ACIL ALLEN CONSULTING

REPORT TO
IPART
28 SEPTEMBER 2018

COST DRIVERS OF RECENT RETAIL ELECTRICITY PRICES FOR SMALL NSW CUSTOMERS

DRAFT REPORT

ACIL ALLEN CONSULTING PTY LTD
ABN 68 102 652 148

LEVEL NINE
60 COLLINS STREET
MELBOURNE VIC 3000
AUSTRALIA
T+61 3 8650 6000
F+61 3 9654 6363

LEVEL ONE
50 PITT STREET
SYDNEY NSW 2000
AUSTRALIA
T+61 2 8272 5100
F+61 2 9247 2455

LEVEL FIFTEEN
127 CREEK STREET
BRISBANE QLD 4000
AUSTRALIA
T+61 7 3009 8700
F+61 7 3009 8799

LEVEL ONE
15 LONDON CIRCUIT
CANBERRA ACT 2600
AUSTRALIA
T+61 2 6103 8200
F+61 2 6103 8233

LEVEL TWELVE, BGC CENTRE
28 THE ESPLANADE
PERTH WA 6000
AUSTRALIA
T+61 8 9449 9600
F+61 8 9322 3955

167 FLINDERS STREET
ADELAIDE SA 5000
AUSTRALIA
T +61 8 8122 4965

ACILALLEN.COM.AU

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COST DRIVERS OF RECENT RETAIL ELECTRICITY PRICES FOR SMALL NSW CUSTOMERS DRAFT REPORT (SEPTEMBER 2018)

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Background

As part of its decision in 2014 to deregulate retail electricity prices, the NSW Government gave the Independent Pricing and Regulatory Tribunal (IPART) a role to monitor and report annually on competition in the retail electricity market. As the market monitor, IPART is required to report annually on the performance and competitiveness of the NSW retail electricity market.

IPART is currently undertaking its review of retail electricity market performance in 2017/18 and will assess whether market developments are consistent with a competitive retail market.

The Minister has also asked IPART to review price movements into 2018/19 for residential and small business customers. IPART will provide advice to the Minister on drivers of the price changes and whether any such changes reflect efficient costs in a competitive market. ACIL Allen Consulting (ACIL Allen) has been engaged by IPART to assist in this aspect of the review and this report provides our draft findings.

Context

Over the last decade, Australia's electricity supply industry has undergone significant changes. In addition to the deregulation of retail prices, NSW saw a significant rise in network investment during the early and middle parts of the decade. Feed-in tariffs designed to encourage the installation of rooftop photovoltaic panels (rooftop solar) as well as a scheme designed to increase energy efficiency (the Energy Savings Scheme or ESS) were introduced. Nationally, a carbon emissions tax was introduced and later replaced by an enhanced Renewable Energy Target (RET). Encouraged by these policy initiatives and falling technology costs, the penetration of large-scale renewable generation increased rapidly. In recent years, the changing generation mix, coupled with higher fuel prices for gas-fired plant and ongoing uncertainty regarding longer-term emissions reduction policies, has begun to influence both the stability and affordability of the power grid.

In its recent Retail Electricity Pricing Inquiry Final Report, the Australian Competition and Consumer Commission (ACCC) estimated that residential customers in NSW saw a real increase of 28% in their electricity bills and a real price increase of around 52% between 2007/08 and 2017/18[1].

Our review is focused on the changes in prices and costs between 2017/18 and 2018/19. We examined cost trends and drivers in recent years when analysing certain components of those retail costs and when considering the implications we should draw from the results of our analysis. In this regard it is relevant to note that the ACCC concluded that the changes in a number of retail electricity

[1] ACCC, Restoring electricity affordability and Australia's competitive advantage: retail electricity pricing inquiry final report, June 2018 (ACCC 2018 report), pp 12-14.

cost components were not uniform over the decade to 2017/18 and that some components exhibited little or no change in recent years.

Approach

By comparing the movement in the market prices for a product with the associated changes in its costs, it is possible to infer greater or lesser degrees of competition in that market. Where, over a period, the changes in prices reflect the changes in costs, it can be concluded that the market is more competitive. Where price movements remain above cost changes, it can be concluded the market is less competitive (given that, absent market barriers, there should be a greater opportunity for new providers to enter into the market)[2].

Our approach to assessing the changes between 2017/18 and 2018/19 in the prices and estimated costs applicable to NSW residential and small business retail electricity customers is broadly similar to that applied in previous years:

- We estimated the proportion of the 2017/18 prices that was attributable to each cost component. Those components comprise the retailers' cost of purchasing wholesale electricity, the costs of complying with Federal and State green schemes, network charges as well as the retailers' own operating costs and margin on sales
- We then estimated the changes in each cost component between 2017/18 and 2018/19 and then applied those changes to the 2017/18 costs to estimate the total 2018/19 costs of supplying small retail customers
- Finally, we compared the changes in costs between 2017/18 and 2018/19 with the corresponding changes in prices offered to residential and small business retail customers.

Assessment

In its previous reviews of retail electricity market performance, IPART found that, overall, prices have risen in line with rises in costs, even where individual components of those costs may have decreased year to year.

