio	Uplift factor
2009–10	1.158	2.128	<b>1.207</b>
2010–11	1.160	2.203	<b>1.212</b>
2011–12	1.153	2.215	<b>1.207</b>
2012–13	1.153	2.253	<b>1.208</b>
2013–14	1.141	2.316	<b>1.200</b>
2014–15	1.132	2.374	<b>1.194</b>
2015–16	1.125	2.474	<b>1.192</b>
2016–17	1.120	2.473	<b>1.188</b>
2017–18	1.117	2.510	<b>1.187</b>

Source: Commission's calculations.

### 3.2.3 Energy purchase cost for 2016–17 and 2017–18

Table 3.7 shows the energy purchase cost calculated for 2016–17 in the Commission's previous determination.

**Table 3.7 Energy purchase cost, 2016–17**

Component	Q3	Q4	Q1	Q2
Forward price (\$/MWh) (A)	42.16	42.16	42.16	42.16
Load shape (B)	1.11	1.09	1.20	1.10
Load ratio (C)	2.13	2.86	2.72	2.42
Forward price margin (D)	0.05	0.05	0.05	0.05
Uplift factor (E = (1 – D) × B + D × C)	1.16	1.18	1.27	1.17
<b>Energy purchase cost (\$/MWh) (A × E)</b>	<b>48.75</b>	<b>49.64</b>	<b>53.68</b>	<b>49.35</b>
<b>Annualised load-weighted EPC</b>				<b>50.06</b>

Source: ICRC, 2016: 17.

Note: The 2016–17 energy purchase cost amount has been recalculated from that contained in the 2016–17 price reset due to the adjustments to the forward price source (from ICAP data to the ASX data) and averaging period (from 21 months to 23 months averaging period) and the Commission's desire to maintain comparability across adjacent years under the index approach.

Table 3.8 shows the calculated energy purchase cost for 2017–18. The quarterly load weights from Table 3.5 are multiplied by the quarterly energy purchase cost in Table 3.8 and summed to give the 2017–18 annual energy purchase cost of \$65.70 per MWh, \$15.64 per MWh, or 31.2 per cent, higher than the energy purchase cost for the previous year.

**Table 3.8 Energy purchase cost, 2017–18**

Component	Q3	Q4	Q1	Q2
Forward price (\$/MWh) (A)	55.35	55.35	55.35	55.35
Load shape (B)	1.11	1.08	1.19	1.11
Load ratio (C)	2.13	2.86	2.72	2.55
Forward price margin (D)	0.05	0.05	0.05	0.05
Uplift factor (E = (1 – D) × B + D × C)	1.16	1.17	1.27	1.18
<b>Energy purchase cost (\$/MWh) (A × E)</b>	<b>64.04</b>	<b>64.58</b>	<b>70.09</b>	<b>65.37</b>
<b>Annualised load-weighted EPC</b>				<b>65.70</b>

Source: Commission's calculations.

### 3.3 Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs

The costs of complying with the national LRET and SRES requirements using spot market data for LGCs and STCs are calculated in this section. Key data inputs into the cost calculations are provided in Table 3.9.

**Table 3.9 LRET and SRES data, 2017 and 2018**

	2017	2018
Renewable power percentage	12.75%	14.03%
Average LGC spot price (\$/certificate)	70.34	87.33
Small-scale technology percentage	9.68%	8.31%
Average STC spot price (\$/certificate)	39.91	39.98
Half-yearly load weights	0.528	0.472

Sources: Clean Energy Regulator (2016); ICAP price data; ActewAGL Retail half-yearly load weight data.

#### LRET

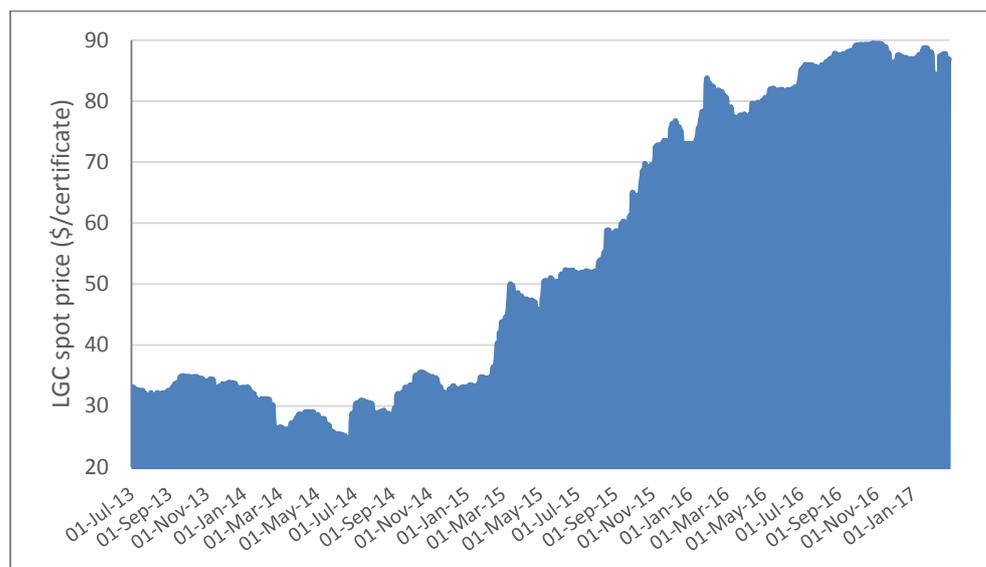
The Commission's approach requires the LGCs price for calendar year 2017 be calculated by averaging over the 11-month period from 1 July 2016 to 31 May 2017. For the draft report, the LGC price is calculated by averaging from 1 July 2016 to 28 February 2017. This will be updated to the 11-month period for the final report.

The average price of LGCs for calendar year 2017 is \$70.34. The price of LGCs for calendar year 2018 is \$87.33 and increases to \$96.06 when adjusted by 10 per cent for the opportunity cost of holding certificates. The RPP for 2016 is 12.75 per cent, and is

used as an estimate for 2017.<sup>46,47</sup> Using the Commission’s approach, this produces a LRET allowance of \$12.15 per MWh for 2017–18.

Figure 3.2 shows daily LGC spot prices since July 2013. It shows that prices remain at historically high levels possibly due to the perceived shortfall of LGCs in the market in the next couple of years.

**Figure 3.2 LGC spot prices, July 2013 to February 2017**



Source: ICAP data

## SRES

The average price of STCs for calendar year 2017 is \$39.91.<sup>48</sup> The average price for 2018 is \$39.98 and increases to \$43.98 when adjusted for the holding cost. The small-scale technology percentage for 2016 is 9.68 per cent, and is used as an estimate for 2017.<sup>49</sup> Using the Commission’s approach, this produces a SRES allowance for 2017–18 of \$4.17 per MWh.

<sup>46</sup> <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/The-certificate-market/The-renewable-power-percentage>. Recall that the RPP is an annual target to achieve the national LRET target by 2020. It represents the proportion of a retailer’s total MWh of electricity purchased for which it is required to surrender LGCs. See section 2.4.2.

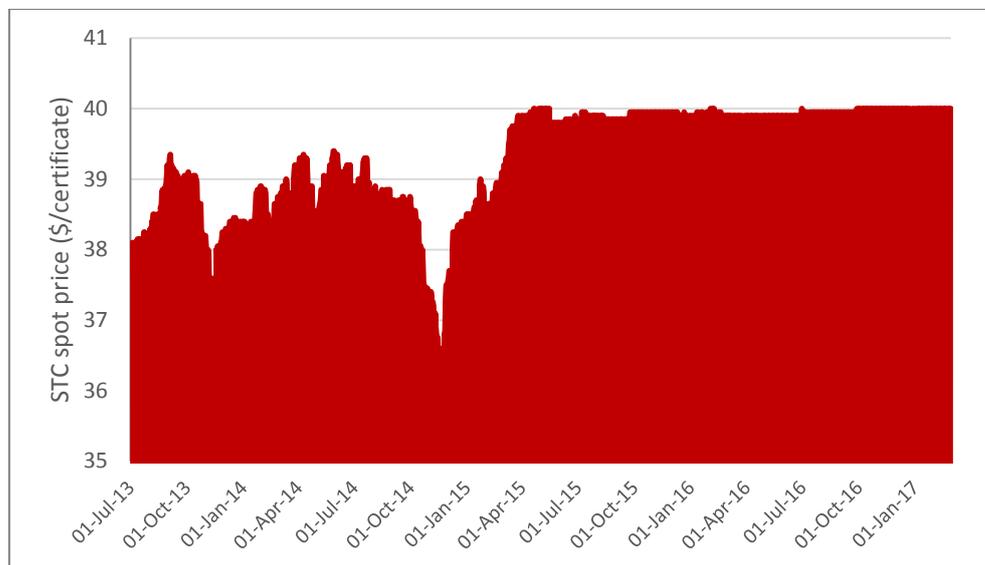
<sup>47</sup> The non-binding RPP was estimated using the default formula set out in section 39(2)(b) of the *Renewable Energy (Electricity) Act 2000 (Commonwealth)*. The latest available percentages are used as estimates for the draft report. The Clean Energy Regulator publishes the RPP and STP percentages by 31 March each year. The respective figures will be updated accordingly for the final report. The same approach is taken for the STC prices.