This year is different. Our analysis suggests that, on average across NSW:

- prices overall decreased slightly from 2017/18 (by around 1% in nominal terms)
- the network and retail cost components of retail bills increased very slightly (each by less than 0.5% in terms of their impact on the average bill) and the cost of complying with green schemes increased slightly more (by up to 4.5% in terms of the average bill impact)
- wholesale electricity prices decreased in the lead up to 2018/19 with the impact on retail prices sensitive to the analysis
- the movement in total costs from 2017/18 to 2018/19 is driven by the change in the wholesale electricity cost and is therefore also sensitive to the analysis.

The analysis of the change in wholesale electricity prices has been undertaken using the same approaches in previous years. That is, by measuring the changes in the (expected) average cost over one day, one month and two years. The wholesale electricity price and, therefore, the total retail electricity costs have decreased when the wholesale price is averaged over one day and one month and increased when averaged over two years.

Table ES1 overleaf sets out the results obtained when comparing the change in prices between 2017/18 and 2018/19 with the associated estimated changes in costs (measured in terms of their impact on average residential and small business customer bills). Using the one day and one month averaging periods, the reduction in prices is not as large as the total cost reductions (indicated in the Table by a positive difference). Using the two year averaging period, prices reduce but total costs increase (indicated by a negative difference).

[2] There are other indicators regarding the competitiveness of the NSW small customer retail electricity market which we note IPART is assessing as part of its current review.

We also undertook the analysis for each NSW distribution area as the network cost component differs slightly in each. The results were consistent with the Statewide averages.

TABLE ES 1 ESTIMATED PERCENTAGE IMPACT OF THE CHANGES IN COST COMPONENTS ON AVERAGE SMALL RETAIL CUSTOMER BILLS BETWEEN 2017/18 AND 2018/19 AND THE RESULTING DIFFERENCES BETWEEN THE CHANGES IN PRICES AND THE TOTAL IMPACT OF THE COST CHANGES (NSW AVERAGES, NOMINAL)

Cost component/price/difference	Residential customer			Small business customer		
Averaging period	One day	One month	Two years	One day	One month	Two years
Wholesale electricity	-11.2%	-12.5%	7.3%	-14.3%	-16.0%	9.2%
Cost of complying with green schemes	3.4%	3.3%	3.0%	4.5%	4.5%	4.0%
Network costs	0.04%	0.04%	0.04%	0.25%	0.25%	0.25%
Retail operating costs and margin	0.33%	0.33%	0.33%	0.22%	0.22%	0.22%
Total impact of the cost changes	-7.5%	-8.8%	10.6%	-9.3%	-11.0%	13.7%
Change in prices	-1.0%	-1.0%	-1.0%	-0.9%	-0.9%	-0.9%
Difference between changes in prices and total cost change impact	6.5%	7.8%	-11.7%	8.4%	10.1%	-14.7%

NOTE: Cost totals and differences between changes in prices and total cost change impacts may not add up due to rounding.

SOURCE: ACIL ALLEN ANALYSIS

Discussion

As noted above, where the changes in market prices over a period reflect the changes in costs, a conclusion can be drawn that the market is more competitive. Where price movements remain above those cost changes, it can be concluded the market is less competitive.

From the analysis summarised above it could be inferred *both* that:

— because the reductions in prices between 2017/18 and 2018/19 appear smaller than the reductions in their estimated costs (based on the one day and one month averaging periods), there is a lack of competition in the NSW retail market for small electricity customers *and*

— because those prices have reduced while their estimated costs have increased (based on the two year averaging period), the market is competitive.

However, we consider it would be inappropriate to draw either inference based on one year on year change observed in isolation. Rather, we consider whether there may be (typically structural) market factors likely to have influenced that result and also assess it within the context of recent price and cost comparison trends[3].

In our view, a feature of the cost of purchasing wholesale electricity is relevant. That feature stems from the fact that that the wholesale electricity cost component is both material in terms of the total retail cost and, certainly in recent times, relatively volatile. One way that some retailers attempt to manage this risk is to absorb increases in this cost by reducing their operating margin. Instead, most retailers hedge that cost through other means including vertical integration (owning their own generation) and/or by contracting a mixture of financial hedging instruments. Because there is an inherent level of uncertainty involved in doing so, as well as transaction costs involved in changing hedged positions, changes in wholesale costs may take time to be passed through into retail prices[4].

This differs from two of the other retail cost components where there is normally a much higher degree of confidence regarding the expected costs and an ability to adjust retail prices more quickly for changes in them: network tariffs are published in advance and retail operating costs and margins are, generally speaking, less volatile and more manageable than wholesale electricity costs.

To recap, we consider that there is a feature of the wholesale cost component of retail electricity costs that can explain why the recent falls in that component between 2017/18 and 2018/19 (estimated

[3] This is known as the "workable competition" approach to assessing the effectiveness of competition.

[4] A view also reached by the ACCC (2018 report, p 48).

using the one day and one month averaging period) have not been fully reflected in the movements in prices over that year.

We have considered the available evidence regarding the relationship between price and cost changes in recent years. In this regard we note that, since small retail customer prices were deregulated in NSW:

- IPART concluded that the abolition of the carbon tax, a green compliance cost, in 2014 was passed through into retail prices in 2014/15[5]
- the 2015 falls and subsequent rises in wholesale electricity costs have appeared to flow through to total retail costs:
  - IPART concluded in November 2016 that increases in wholesale costs between June and September 2016 were passed through to retail prices[6]
  - last year, Frontier Economics found that 2016/17 wholesale costs more than doubled using a point in time method but that the retail price changes implied that a much smaller proportion of costs were passed through[7]
- there is no evidence to suggest that the changes in total retail costs have otherwise differed from year to year minor increases or decreases in network charges and there has been no finding that retail operating costs and margins have materially changed during the period[8].

Conclusion

On the basis of the above analysis and evidence, we consider that competition continues to provide a restraint on prices and, therefore, the NSW small customer retail electricity market is a "workably competitive" market.

5 IPART, Review of the performance and competitiveness of the retail electricity market in NSW from 1 July 2014 to 30 June 2015, Energy – final report, November 2015, p 53.

6 IPART, Review of the performance and competitiveness of the retail electricity market in NSW from 1 July 2015 to 30 June 2016, Energy – final report, November 2016, p 59.

7 Frontier Economics, Cost drivers of recent retail electricity and gas prices for residential customers in NSW, November 2017, p 35.

8 See further the references to the IPART and Frontier reports in footnotes 5 to 7 as well as the ACCC 2018 report, fig 10.1, p 221.

1 INTRODUCTION

In April 2014, the NSW Government decided to remove retail electricity price regulation, effective 1 July 2014. This decision was based on findings by both the Independent Pricing and Regulatory Tribunal (IPART) and the Australian Energy Market Commission (AEMC) that the NSW retail electricity market was competitive.

As part of its decision to deregulate, the NSW Government gave IPART a role to monitor and report annually on competition in the retail electricity market. As the market monitor, IPART is required to report annually on the performance and competitiveness of the NSW retail electricity market.

IPART is currently undertaking its review of retail electricity market performance in 2017/18 and will assess whether market developments are consistent with a competitive retail market.

In addition, the Minister has asked IPART to review price movements into 2018/19. IPART will provide advice to the Minister on drivers of the price changes and whether any such changes reflect efficient costs in a competitive market.

1.1 Scope

ACIL Allen Consulting (ACIL Allen) has been engaged by IPART to assist in its review of the drivers of electricity price movements into 2018/19. Specifically, we have been engaged to:

1. For 2017/18, estimate the total costs and cost components (set out in Table 1.1 overleaf) of supplying:
   a) residential customers consuming 6,500 kiloWatthours (kWh) per annum and
   b) small business customers consuming 10,000 kWh per annum,

   by NSW distribution network areas and on average across NSW.
2. For each cost component:
   a) Estimate how the costs have changed for supplying each customer type in each distribution network area and on average across NSW between 2017/18 and 2018/19
   b) Provide an explanation of the drivers of any such changes. For example, wholesale electricity costs may be influenced by a changing load shape and changes in spot and contract prices as a result of factors such as changes in demand, a changing mix of generation and changes in fuel costs
   c) As a result of any cost changes in a), estimate the cost breakdown and total costs of supplying the above customer types in 2018/19 by network distribution area and on average across NSW.
3. Assess whether the price changes that occurred in NSW in July 2018 reflect efficient costs in a competitive market.

TABLE 1.1 COMPONENTS OF THE COSTS OF SUPPLYING SMALL CUSTOMERS.

Cost
Wholesale costs
Costs of complying with "green" schemes comprising the Large scale Renewable Energy Target (LRET), Small scale Renewable Energy Scheme (SRES) and NSW Energy Savings Scheme (ESS)
Transmission and distribution network costs
Retail operating costs and margin

1.2 Context

Over the last decade, Australia's electricity supply industry has undergone significant changes. In addition to the deregulation of retail prices, NSW saw a significant rise in network investment during the early and middle parts of the decade. Feed-in tariffs designed to encourage the installation of rooftop photovoltaic panels (rooftop solar) as well as a scheme designed to increase energy efficiency (the ESS) were introduced. Nationally, a carbon emissions tax was introduced and later replaced by an enhanced Renewable Energy Target (the LRET) and the SRES. Encouraged by the LRET and initiatives and falling technology costs, the penetration of large-scale renewable generation increased rapidly. In recent years, the changing generation mix, coupled with higher fuel prices for gas-fired plant and ongoing uncertainty regarding longer-term emissions reduction policies, has begun to influence both the stability and affordability of the power grid.

In its 2018 report, the ACCC estimated that residential customers in NSW have seen a real increase of 28% in their electricity bills and a real price increase of around 52% between 2007/08 and 2017/18[9] as the result of these and other industry changes.

The scope of this report concerns the changes in retail electricity prices and costs between 2017/18 and 2018/19. We examined cost trends and drivers in recent years when analysing certain components of those retail costs (Chapters 3 to 6) and when considering the implications we should draw from the results of our analysis (Chapter 7). In this regard, it is relevant to note the ACCC's findings[10] that:

- while network costs have been the primary driver (roughly one quarter) of NSW retail cost increases over the decade since 2007/08, they appear to have levelled off or slightly declined overall in the last few years
- while there was an overall rise in wholesale electricity costs over the last ten years that increased retail costs by 9%, wholesale costs fell materially during the early and middle parts of the decade
- the cost of complying with green schemes increased retail costs by 12% although the increase has been smaller in recent years
- retail costs declined by 3% since 2007/08 and
- while retail margins increased significantly, this result was largely driven by one year of negligible margin in 2007/8 under regulated pricing and margins were roughly the same in 2016/17 and 2017/18.

1.3 Approach

As far as practicable, we have adopted the same approach to assessing the relevant proportions of the cost components, and estimating how they have changed and the results of those changes, to the approach used by Frontier Economics (Frontier) in its reports prepared for IPART as part of the latter's reviews over the last two years. However, there are areas where we have used a different approach. We have highlighted where we have done so and explained the rationale as to why. In particular, we have applied a "workable" competition approach to assess the implications of the differences in the changes in retail prices and the estimated costs. Our reasons for doing so are set out in Chapter 7.