<sup>48</sup> The average STC price for the period 1 July 2016 to 28 February 2017 is used for the draft report. This will be updated to 11 month period from 1 July 2016 to 31 May 2017 for the final report.

<sup>49</sup> <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/The-certificate-market/The-small-scale-technology-percentage>.

As shown in Figure 3.3, the STC spot price has remained high since about April 2015 exerting significant influence on electricity prices.

**Figure 3.3** STC spot prices, July 2013 to February 2017



Source: ICAP data

### Cost adjustment

The Commission’s approach allows for a cost adjustment resulting from any difference between the actual 2017 small-scale technology percentage and renewable power percentage and the estimated numbers used in the 2016–17 decision.<sup>50</sup> The Commission has calculated an adjustment of -\$0.91 per MWh for 2016–17 for these costs to be included in the LRET and SRES cost allowance for 2017–18 draft decision.<sup>51</sup>

### Total allowance

The draft LRET and SRES allowances for 2016–17 and 2017–18 are summarised in Table 3.10. The allowance for 2017–18 of \$15.41 per MWh is \$2.26 per MWh or 17.2 per cent more than the allowance for the previous year.

<sup>50</sup> Recall that the small-scale technology percentage represents the proportion of a retailer’s total MWh of electricity purchased for which it is required to surrender STCs. See section 2.4.2.

<sup>51</sup> The reason for this negative adjustment could be due to the Commission, for the purpose of the draft report, using 2016 RRP and STP values. These percentages will be updated for the final report when updated data becomes available.

**Table 3.10** LRET and SRES allowance, 2016–17 and 2017–18 (dollars per MWh)

	2016–17	2017–18
LRET	8.80	12.15
SRES	4.25	4.17
Cost adjustment from previous year	0.10	-0.91
<b>Total cost</b>	<b>13.15</b>	<b>15.41</b>

Source: Commission's calculations.

The Commission's draft determination on LRET and SRES cost allowance is based on information up to 28 February 2017. This will be expanded to 31 May 2017 for the final report. If LGC and STC spot prices continue to rise, the resulting cost allowance for LRET and SRES will further increase.

### 3.4 Energy losses

The energy loss factors are calculated by the AEMO. They are used by all regulators to determine the energy loss allowances where regulated tariffs apply. The AEMO will release the distribution and transmission loss factors for 2017–18 in April 2017. For the purpose of the draft decision, the Commission will apply the 2016–17 loss factors. This generates a draft energy loss cost component of \$4.82 per MWh for 2017–18.

### 3.5 Energy contracting costs

The energy contracting cost allowance is adjusted by the annual change in the consumer price index. The Commission has calculated a draft allowance of \$0.89 per MWh for energy trading and management costs for 2017–18. This is based on an adjustment of the 2016–17 cost allowance of \$0.87 per MWh for a change of 1.28 per cent in the consumer price index.

### 3.6 National Electricity Market fees

The cost allowance for NEM fees is adjusted by the annual change in the consumer price index. The Commission has calculated an allowance of \$0.89 per MWh for NEM fees for 2017–18. This is based on an adjustment of the 2016–17 cost allowance of \$0.87 per MWh for a change of 1.28 per cent in the consumer price index.

### 3.7 Retail operating costs

According to the Commission's proposed approach, the retail operating cost allowance for 2017–18 is calculated by adjusting the 2016–17 per customer allowance of \$119.31 by the change in the consumer price index of 1.28 per cent. This adjustment takes the per customer allowance to \$120.83 for 2017–18.

This value is then converted into an allowance per MWh for retail operating costs using customer numbers and energy usage information provided by ActewAGL Retail for the year to 31 March 2017. For the purpose of the draft report, the Commission is using 2016–17 customer numbers and energy use as estimates. This converts to an allowance of \$14.75 for 2017–18 representing a 1.28 per cent increase over the 2016–17 cost allowance of \$14.56 per MWh.

In the final report, the Commission will update customer numbers and energy usage for the year to 31 March 2017, as provided by ActewAGL Retail.

### 3.8 Energy Efficiency Improvement Scheme costs

ActewAGL Retail provided the Commission with information on its EEIS compliance costs and processes on 20 January 2017 for the purpose of the draft report.

In its submission, ActewAGL Retail noted that, due to lack of data and limited experience in determining reliable cost estimates for the new activities to be undertaken in 2017, it was unable to provide the Commission with exact cost estimates in January 2017 for the purpose of the draft report. ActewAGL Retail proposed that the Commission use the 2016–17 cost estimates in determining its draft decision for 2017–18. In May 2017, it will provide the Commission with updated forecast costs based on actual costs and more accurate model estimates.

In the absence of reliable estimates on ActewAGL Retail’s forecast abatement costs for the EEIS for the second half of 2016–17 and 2017–18, the Commission proposes to use the 2016–17 abatement costs, as the best estimates, to determine its draft decision. In the final report, the Commission will update this with new cost estimates as provided by ActewAGL retail.

As show in Table 3.11, applying the methodology described in Chapter 2 to available information provided by ActewAGL Retail generates a draft EEIS allowance of \$4.98 per MWh for 2017–18.

**Table 3.11 Forecast EEIS costs, 2017–18, \$ per MWh**

Year	Cost allowance per tonne	Emissions factor	Energy savings target	Cost per MWh	Half-yearly load weights
Jul–Dec 2017	144.88	0.4	8.6%	\$4.98	52.8%
Jan–Jun 2018	144.88	0.4	8.6%	\$4.98	47.2%
<b>2017–18 EEIS cost (\$ per MWh)</b>				<b>\$4.98</b>	

Source: Commission’s calculations using ActewAGL Retail data.

### 3.8.1 Prudence and efficiency

#### Prudence

ActewAGL Retail is legally obliged to implement the EEIS scheme, and the associated expenditure is therefore considered prudent.

#### Efficiency

The efficiency assessment is based on whether ActewAGL Retail has undertaken a sufficiently robust expenditure decision-making process in implementing the compliance activities required, and that there is no lower-cost alternative that could be substituted to achieve the same outcome.

As discussed in Chapter 2, the Commission has adopted a two-part efficiency assessment. First is an assessment of the robustness of the process and practices that ActewAGL Retail utilised in delivering the activities. Second is establishing a cost ceiling above which it would deem expenditure inefficient.

In its confidential submission, ActewAGL Retail provided information on the processes it followed in making EEIS expenditure decisions. ActewAGL Retail noted that it has followed a transparent tender process for contractors to implement lighting related abatement activities. As mentioned in its submission, the new EEIS activities such as gas ducted heating replacements involve simple rebates, and therefore do not require tender processes. ActewAGL Retail also continues to implement the same activities that were previously assessed and implemented in 2016 such as the refrigerator and freezer disposal programme. In response to a further information request, ActewAGL Retail has provided the Commission with more details on its expenditure decision-making process. This information, in conjunction with updated cost estimates to be provided by ActewAGL Retail in May 2017, will be used in the Commission's assessment of the ActewAGL Retail's compliance costs as part of the final report.