9 ACCC, Restoring electricity affordability and Australia's competitive advantage: retail electricity pricing inquiry final report, June 2018 (ACCC 2018 report), pp 12-14.

10 Ibid and id, pp 32-37.

1.4 This report

This report provides our draft findings on the drivers of recent changes in retail electricity prices for small retail customers in NSW. The remainder of the report is structured as follows:

- Chapter 2 sets out our analysis of the proportion of the costs of supplying electricity to small retail customers that is contributed by each of the cost components.
- Chapter 3 considers the potential drivers of changes in wholesale electricity costs and provides our estimate of the increase in those costs from 2017/18 to 2018/19.
- Chapter 4 considers the potential drivers of changes in the cost of complying with green schemes and provides our estimate of the increase in those costs from 2017/18 to 2018/19.
- Chapter 5 considers the potential drivers of changes in network charges and provides our estimate of the increase in those costs from 2017/18 to 2018/19.
- Chapter 6 discusses retail operating costs and the retail margin.
- Chapter 7:
  - sets out our estimates of the changes in the total cost of supplying electricity to small retail customers between 2017/18 to 2018/19 and the differences between the corresponding changes in the prices offered to those customers and those changes in costs and
  - discusses the implications of the comparison of those changes and draws from them a conclusion regarding the competitiveness of the NSW small retail electricity customer market.

2 COST COMPONENTS

The proportions of the total cost of supplying small retail customers is a key determinant of the extent to which changes in particular cost components drive changes in the overall cost of supply electricity.

There are two primary sources of information for estimates of the proportions of each of the cost components. These are the ACCC's 2018 report and the AEMC's Residential Electricity Price Trends December 2017 final report (AEMC 2017 report).

We have also referenced the AEMC's Residential Electricity Price Trends December 2016 report (AEMC 2016 report) and Retail Energy Competition Review June 2018 report (AEMC 2018 report).

The AEMC's 2017 report sets out estimates of the cost components of the cost of supplying electricity for the years from 2016/17 through to 2019/20[11]. These are set out in Table 2.1.

TABLE 2.1 AEMC COST COMPONENTS OF SUPPLYING NSW RESIDENTIAL ELECTRICITY CUSTOMERS (NOMINAL EX-GST)

	2016/17		2017/18		2018/19		2019/20	
Component	c/kWh	$/pa	c/kWh	$/pa	c/kWh	$/pa	c/kWh	$/pa
Environmental policies	1.65	70	1.71	72	1.85	78	1.98	83
LRET – LGC cost	0.64	27	0.76	32	0.89	37	1.03	43
SRES – STC cost	0.36	18	0.32	14	0.33	14	0.32	14
Climate Change Fund	0.48	20	0.41	17	0.40	17	0.39	16
Energy Savings Scheme	0.17	7	0.21	9	0.23	10	0.25	10
Regulated networks	14.63	617	14.23	600	14.44	608	14.53	612
Transmission	3.20	135	3.03	128	3.10	131	3.19	135
Distribution	11.43	482	11.19	472	11.34	478	11.33	478
Wholesale	9.57	403	12.44	524	10.26	433	7.87	332
Residual	1.89	80	2.19	92	2.25	95	2.31	97
Market offer	27.74	1,169	30.57	1,289	28.80	1,214	26.69	1,125

SOURCE: AEMC RESIDENTIAL ELECTRICITY PRICE TRENDS FINAL REPORT, DECEMBER 2017, FIGURE C.3.

The AEMC changed one element of its approach to presenting the cost components between its 2016 and 2017 Residential Electricity Price Trends report. The AEMC's 2016 report estimated proportions for green costs, network costs and competitive market costs. The "competitive market costs" comprised wholesale energy and retail costs. The AEMC's 2017 report estimated proportions for

[11] AEMC 2017 report, fig C.3, p 100. These cost components are based on an annual consumption of 4,215 kWh (id, p 62).

green costs, network costs, environmental and system security policy costs and what it terms "residual" costs. The system security policy cost is applicable only in South Australia[12] and so the NSW cost component includes only green scheme costs.

"Residual" costs are those costs remaining when the wholesale, green and network costs are deducted from retail prices. Thus, they represent retail operating costs and retail margin but also errors in the estimated value of all the other supply chain components. In this regard, the AEMC stated that "[i]t is important to note that the residual component… does not reflect nor is it meant to represent retail margins (either gross or net)" and referred readers to its then current 2017 Retail Energy Competition Review Report for the latter's review of retail margins.[13]

The AEMC's 2018 report estimated gross retail margins on NSW residential electricity sales. The gross retail margin is the retailer's revenues less the cost of goods sold, that is, the gross retail margin is the retail operating costs plus net margin.

The gross margin estimate was based on 2016/17 data voluntarily supplied to the AEMC by the "Big 3 retailers" (AGL, Origin Energy and EnergyAustralia) who comprise over 85% of NSW residential market sales.[14] The AEMC estimated the gross margin as 5.39 c/kWh or 20.5% of a typical 26.23 c/kWh residential electricity bill. The AEMC cautioned that gross margins are likely to vary between individual retailers for a number of reasons and that the estimate, being based on 2016/17 data, did not include the effect of the price movements that have occurred subsequently.[15]

The ACCC's 2018 report estimates the 2017/18 cost components for NSW residential customers but only National Electricity Market (NEM)-wide for small business customers.

Table 2.2 sets out the 2016/17 cost component estimates used in the ACCC and AEMC reports.

To assist in making comparisons, we have included the 2016/17 (***not*** 2017/18) cost proportions estimated by Frontier in its report for IPART last year, which were based on data from the AEMC's 2016 report. Frontier disaggregated the "competitive market costs" component for 2016/17 using retail operating costs of $121 per customer and a retail margin of 5.7%.[16]

TABLE 2.2 ESTIMATES OF PROPORTIONS OF TOTAL COSTS BY COST COMPONENT FOR 2017/18

Cost component	Proportion of total costs				
Customer type	Residential customers				Small business customers
Source	Frontier Economics Cost Drivers of Recent Retail Energy Prices	AEMC Retail Electricity Price Trends Final Report	AEMC Retail Energy Competition Review Final Report	ACCC Retail Electricity Pricing Inquiry Final Report	ACCC Retail Electricity Pricing Inquiry Final Report
Scope	NSW	NSW	NEM	NSW	NEM
Wholesale electricity costs	28.1%	40.7%	79.4%	33%	42%
Costs of complying with green schemes	8.2%	5.6%		6%	8%
Network costs	49.1%	46.5%		43%	38%
Retail operating costs	8.9%	7.1%[b]	20.5%[c]	8%[d]	4%[d]
Retail margin	5.7%			10%[d]	8%[d]
Total[a]	100.0%	100.0%	100.0%	100.0%	100.0%

12 Id, p 72.

13 Id, p 59.

14 ACCC 2018 report, p 135.

15 AEMC 2018 report, p 203.

16 Frontier Economics, *Cost drivers of recent retail electricity and gas prices for residential customers in NSW*, November 2017 (Frontier 2017), p 8.

Notes:

(a) Totals may not add due to rounding.

(b) Retail operating costs and retail operating margin described as "residual costs" which also include estimation errors regarding the other components.

(c) Retail operating costs and retail operating margin combined into "gross margin".

(d) Retail operating costs and retail operating margin separately quantified.

SOURCES: FRONTIER 2016/17 REPORT, AEMC 2017 AND 2018 REPORTS, ACCC 2018 REPORT AND ACIL ALLEN ANALYSIS

In comparing the estimated proportions of cost components in Table 2.2, we note the following:

- For residential customers, the estimates of the **costs of complying with green schemes** is broadly consistent for 2017/18 between the AEMC's 2017 report (5.6%) and the ACCC's 2018 report (6%). Both estimates are slightly lower than that used by Frontier for 2016/17 which was based on the AEMC's 2016 report. For small business customers, the ACCC's estimate (8%) is consistent with Frontier's 2016/17 estimate.
- The same is true regarding the estimate of **network costs** for residential customers in 2017/18. That is, the AEMC's 2017 report estimated 46.5% and the ACCC's 2018 report estimated 43% while Frontier's estimate for 2016/17 was slightly higher at 49.1% based on the AEMC's 2016 report. For small business customers, the ACCC's 38% estimate is lower than the other estimates.
- There is some variation in the **combined estimate of retail operating costs and the retail operating margin** for residential customers in 2017/18. The AEMC's 2017 report estimated 7.1% which is materially lower than the ACCC's 2018 report of 18% and the AEMC's 2018 report of 20.5%. These latter two estimates are slightly above Frontier's estimate for 2016/17 of 14.6%. For small business customers, the ACCC's estimate is a combined 12%.
- For residential customers, the AEMC's 2018 report estimates **retail operating costs** for 2017/18 at 8% which is broadly consistent with Frontier's estimate for 2016/17 of 8.6%.
- For residential customers, there is some difference between the AEMC's 2017 report estimate of 40.7% for **wholesale electricity costs** for 2017/18 and the ACCC's estimate of 33%. Both lie above Frontier Economics' estimate for 2016/17 of 28.1%. For small business customers, the ACCC estimated retail operating costs at 4%.

On balance, for the purposes of this report, we have adopted the ACCC's 2018 report proportions of cost components for 2017/18 small retail customers. This is based on the following:

- The ACCC's estimates for the cost of complying with green schemes and network costs are broadly consistent with the AEMC's 2017 report estimates.
- The ACCC's combined estimate of retail operating costs and margin is largely consistent with the AEMC's 2018 estimate.
- The ACCC's estimates of wholesale electricity costs are based on more recent data.
- The ACCC has separately identified residential and small business cost components.

3 WHOLESALE COSTS

In supplying electricity to small retail customers, retailers incur wholesale electricity costs. These are the costs that retailers face in procuring the electricity that they supply to their customers.

There are a number of ways to assess the wholesale electricity costs that retailers face. These include forecasting wholesale electricity costs on the basis of the long run marginal cost of supplying customers and on the basis of market forecasts of spot and contract prices. Consistent with the approach adopted in last year's review, we are not undertaking energy market modelling of the kind that would be used to implement these approaches. Rather, we analyse trends over time in the two key drivers of changes in wholesale electricity costs: changes in load shape and changes in spot and contract electricity prices.