The processes followed by ActewAGL Retail also included the submission of an annual compliance plan for the EEIS Administrator's approval under section 17 of the Energy Efficiency Act. ActewAGL Retail's 2017 compliance plan has been accepted by the Administrator. ActewAGL Retail provided the Commission with a copy of its 2017 compliance plan, which describes the resources, systems, processes and eligible activities to be implemented to ensure ActewAGL Retail's compliance with its 2017 obligations. The EEIS Administrator's approval of ActewAGL Retail's 2017 compliance plan also indicates that it follows a robust decision making process, supporting the Commission's draft assessment of the productive efficiency of delivering EEIS activities.

#### Cost ceiling

In the absence of useful available benchmarking information, the Commission proposes using the formula described in Chapter 2, to establish a cost ceiling above

which it would deem expenditure inefficient. This cost ceiling can be calculated using the tier penalty rate of \$300 per t CO<sub>2</sub>-e<sup>52</sup> for non-compliance with the EEIS. Multiplying this number by the determined emissions intensity factor of 0.4 t CO<sub>2</sub>-e per MWh and the average energy savings target for the three-year EEIS period (8.6%) gives a ceiling of about \$10.32 per MWh. This shows that the proposed costs are below the cost ceiling.

### 3.8.2 Cost adjustment from 2016–17

For the purpose of draft report, ActewAGL Retail has not proposed any adjustment for the difference between the Commission’s original forecast values and the revised actual costs. ActewAGL nevertheless proposes to include an adjustment for this difference in its submission in May 2017.

### 3.8.3 Draft decision

Having reviewed ActewAGL Retail’s proposed expenditure, activities and expenditure processes, the Commission proposes a draft EEIS cost allowance of \$4.98 per MWh for 2017–18 subject to a further efficiency assessment to be done as part of the final report.

## 3.9 Network cost allowance

For the purpose of the draft report, the Commission proposes to adjust network charges by the change in the consumer price index from 2016–17 to 2017–18. This proposal increases the 2016–17 network cost allowance of \$89.28 per MWh to \$90.42 per MWh for 2017–18.

In the final report, the Commission will update the network cost allowance approved by the AER. The Commission expects that the AER’s final approval will be available in June 2017.

## 3.10 Retail margin

For the reasons explained in detail in Chapter 2, the Commission’s draft decision is to index the nominal value of the 2016–17 retail margin allowance by the change in the CPI. The resulting retail margin for 2017–18 in percentage terms is 5.49. Applying this margin to all of the cost categories of the retail electricity cost index model generates a retail margin allowance of \$10.86 per MWh for 2017–18.

---

<sup>52</sup> per t CO<sub>2</sub>-e means per tonne of carbon dioxide equivalent greenhouse gas emissions.

### 3.11 Draft decision on cost elements

Table 3.12 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 2017–18, using the methodology set out in Chapter 2. The Commission’s draft decision provides for an average nominal increase of 10.90 per cent in ActewAGL Retail’s basket of regulated tariffs. This is equivalent to a real (adjusted for inflation) increase in the regulated retail price of about a 9.50 per cent.

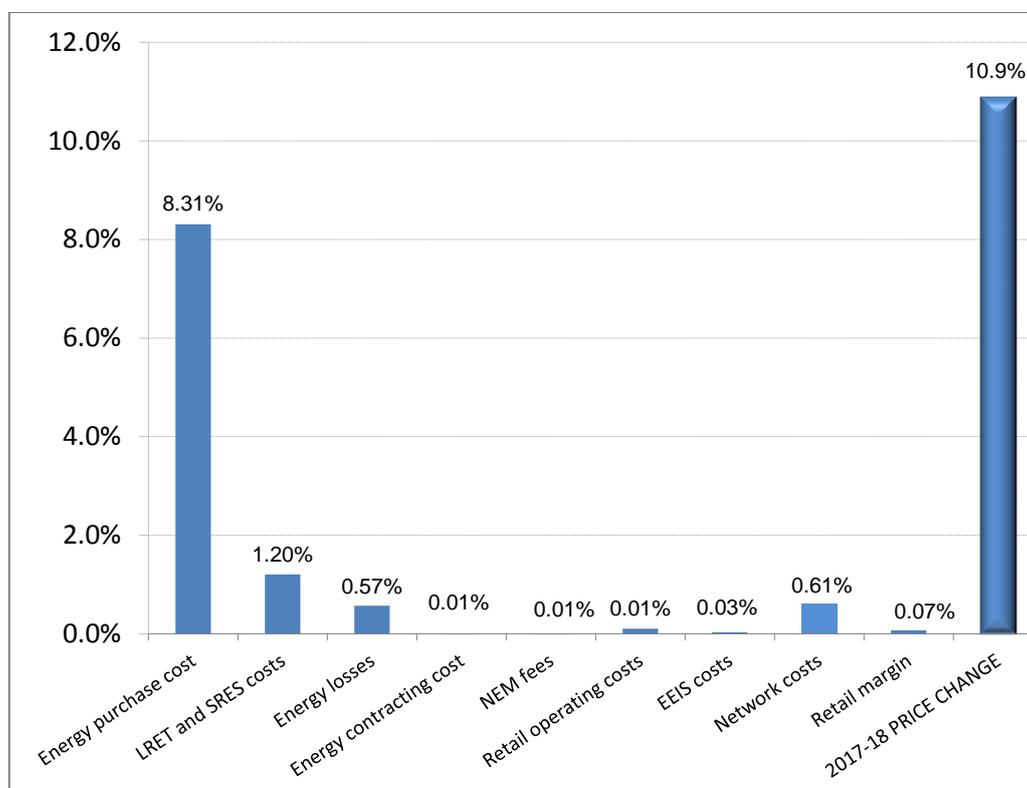
**Table 3.12 Draft decision on cost elements, 2017–18**

	2016–17 (\$/MWh)	2017–18 (\$/MWh)	% change
Energy purchase cost	50.06	65.70	31.24
National renewable energy (LRET and SRES) costs	13.15	15.41	17.20
Energy losses	3.76	4.82	28.39
Energy contracting cost	0.87	0.89	1.28
NEM fees	0.87	0.89	1.28
<b>Total energy purchase cost</b>	<b>68.72</b>	<b>87.71</b>	<b>27.64</b>
Retail operating costs	14.56	14.75	1.28
ACT Energy Efficiency Improvement Scheme costs	4.93	4.98	1.14
<b>Total retail costs</b>	<b>19.49</b>	<b>19.73</b>	<b>1.24</b>
Network costs	89.28	90.42	1.28
<b>Total energy + retail + network costs</b>	<b>177.48</b>	<b>197.85</b>	<b>11.48</b>
Retail margin	10.73	10.86	1.28
<b>Total costs</b>	<b>188.21</b>	<b>208.72</b>	<b>10.90</b>

Note: The 2016–17 energy purchase cost amount has been recalculated from that contained in the 2016–17 price reset due to the adjustments to the forward price source (from ICAP data to the ASX data) and averaging period (from 21 months to 23 months averaging period) and the Commission’s desire to maintain comparability across adjacent years under the index approach.

Figure 3.4 shows the contribution of the various cost components to the total percentage change in prices from 2016–17 to 2017–18. The two primary drivers of the price increase are the wholesale electricity purchase cost, driven by rapidly increasing forward prices, and LRET and SRES costs driven by LGC and STC prices. The wholesale electricity purchase cost contributes 8.31 percentage points of the total change of 10.9 per cent. LRET and SRES costs contribute 1.20 percentage points of the total change of 10.9 per cent.