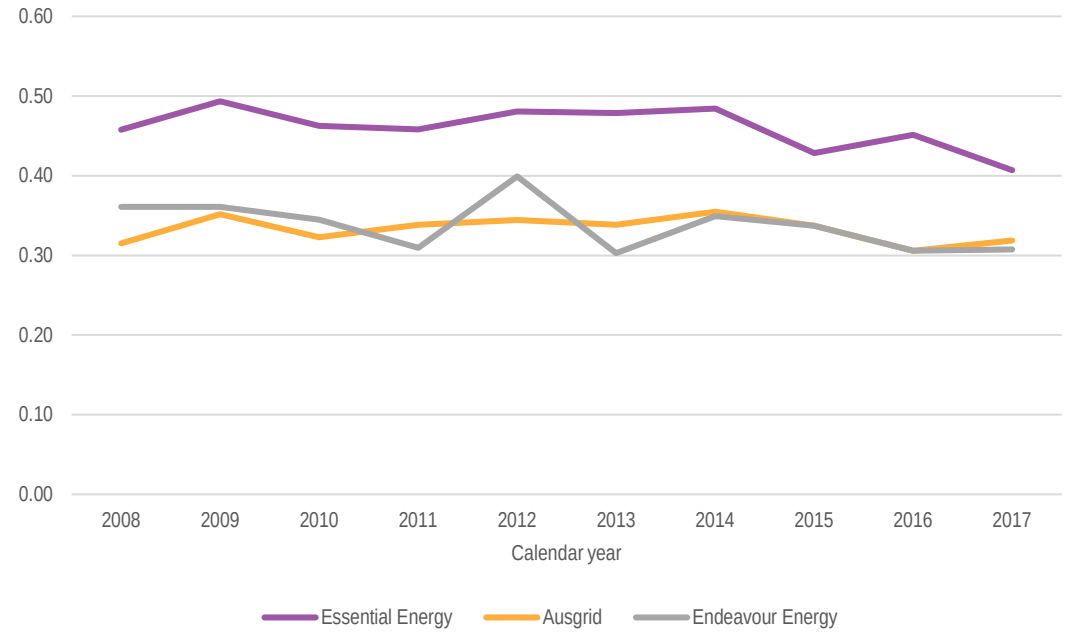
3.1 Load shape

The load shape for customers is a key determinant of the cost of supplying electricity to those customers: the peakier the load shape, and the more closely correlated that load is to wholesale electricity prices, the more expensive it is to supply those customers.

Data on the load shape of individual residential customers is not publicly available. However a good proxy for the aggregate load shape for residential and small business customers is the Net System Load Profile (NSLP) which is published by the Australian Energy Market Operator (AEMO) for each of the three distribution networks in NSW. The NSLP measures the aggregate load shape of all customers that have accumulation meters. Only small customers have such meters.

To assess whether there have been changes in the load shape for NSW customers, we analysed data on the NSLP for each distribution network in NSW for the last ten years. Consistent with last year's report, we have summarised that analysis into the annual load factor which is measured as average demand divided by peak demand. This is shown in Figure 3.1 overleaf.

FIGURE 3.1 NSLP LOAD FACTOR



SOURCE: ACIL ALLEN ANALYSIS OF AEMO DATA

Our view is that this NSLP data is mixed, noting that peak demand is highly influenced by weather outcomes in each year. In general terms, for Essential Energy, there may be a slight long-term trend towards a peakier load shape (a lower load factor) while, for Ausgrid and Endeavour Energy the trend has flattened in 2016/17. Part of this trend will be driven by the uptake of rooftop solar PV which is reducing energy drawn from the grid by households (more so than the peak demand in aggregate). For these reasons, we do not think there is strong evidence to suggest that changes in load shape would be an important driver of changes in the cost of supplying wholesale electricity into 2018/19.

3.2 Spot and contract electricity prices

Wholesale electricity prices, both spot and contract prices, are a key determinant of the cost of supplying electricity to retail customers: the higher those prices, the more expensive it is for a retailer to supply those customers.

In the remainder of this section, we use publicly available information on wholesale electricity prices for 2017/18 and 2018/19 to assess the changes in wholesale electricity costs from 2017/18 to 2018/19. As we are comparing this year with last year, we have actual spot prices for 2017/18 but not 2018/19. This means that, conceptually, there are two ways we can compare electricity prices between the two years, namely, compare:

- actual 2017/18 prices with expectations of prices for 2018/19
- expectations of 2017/18 prices (prior to the start of 2017/18) with expectations of prices for 2018/19 (prior to the start of 2018/19).

We discuss both these approaches in the following sections.

3.2.1 Approach 1: comparing actual 2017/18 pries with expectations of prices for 2018/19

AEMO publishes spot prices for every half hour of the year. The annual average 2017/18 spot price for NSW calculated using AEMO data is $82.27.[17]

[17] Assessed using volume weighted averages. See AEMO's website: http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Data-dashboard#average-price-table.

As noted above, we don't yet know the annual average spot price for 2018/19. However, we can use prices available from the electricity futures market to provide an indication of the expected annual average spot price for that year. Consistent with the approach used in last year's review, we have used the publicly available price of an implied base load financial year 2018/19 strip for NSW as published by ASX Energy[18]. The price of this implied base strip as at 1 June 2018 (assuming that this is the time that retailers decide their retail prices for 2018/19) was $73.28. It is generally accepted that contracts of this kind trade at a premium to expected spot prices. Deducting a premium of 5% (again, consistent with last year's approach), this suggests that the market's expectation was that the annual volume weighted average spot price for NSW for 2018/19 will be $69.62.

This comparison of actual spot prices for 2017/18 with forward prices for 2018/19 suggests that, as at 1 June 2018, retailers could have expected that there would be a noticeable decrease (15%) in the spot electricity prices that they faced in 2017/18 and those they expected to face in 2018/19.

3.2.2 Approach 2: comparing expectations of prices for 2017/18 and 2018/19

Methodology

The alternative approach involves comparing expectations of prices for both 2017/18 and 2018/19.

Again, consistent with the approach taken in last year's report, we have compared the prices of a number of individual ASX Energy contracts settled in each year rather than rely solely on implied base load financial year strips. This is because we understand that a typical retailer uses a mix of products to manage their exposure to wholesale electricity prices including contracts available from ASX Energy. The contracts that we consider are peak quarterly swaps, base quarterly swaps and base quarterly caps. ASX Energy publishes daily prices for each of these products and the prices for each of these instruments have changed by different amounts from 2017/18 to 2018/19. We have applied a mix of the contract types that an efficient retailer is likely to enter into for small retail customers in order to estimate an indicative change in the wholesale electricity cost in NSW.

It is important to compare expected prices at an equivalent point in time to the start of each financial year. There continues to be regulatory debate about whether retailers set retail prices on the basis of contract prices at a single point in time or whether they do so on the basis of a rolling average of contract prices over a longer period. This is an important consideration that will be discussed further below. To inform that discussion, we have applied the approach used by Frontier last year, namely, to compare prices using the following three timeframes:

- looking at time-weighted settled prices on the day closest to the time retailers are likely to make their decision on retail prices which we assume to be 1 June each year (one day method)
- looking at time-weighted settled prices averaged over one month leading up to that time (that is, from 1 May to 1 June each year) (one month method)
- looking at time-weighted settled prices averaged over the two years leading up to 1 June (two years method).

By comparing prices for the three types of contracts across the four quarters available for settlement in 2017/18 with prices for contracts for settlement in 2017/18, we can estimate the market's expectations of the change in the wholesale electricity cost to supply small retail customers.

Assessment

Figure 3.2 overleaf sets out the percentage change in ASX contract prices between 2017/18 and 2018/19 using the three methods described above. Each provides different results:

- for the one day and one month averaging methods, the decrease in the price of swaps ranges between approximately 20 and 50%, depending on the quarter
- for the two year averaging method, swaps increase between roughly 10 and 30%, depending on the quarter.

[18] See ASX Energy's website: www.asxenergy.com.au.

Base caps follow similar patterns:

— up to a 70% increase under the one day and one month methods

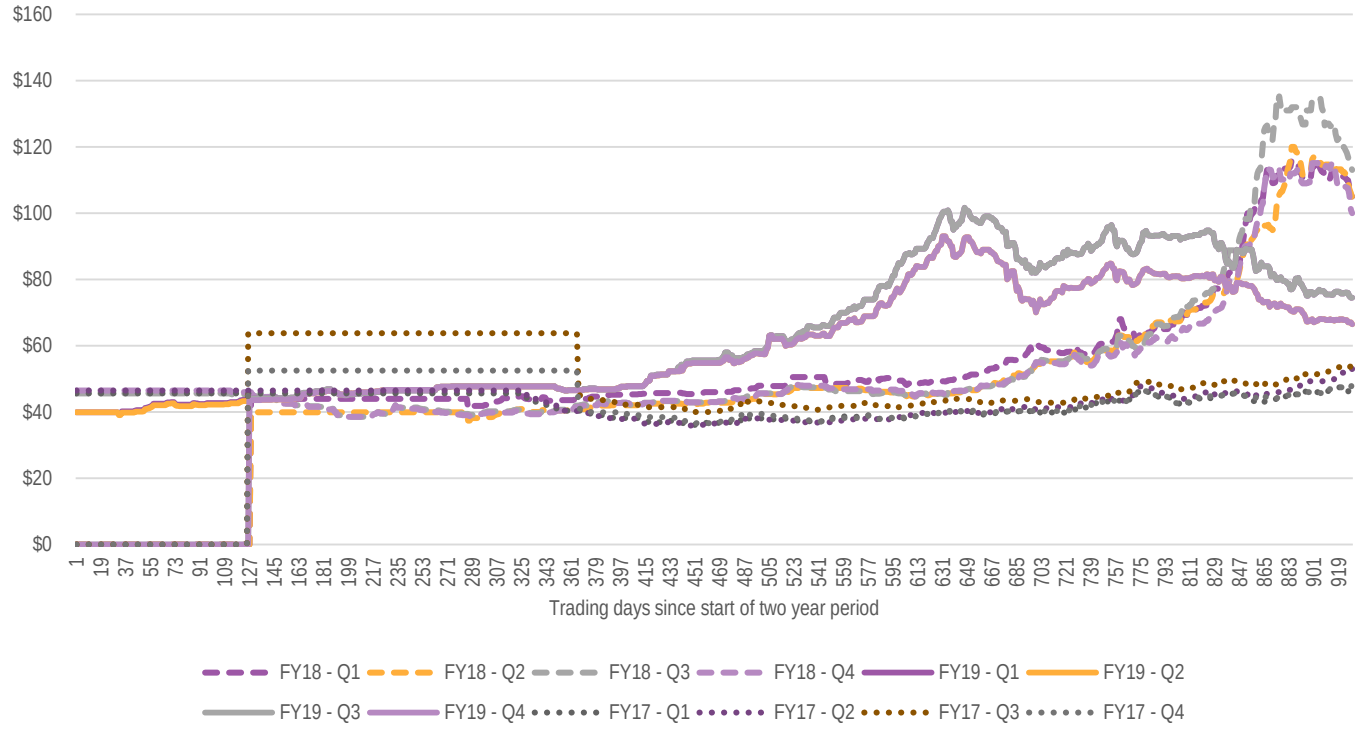
— up to a 30% decrease under the two years method.