**Figure 3.4 Components of the change in regulated retail electricity prices 2016–17 to 2017–18** <sup>53</sup>



Source: Commission's calculations

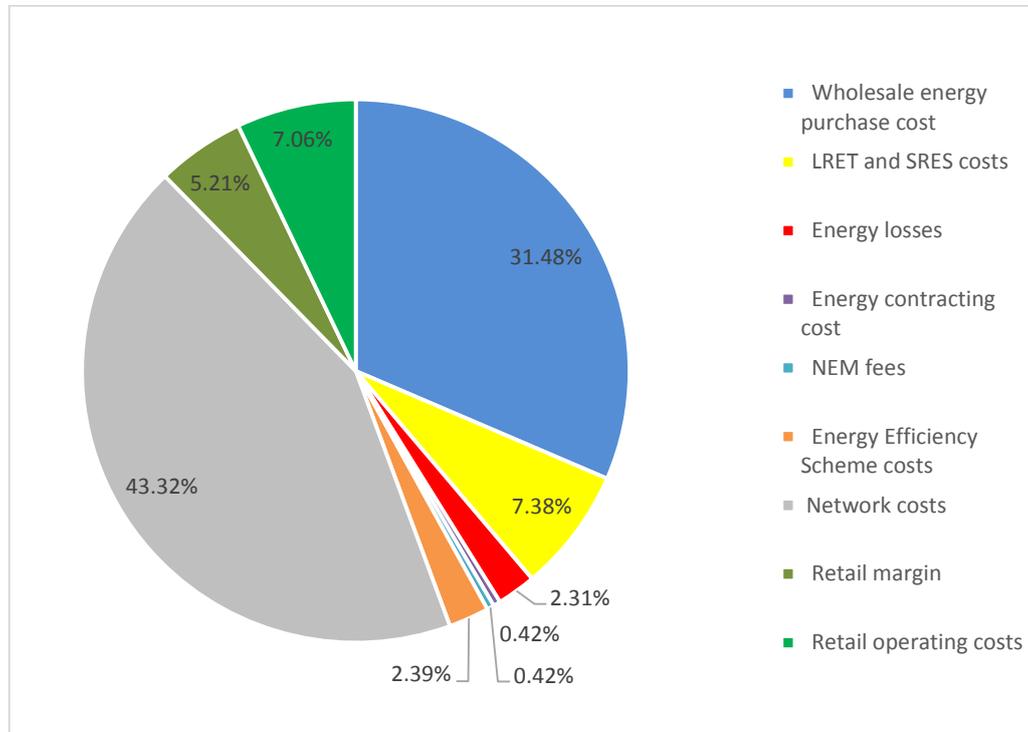
Figure 3.5 shows the proportion of each cost component in total costs. An analysis of these cost components shows that most costs are manifestly outside the control of the retailer. The costs that the retailer cannot control and that are not regulated by the Commission include:

- the cost of purchasing electricity from the NEM (except for the ability to implement different hedging strategies);
- the cost of complying with Commonwealth and Territory environmental obligations;
- costs associated with energy lost in transmission and distribution;
- NEM fees payable to the AEMO for operating the wholesale market, and
- the charges for the carriage of electricity bought by its customers.

The main costs where the retailer may have some control relate to hedging and retail operating costs. However, retail-operating costs only account for about seven per cent of the total costs and hedging costs are a small but necessary component of energy purchase costs.

<sup>53</sup> This chart shows the separate effects of the positive or negative contribution of each of the components of the cost-index model to the total percentage change.

**Figure 3.5 Cost components in dollars per MWh as a share total cost 2017-18**



Source: Commission's calculations

### 3.12 Impact on customers

Table 3.13 presents estimated electricity bills for a range of typical residential customers in 2017-18 as a result of the indicative price increase of 10.90 per cent. A small customer may be representative of a single person living in an apartment, an average customer may be representative of a small family in a townhouse, and a large customer may be representative of a large family in a detached house. The annual impact on these typical bills due to the price increase ranges from \$112 for a small customer to \$271 for a large customer.

**Table 3.13 Estimated annual bill changes for residential customers, 2016-17 and 2017-18**

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2016-17 (\$)	Estimated annual bill 2017-18 (\$)	Change (\$)
Large	12,000	2,488	2,759	271
Average	8,000	1,756	1,948	191
Small	4,000	1,025	1,137	112

Source: Commission's calculations.

Table 3.14 presents estimates of annual electricity bills for a range of typical non-residential customers resulting from the electricity price increase of 10.90 per cent. The impact on a typical bill ranges from \$300 for a small non-residential customer to \$1,060 for a large non-residential customer.

**Table 3.14 Estimated annual bill changes for non-residential customers, 2016–17 and 2017–18**

Customer consumption type	Annual usage (kWh)	Estimated annual bill 2016–17 (\$)	Estimated annual bill 2017–18 (\$)	Change (\$)
Large	40,000	9,732	10,792	1,060
Average	25,000	6,242	6,922	680
Small	10,000	2,752	3,052	300

Source: Commission's calculations.

### 3.13 Comparison of residential electricity prices across jurisdictions<sup>54</sup>

The price that ACT customers pay for their electricity is considerably less than that paid by consumers in other jurisdictions.<sup>55</sup>

Table 3.15 shows the estimated annual bill (including all discounts) for the current range of single rate offers available to residential customers in the ACT, Sydney, Brisbane and Adelaide, as reported on the Energy Made Easy website. These offers are a mix of standard and market contracts. They also include single rate offers available to Melbourne residents, as reported on the Victoria Energy Compare website. To ensure comparability, all offers are based on an annual electricity consumption of about 7,500kWh. The figures confirm that the average annual bill in Canberra is considerably less than that in all the other capital cities.<sup>56</sup>

<sup>54</sup> See Appendix 4 for more details.

<sup>55</sup> See for instance AER, 2016: 4; CME, 2016: 18,23 and OTTER, 2017: 25.

<sup>56</sup> Even though the varying level of regulation across jurisdictions makes direct comparisons difficult, this information still provides some valuable insights into price comparisons. It should be noted that, while retail electricity markets in the ACT and Tasmania remain regulated, most other Australian states have proceeded with the deregulation of retail electricity prices over time.

**Table 3.15 Comparison of retail electricity (single rate) prices, as at 22 February 2017<sup>(a)</sup>**

	No of offers	Price range (\$)	Average bill (\$)
<b>Canberra</b>	34	1,465-2,301	<b>1,590</b>
Sydney	78	1,946-3,686	2,221
Brisbane	64	2,147-3,515	2,349
Adelaide	69	2,676-4,588	2,895
Melbourne <sup>(b)</sup>	273	1,150-2,510	1,833
Hobart	1	2,284	2,284
Perth	N/A	N/A	N/A

Source: Data from [www.energymadeeasy.gov.au](http://www.energymadeeasy.gov.au) and <https://compare.switchon.vic.gov.au/>. Accessed 22 February 2017.

Note: (a) Estimated annual cost is based on a customer using 7,500 kWh of electricity per year on a single rate tariff at 22 February 2017; (b) Estimated cost is based on households using 7,500 kWh of electricity per year with 3 members, 8 rooms, split system air-conditioning for heating and room air-conditioning for cooling, with no solar panels and with no controlled load connected to the house.



## 4 Annual recalibration and pass-through arrangements

This chapter describes the proposed procedure for setting regulated prices for 2018–19 and 2019–20 based on the Commission’s cost index model, which also passes through the costs such as network costs and energy loss factors. It also sets out arrangements to pass-through the costs associated with regulatory and tax change events triggered during the regulatory period that are not recognised in the Commission’s cost index model.

### 4.1 Annual recalibration method

As discussed in Chapter 2, the Commission is undertaking two annual price recalibrations during the next regulatory period. The recalibration process will determine regulated prices for 2018–19 and 2019–20. 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 the 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 4.1 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 4.1 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 2018–19 and 2019–20 years respectively, which are verified and applied using the Commission’s methodology.
Energy Efficiency Improvement Scheme	Estimates from ActewAGL Retail for the 2018–19 and 2019–20 years as required, subject to a prudence and efficiency assessment, with costs determined using the Commission’s methodology.
Energy losses (%)	Based on the AEMO’s estimates for 2018–19 and 2019–20 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 (%)	Previous year’s value in dollars per MWh adjusted by the change in CPI.

The Commission proposes to use the weighted average price cap formula set out in Box 2.1 to control prices.

## 4.2 Pass-through arrangement details

As discussed in Chapter 2, 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 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.

## 4.2.1 Regulatory change and tax change events

### Event description

#### *Regulatory change events*

A regulatory change event is a decision made on or after 31 May 2017 and before 30 June 2020 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 the AEMO) that has the effect 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 EEIS; 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 2018–19 and 2019–20.

### **Materiality threshold**

As per the current provisions, possible pass-throughs can only occur as part of an annual reset process and annual recalibration of the cost-index model parameters does not have a materiality consideration. The Commission intends to maintain the current pass-through provisions for the next regulatory period.

### **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 actual or increment in efficient costs 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.

When determining the maximum average percentage change in regulated retail tariffs ( $Y^t$ ),<sup>57</sup> for a regulatory or tax change pass-through event, the Commission will include the value of the pass-through event, which can be either negative or positive, in the cost-index model.

---

<sup>57</sup> For more information, see Box 2.1 in Chapter 2 of this report.

## 5 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, would comply with the provisions of the ICRC Act, and particularly the requirements of section 20(2).<sup>58</sup>

### 5.1 Compliance with the terms of reference

**Table 5.1 Compliance with the terms of reference**

Clause	Requirement	Chapter	Comments
2	The price direction will be for the period of 1 July 2017 to 30 June 2020. The Price direction must make provision for annual recalibrations to be undertaken by 30 June 2018 and 30 June 2019.	2, 4	The proposed price direction applies for a 3 year period and provides for annual price recalibrations.
3.1a	The Commission must consider the direct impact on electricity costs of government policies and pass through of costs and savings to regulated prices including but not limited to:		
	i The ACT retailer obligations under the Energy Efficiency Improvement Scheme.	2, 3	The prudent and efficient costs of the Act Government’s EEIS are included in the cost build-up.
	ii the Commonwealth Government’s Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme	2, 3	LRET and SRES costs are included in the cost build-up.
	iii 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 for the period of the price direction.	2, 3	The energy purchase cost model incorporates a hedging strategy.
3.2	The Commission must identify and report on the efficient costs of complying with the Energy Efficiency (Cost of Living) Improvement Act 2012 for the period that the determination is being made.	2, 3	The costs of the ACT Government’s EEIS scheme are identified, assessed for prudence and efficiency and reported.
3.3	The Commission must identify and report on the cost allowance of the ACT feed-in tariffs (small and large scale) for the period that the determination is being made.	2, 3	The costs of the ACT feed-in tariffs will be identified and reported in the final report.

<sup>58</sup> 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
3.4	The Commission must produce its final report within the period of 1 January 2017 to 7 June 2017, to provide sufficient time 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 2017.		This clause relates to the final report.

## 5.2 Compliance with the ICRC Act

### 5.2.1 Objectives

**Table 5.2 Compliance with section 7 of the ICRC Act**

Section 7	Requirement	Chapter	Comments
(a)	to promote effective competition in the interests of consumers	3	The Commission considered whether a competition/CARC allowance should be included in the regulated retail electricity price in the ACT in order to promote competition. The Commission acknowledges that retailers incur costs relating to customer acquisition and management but maintains that it remains appropriate not to include an additional separate competition allowance because (1) the Commission, via its allowed retail operating cost structure, is currently allowing retailers to recover relevant costs relating to customer acquisition and retention; and (2) it is not economically beneficial to introduce an additional allowance if it will set higher prices for consumers compared with a regulated monopoly situation.
(b)	to facilitate an appropriate balance between efficiency and environmental and social considerations	2, 3, 4,	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 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 the impacts of proposed price changes on customer electricity bills.
(c)	to ensure non-discriminatory access to monopoly and near monopoly infrastructure		N/A

### 5.2.2 Section 19(L)

**Table 5.3 Compliance with section 19(L) of the ICRC Act**

Section 19L	Requirement	Chapter	Comments
	The Objective of the Commission, when making a price direction in a regulated industry, is to promote the efficient investment in, and	2,3,4	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 costs of meeting quality, reliability and safety standards. The long-term interests of consumers are taken into account by ensuring that

Section 19L	Requirement	Chapter	Comments
	efficient operation and use of regulated services for the long term interests of consumers in relation to the price, quality, safety, reliability and security of the service.		the regulated price is based on efficient costs to meet the required standards. The Commission also considers the impacts of proposed price changes on customer electricity bills. The Commission's model also includes the efficient costs of various environmental measures.

### 5.2.3 Section 20(2)

**Table 5.4 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 or structure of prices for services) and standard of regulated services	2, 3	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 of prices.
(b)	Standards of quality, reliability and safety of the regulated services	2,3	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 the 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	2,3	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,	The Commission is proposing a retail margin of 5.49 per cent of the total efficient cost of providing retail electricity services. The Commission is confident that this provides in the current circumstances an appropriate rate of return on investment in the retail electricity industry.
(e)	The cost of providing the regulated services	2, 3	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 represents 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	2, 3	The Commission's retail electricity cost-index model includes the efficient costs of various environmental measures such as the national LRET and SRES schemes and the ACT energy efficiency schemes.

Section 20(2)	Requirement	Chapter	Comments
			These costs reflect to some extent the environmental costs incurred in the consumption of electricity that the Australian Government and the ACT Government consider should be passed through to consumers.
(g)	The social impacts of the decision	2,3	Social considerations are taken into account first by ensuring that the regulated price is based on efficient costs. The Commission also 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/CARC allowance.
(h)	Considerations of demand management and least-cost planning	2, 3	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	2, 3	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 5.49 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	2, 3	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	2, 3	The recovery of energy losses in the cost-index model is mandated in the NEM framework and therefore meets the 20(2)(k) requirement.

## 6 Next steps

This draft report follows the release of an issues paper in the Commission's consultation for the 2017 price investigation. The proposed timing of the next steps in the investigation process is set out in Table 6.1.

**Table 6.1** Next steps in the retail electricity price investigation

Task	Date
Terms of reference signed	22 June 2016
Release of issues paper	24 October 2016
Submissions on issues paper close	30 November 2016
Release of draft report and proposed price direction	28 March 2017
Submissions on draft report close	28 April 2017
Public hearing	03 May 2017
Release of final report and price direction	June 2017



# Appendix 1 Terms of reference

Australian Capital Territory

## Independent Competition and Regulatory Commission (Price Direction for the Supply of Electricity to Small Customers on Standard Retail Contracts) Terms of Reference Determination 2016

Disallowable instrument DI2016–138

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 Icon Retail Investments Limited (ACN 074 371 207) and AGL ACT Retail Investments Pty Ltd (ACN 093 631 586).

---

### 2. Reference for investigation under Section 15

Under section 15(1) of the Act, I provide a reference to the Independent Competition and Regulatory Commission (the ‘Commission’) to determine a price direction for the *standing offer prices* for the supply of electricity to *small customers* who consume less than 100MWh of electricity over any period of 12 consecutive months.

The price direction will be for the period of 1 July 2017 to 30 June 2020.

The price direction must make provision for annual recalibrations to be undertaken by 30 June 2018 and 30 June 2019.

Under section 15(4) of the Act, the price direction determined by the Commission under this reference is to only apply to the electricity retailer **ActewAGL Retail**.

### 3. Terms of reference for investigation under section 16

Under 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 must consider:
  - a. The direct impact on electricity costs of government policies and pass through of costs and savings to regulated prices including, but not restricted to:
    - i. the ACT retailer obligations under the Energy Efficiency Improvement Scheme;
    - ii. the Commonwealth Government’s Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme; and
    - iii. 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 for the period of the price direction.
2. The Commission must identify and report on the efficient costs of complying with the *Energy Efficiency (Cost of Living) Improvement Act 2012* for the period that the determination is being made.
3. The Commission must identify and report on the cost allowance of the ACT Feed-in Tariffs (small and large scale) for the period that the determination is being made.
4. The Commission must release its final report within the period of 1 January 2017 to 7 June 2017, to provide sufficient time 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 2017.

Andrew Barr MLA

Treasurer

22 June 2016

## Appendix 2 Submissions

### A2.1 Submissions on the issues paper

	Date received	Submitter	Key issues raised/information provided
1	30 November 2016	AGL Energy Ltd	<p>Noted that the way retail price regulation is implemented in the ACT is one of the key barriers to entry.</p> <p>Argued that lower retail participation in the ACT compared to other jurisdictions and the high market share of ActewAGL are strong indicators that the regulated price cap has been set too low.</p> <p>Contended that the ICRC has misconstrued the purposes of both the CARC and headroom allowances and noted they are not linked to start-up costs but are a fundamental component of a competitive electricity market.</p> <p>Noted that regulated prices should be set at levels that promote competition and be sufficiently high to provide an incentive for new retailers to develop offers that will encourage consumers to switch.</p> <p>Argued that if the Commission does not intend to include a CARC or headroom allowance, the retail operating cost should reflect the fact that fixed costs would have to be recovered over a smaller base compared with the top three retailers which the cost benchmark is based upon.</p>
2	30 November 2016	ActewAGL Retail	<p>Supported the weighted average price cap.</p> <p>Recommended that the annual adjustment mechanism should be calculated as an X-factor that is applied to the average weighted price cap formula.</p> <p>Requested amendments to the cost pass-through provisions in the price direction and identified a potential cost pass-through application for the Power of Choice regulatory reforms to recover additional costs that arise within the regulatory control period 2017–20.</p> <p>Argued that the Power of Choice reforms are clearly regulatory changes and the circumstances where customers can opt of small meters are narrow.</p> <p>Noted that the necessary policy directions have already been in place for the Commission to consider including the costs of installing and supporting smart meters in regulated retail prices.</p> <p>Supported the Commission's decision to return to using exchange traded ASX forward price data averaging over a 23-month period.</p> <p>Noted that the Commission's current model is able to capture the significant rise in the forward price for wholesale electricity in 2016–17.</p> <p>Submitted that the Commission's current approach to calculating hedging costs underestimates the efficient costs incurred by retailers.</p> <p>Argued that the Commission's hedging costs model is based on a simple swap only hedge approach and that retailers in practice use more complex hedging structures such as a combination of base swaps, peak swaps and caps.</p> <p>Noted that competition continues to increase in the ACT retail electricity market and therefore retail price regulation is no longer warranted.</p>

Date received	Submitter	Key issues raised/information provided
		<p>Urged the Commission to include a commercially based benchmark allowance for CARC in its pricing determination for the forthcoming regulatory period.</p> <p>Stated that the EEIS costs can be assessed for prudence in terms of the abatement mechanism chosen by ActewAGL Retail to satisfy the schemes legislative requirements.</p> <p>Noted that future EEIS activities will focus more on encouraging energy efficient appliance replacements.</p> <p>Noted that transitioning to appliance-based EEIS activities will affect adoption levels by low-income households and require additional incentives to increase participation. This will increase the total cost of delivering EEIS obligations.</p> <p>Supported the Commission’s proposal to continue to directly pass through network costs into retail prices.</p> <p>Supported the Commission’s market-based approach to determining efficient costs for the LRET and SRES.</p> <p>Supported the Commission’s methodology for calculating energy losses component based on the AEMO data.</p> <p>Considered the CPI adjustment applied by the Commission to energy contracting costs to be appropriate.</p> <p>Considered the benchmark retail margin of 6.04 per cent appropriate.</p> <p>Suggested that the carbon cost component be removed from the pricing model.</p>
3	30 November 2016 Origin Energy Ltd	<p>Supported the adoption of a weighted average price cap (WAPC) ahead of setting actual tariffs or capping revenues.</p> <p>Supported a term of determination of three years with annual reviews of wholesale costs, including the SRES and LRET components of the energy cost.</p> <p>Strongly supported a mechanism that allows retailers to pass-through any unforeseen and uncertain costs imposes that cannot be determined at the time of setting retail prices.</p> <p>Suggested that the Commission review the merits of utilising a trade-weighted average instead of a simple average to reflect energy purchase trades that occur in the market.</p> <p>Noted that competition in the ACT is not as effective as in other jurisdictions and submitted this is due to the risk that electricity tariffs will not reflect a retailer’s actual cost of supply.</p> <p>Did not support the Commission’s proposal to exclude CARC from its calculation of retail costs.</p> <p>Stated it would support the Commission including an additional headroom allowance of five per cent.</p> <p>Supports a retail margin of a least 5.7 per cent.</p>
4	30 November 2016 Australian Energy Council	<p>Submitted that standing offer prices should be set at a level that reflects the true costs of operating in the market to allow retailers to compete.</p> <p>Did not support the Commission’s current pricing model for the retail operating costs component, as it does not incorporate any allowance to reflect CARC.</p>
5	14 December 2016 Minister for Climate	<p>Stated that the ACT Government supports the further uptake of energy efficiency measures in households and small businesses.</p>

Date received	Submitter	Key issues raised/information provided
	Change and Sustainability	<p>Noted that as complying with <i>the Energy Efficiency (Cost of living) Improvement Act 2012 (EEIS)</i> is a mandatory obligation, it is critical that energy efficiency activities delivered under the scheme are cost effective.</p> <p>Suggested that the Commission's methodology for assessing EEIS should include further scrutiny of the abatement costs to ensure the scheme is being delivered competitively and at the least cost to ACT energy consumers.</p> <p>Did not support the inclusion of a competition allowance.</p> <p>Supported the Commission's view that Advanced Meter costs should be recovered from customers via contractual arrangements, rather than regulated tariffs.</p>
6	14 December 2016 ACT Civil and Administrative Tribunal	<p>Recommended that the Commission consider and prioritise the impact of its decisions on the most vulnerable members of the ACT community.</p> <p>Observed that the overarching objective of the new Section 19L in the ICRC Act is similar to those in the National Energy Law in that the long term interests of consumers are the paramount consideration.</p> <p>Supported a weighted average price cap form of regulation.</p> <p>Supported annual recalibrations updating the parameters of the retail cost index, but not affecting the determined methodology.</p> <p>Supported appropriate cost pass-through arrangements.</p> <p>Supported the Commission's decision that the carbon cost be retained and initially set to zero.</p> <p>Cautions the Commission on the reliance of raw customer data on complaints published by the AER as they do not include hardship complaints. If these were included, the number of complaints in the ACT would be similar to other jurisdictions, but with a higher proportion of credit complaints than elsewhere.</p> <p>Supported that the costs of introducing smart meters should not be included in the standard regulated tariff.</p> <p>Noted that network costs are currently uncertain because of litigation in the Australian Competition Tribunal. This may lead to price shocks and asks the Commission to smooth these possible shocks.</p> <p>Stated that it strongly opposes a 'headroom' allowance.</p> <p>Submitted that there is little customer churn and relatively low costs in acquiring and retaining customers in recent years.</p> <p>Noted that there is a highly competitive market in the ACT for large electricity customers.</p> <p>Observed that many of the discount market contract offers in the ACT market currently are based on a 'pay on time' condition which effectively excludes low-income customers who pay via CPay or other bill smoothing mechanisms.</p>



## Appendix 3 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 this is a conservative strategy, typically there should be surplus forward contracts.

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 the variables are defined 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 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:

$$(T \times \hat{L} \times FP - \hat{L} \times \sum_{t=1}^T SP_t + \sum_{t=1}^T L_t \times SP_t) / 2.$$

Using the definitions of time-weighted average spot price and load-weighted average spot price and taking out  $T$  as a common factor gives:

$$T/2 \times (\hat{L} \times FP - \hat{L} \times \overline{SP} + \overline{SP} \times \bar{L}).$$

Using the definition of the load ratio and the load shape gives:

$$T/2 \times (\bar{L} \times LR \times FP - \bar{L} \times LR \times \overline{SP} + \overline{SP} \times LS \times \bar{L}).$$

Using the definition of the forward margin:

$$\overline{SP} = (1 - M) \times FP.$$

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 and the weight on the load shape is equal to 1 minus the forward premium. The load shape component can be interpreted as capturing the effect of load on spot prices which in turn increases the cost of hedging. The load ratio component can be interpreted as allowing for an extreme effect and its impact will depend on the choice of the LR for the calculation.

## Appendix 4 Comparison of residential electricity prices across Australian jurisdictions

This appendix provides a summary comparison of residential electricity prices for a number of Australian jurisdictions. Retail electricity prices in the ACT and Tasmania remain regulated but most other Australian states have proceeded with deregulation of retail electricity prices.

### A4.1 Recent reports comparing retail electricity prices

The most recent AER annual report (“State of the Energy Market”)<sup>59</sup> covering various aspects of the energy market in Australia found that electricity bills for customers on standing offers<sup>60</sup> in the ACT are among the lowest in Australia (see Figure A4.1).<sup>61</sup>

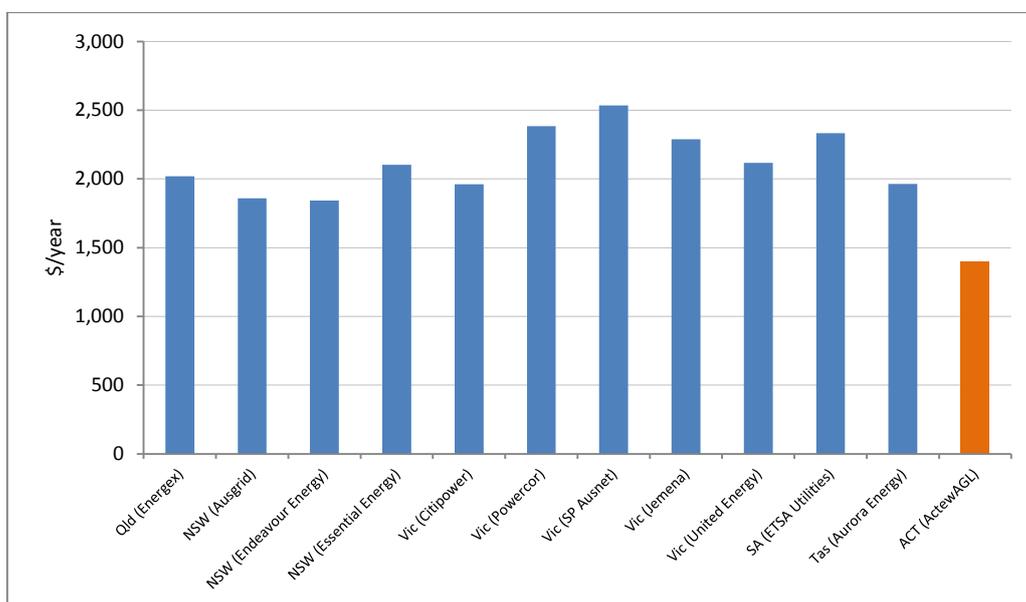
---

<sup>59</sup> The next State of the Energy Market Report is scheduled for publication in late March/April 2017.

<sup>60</sup> Customers can choose a standing offer if they do not want to sign up for a market retail offer. Standing offers prices are often set by the government depending on where you live.

<sup>61</sup> AER, 2016: 133.

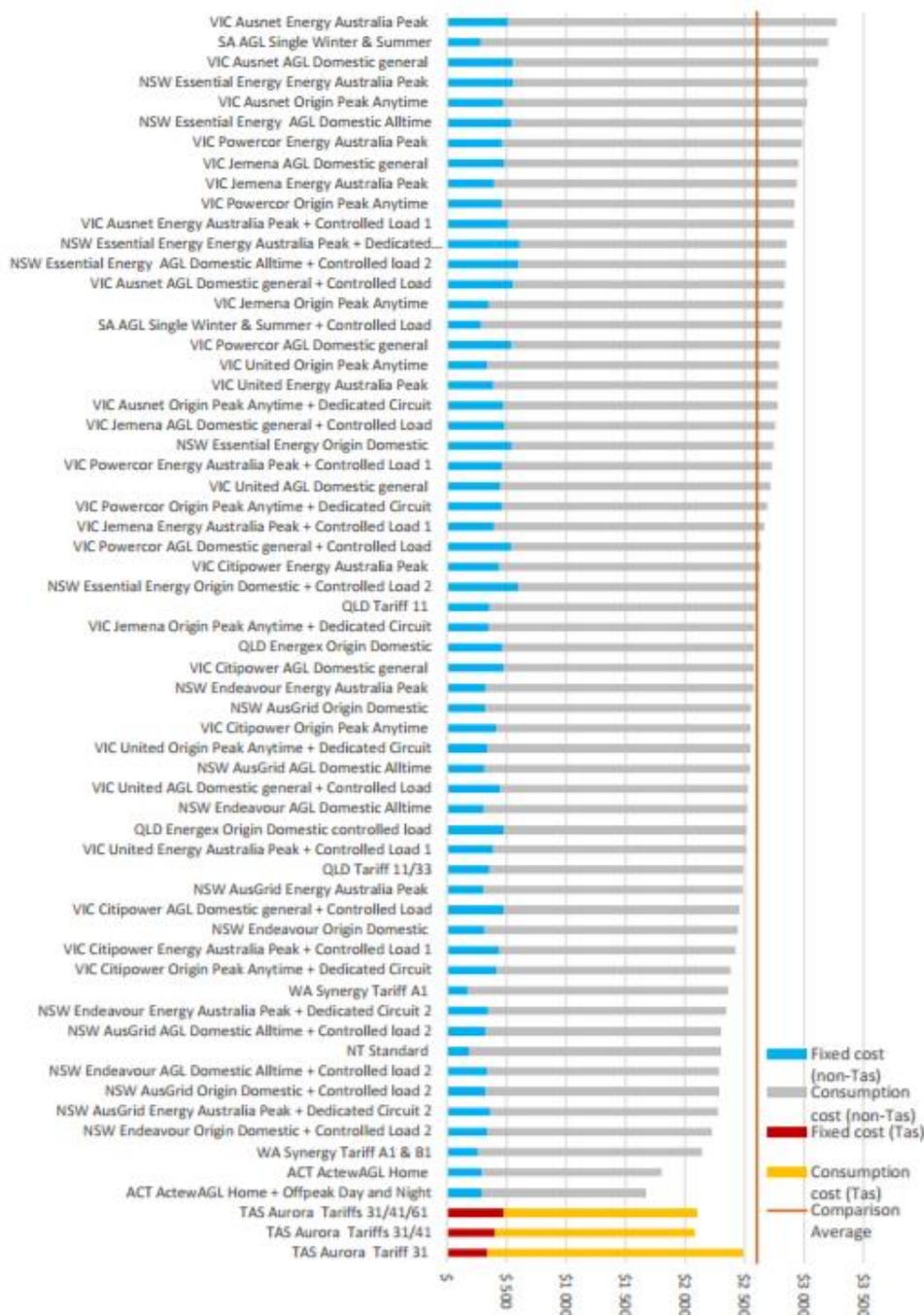
**Figure A4.1 Estimated annual small customer electricity bills based on standing offers, 2014–15**



Source: Data from AER (2016)

The recent Office of Tasmanian Economic Regulator (OTTER) report comparing Australian standing offer energy prices across jurisdictions found that customers in the ACT pay the lowest amount for annual consumption of 8,250kWh (see Figure A4.2).

**Figure A4.2 Residential standing offer electricity bills based on annual consumption of 8,250 kWh**



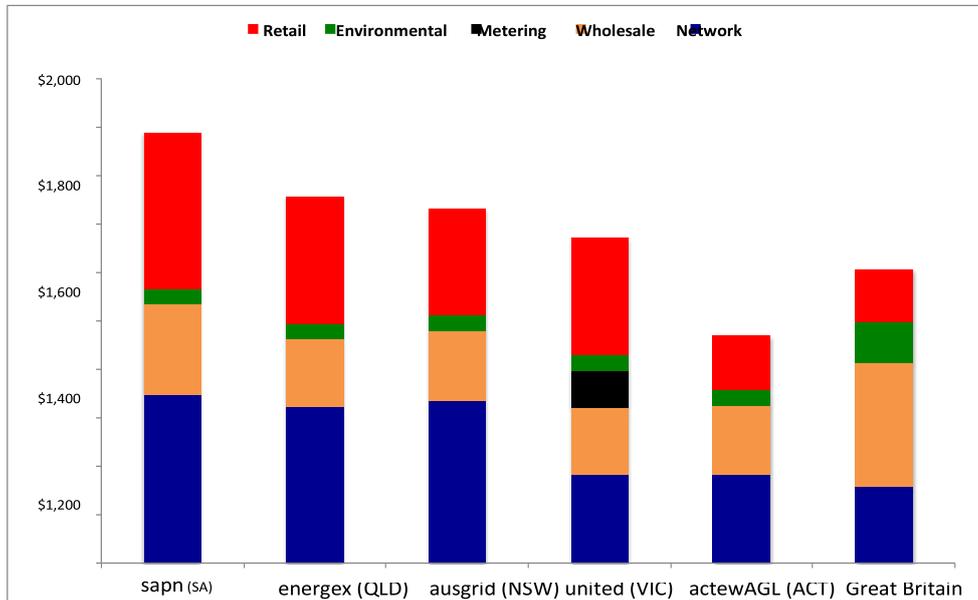
Source: OTTER (2017).

The GetUp! Report of August 2016 compared household electricity bills in regulated ACT retail market to the bills in the deregulated markets in Victoria, New South

Wales, South Australia and south-east Queensland.<sup>62,63</sup> This report found that the total annual bill in the ACT is the lowest of all NEM jurisdictions.<sup>64</sup> It further found that the regulated retail component in the ACT is much lower than the estimated retail component on the best offers from the big three energy retailers (AGL Energy, Energy Australia and Origin Energy) in the other regions of the NEM.

As the GetUp! Report noted, the charges for the provision of retail services in the ACT are on average about half of those in the other states in Australia (see Figure A4.3).

**Figure A4.3 Breakdown of household electricity bills in select distribution zones, average of big three market offers on 2 August 2016**



Source: CME (2016)

A recent report by Grattan Institute also noted that electricity prices in Sydney, Melbourne, Brisbane and Adelaide have almost doubled over the past decade.<sup>65</sup>

<sup>62</sup> GetUp Group is a non-profit organization known as an Australian progressive activist group. This report has been prepared for GetUp Group by CME (Carbon Energy Markets), an economics consultancy firm focussing on Australia's energy and utility industries.

<sup>63</sup> The data used in this analysis was obtained from the market covering every retail offer disclosed in every electricity fact sheet applicable to residential customers in Victoria, New South Wales, Queensland, the ACT and South Australia on 2 August 2016. It also used data on Great Britain for comparison purposes.

<sup>64</sup> CME, 2016: 18.

<sup>65</sup> Wood, Blowers and Morgan, 2017: 3.

## A4.2 Comparison of recent residential electricity prices across jurisdictions

Retailers offer a range of contracts with different price and product characteristics. Table A4.1 shows the number of single rate and time of use offers available to residential electricity consumers in the ACT, Sydney, Brisbane, Adelaide and Hobart, sourced from the Energy Made Easy website as at September 2016.<sup>66</sup> These offers are a mix of standard and market contracts. Single rate offers in Melbourne are also included, sourced from the Victorian Energy Compare website.<sup>67</sup>

**Table A4.1 Retail electricity offers, September 2016**

	Single rate	Time of use	Total
<b>ACT</b>	23	15	<b>38</b>
<b>Sydney</b>	74	72	<b>146</b>
<b>Brisbane</b>	43	39	<b>82</b>
<b>Adelaide</b>	60	8	<b>68</b>
<b>Melbourne</b>	216	N/A	<b>216</b>
<b>Hobart</b>	1	1	<b>2</b>

Source: [www.energymadeeasy.gov.au](http://www.energymadeeasy.gov.au) and <https://compare.switchon.vic.gov.au/>. Accessed mid-September 2016, as cited in ICRC(2016).

Comparison of residential electricity prices across jurisdictions is difficult because of the range of offers that retailers make in deregulated markets.

Table A4.2 shows the estimated annual bill (including all discounts) for the current range of single rate offers available to residential customers in Canberra, Hobart, Sydney, Brisbane and Adelaide, as reported on the Energy Made Easy website. These offers are a mix of standard and market contracts. They also include single rate offers available to Melbourne residents, as reported on the Victoria Energy Compare website. To ensure comparability, all offers are based on an annual electricity consumption of about 7,500kWh.

The figures confirm that the average annual bill in Canberra is considerably less than in all the other capital cities.

<sup>66</sup> Energy Made Easy is an Australian Government website maintained by the AER.

<sup>67</sup> Price comparisons on the Energy Made Easy website are only available for jurisdictions where the National Energy Retail Law has commenced, which is not the case in Victoria.

**Table A4.2 Comparison of retail electricity (single rate) prices, as at 22 February 2017<sup>(a)</sup>**

	No of offers	Price range (\$)	Average bill (\$)
<b>Canberra</b>	34	1465-2301	<b>1590</b>
Sydney	78	1946-3686	2221
Brisbane	64	2147-3515	2349
Adelaide	69	2676-4588	2895
Melbourne <sup>(b)</sup>	273	1150-2510	1831
Hobart	1	2284	2284
Perth	N/A	N/A	N/A

Source: Data from [www.energymadeeasy.gov.au](http://www.energymadeeasy.gov.au) and <https://compare.switchon.vic.gov.au/>. Accessed 22 February 2017.

Note: (a) Estimated annual cost is based on a customer using 7,500 kWh of electricity per year on a single rate tariff at 22 February 2017; (b). Estimated cost is based on households using 7,500 kWh of electricity per year with 3 members, 8 rooms, split system air-conditioning for heating and room air-conditioning for cooling, with no solar panels and with no controlled load connected to the house.

## Abbreviations and acronyms

ACAT	Australian Capital Territory Civil and Administrative Tribunal
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASX	Australian Securities Exchange
CARC	Customer acquisition and retention costs
ICRC	Independent Competition and Regulatory Commission
CPI	Consumer Price Index
EEIS	Energy Efficiency Improvement Scheme
EPC	Energy purchase cost
EPSDD	Environment Planning and Sustainable Development Directorate
ICRC	Independent Competition and Regulatory Commission
IPART	Independent Pricing and Regulatory Tribunal
LGC	Large-scale Generation Certificate
LR	Load ratio
LRET	Large-scale Renewable Energy Target
LS	Load shape
MWh	Megawatt hour
NEM	National Electricity Market
NSW	New South Wales
OTC	Over-the-counter
OTTER	Office of the Tasmanian Economic Regulator

*Abbreviations and acronyms*

PHT	Priority Household Target
RPP	Renewable power percentage
STC	Small-scale Technology Certificate
SRES	Small-scale Renewable Energy Scheme

## References

- ACAT 2016. "Submission to Issues paper: Standing offer prices for the supply of electricity to small customers from 1 July 2017." Canberra: Australian Capital Territory Civil and Administrative Tribunal.
- ACT Government 1997. "Independent Competition and Regulatory Commission Act 1997." In: Counsel, AP (ed.) A1997-77. Canberra: ACT Government.
- ActewAGL Retail 2016. "ActewAGL response to issues paper framework and approach: Standing offer prices for the supply of electricity to small customers from 1 July 2017." Canberra: ActewAGL Retail.
- AEC 2016. "Standing offer prices for the supply of electricity to small customers from 1 July 2017: Issues paper." Canberra: Australian Energy Council.
- AEMC 2013. "Advice on best practice retail price methodology: Final report." Sydney: Australian Energy Market Commission.
- AEMC 2015. "Expanding competition in metering and related services: Rule determination." Sydney: AEMC.
- AER 2016. State of the energy market 2015 [Online]. Australian Energy Regulator, Melbourne.
- AGL 2016. "Issues paper: Standing offer prices for the supply of electricity to small electricity customers from 1 July 2017." Canberra: AGL.
- CME 2016. "Australia's retail electricity markets: Who is serving whom?" A report prepared for GetUp! : CME Australia
- EPSDD 2016. "A letter: Response to ICRC issues paper on standing offer prices for the supply of electricity to small customers from 1 July 2017." Canberra: Environment Planning and Sustainable Development Directorate of the ACT Government.
- ICRC 2003. "Final determination: Investigation into retail prices for non-contestable electricity customers in the ACT." Canberra: Independent Competition and Regulatory Commission
- ICRC 2010. "Model for determining the energy purchase cost component of the transitional franchise tariff: Final technical paper." Canberra ACT: Independent Competition and Regulatory Commission
- ICRC 2014a. "Draft report: Standing offer prices for the supply of electricity to small customers 1 July 2014 to 30 June 2017 ". Canberra ACT: Independent Competition and Regulatory Commission.

*References*

- ICRC 2014b. "Final report: Standing offer prices for the supply of electricity to small customers 1 July 2014 to 30 June 2017 ". Canberra: Independent Competition and Regulatory Commission.
- ICRC 2016. "Final Decision: Retail electricity price recalibration 2016-17." Canberra ACT: Independent Competition and Regulatory Commission.
- IPART 2013. "Review of regulated retail prices for electricity, 2013 to 2016 - Draft Report." Sydney: Independent Pricing and Regulatory Tribunal.
- Origin 2016. "Retail prices for small electricity customers from 1 July 2017: Issues paper." Canberra: Origin.
- OTTER 2017. "Comparison of Australian standing offer energy prices as at 1 February 2017." Hobart: OTTER.
- Wood, T, Blowers, D and Morgan, G 2017. "Price shock: Is the retail electricity market failing consumers?". Carlton: Grattan Institute.