FIGURE 3.2 PERCENTAGE CHANGE IN ASX CONTRACT PRICES BETWEEN 2017/18 AND 2018/19 (NOMINAL)

SOURCE: ACIL ALLEN USING ASX ENERGY DATA

The reason for the difference in the direction and size of the changes is the result of the decline in the prices for all such contracts that we observe occurring in the second half of the 2017/18 financial year. This can be seen in Figure 3.3 overleaf which sets out the prices of base swap contracts for the three years leading to the start of the 2018/19 financial year.

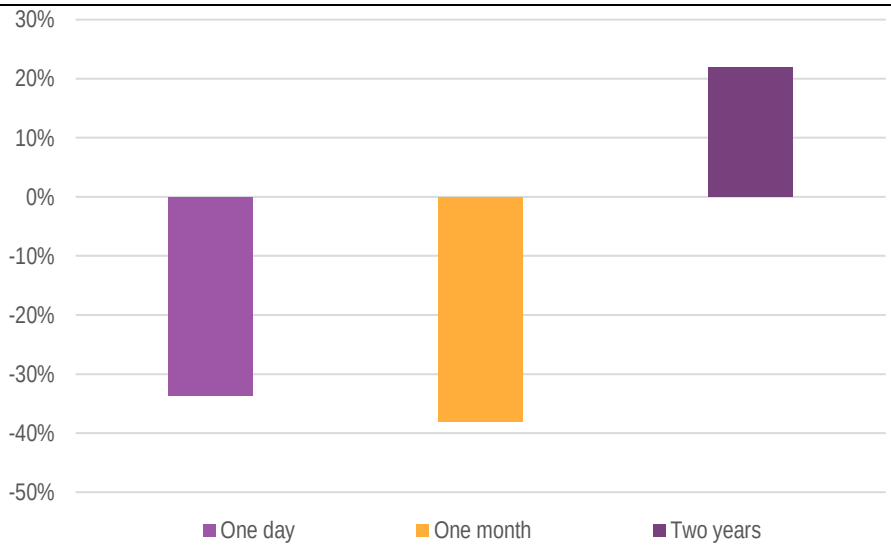
FIGURE 3.3 COMPARISON OF BASE SWAP CONTRACT PRICES FOR 2017/18 AND 2018/19 ($/MWH NOMINAL)



SOURCE: ASX ENERGY AND ACIL ALLEN ANALYSIS

The fact that the change occurred recently means that, applying the proportions of the contract types as discussed above, the overall direction of the change is downwards using the one day (34%) and one month (38%) methods but upwards using the two years method (22%). These are set out in Figure 3.4.

FIGURE 3.4 PERCENTAGE CHANGE IN WHOLESALE ELECTRICITY PRICES BETWEEN 2017/18 AND 2018/19 (NOMINAL)

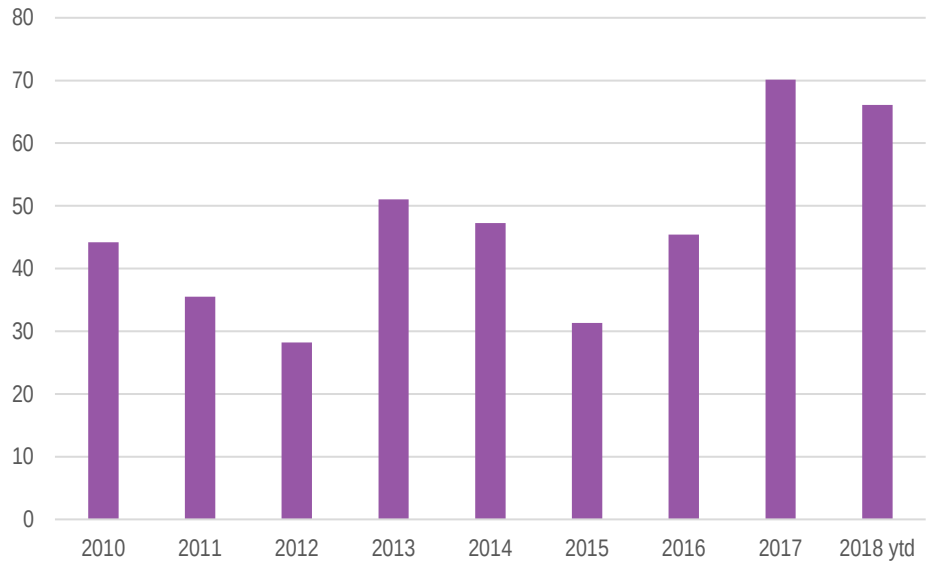


SOURCE: ACIL ALLEN ANALYSIS

3.2.3 What has driven the change in contract prices for 2018/19?

Figure 3.5 sets out annual average spot prices for NSW between 2010 and 2017 and annual monthly spot prices for 2018 to date.

FIGURE 3.5 NSW AVERAGE SPOT PRICES ($/MWH REAL)



SOURCE: AEMO, ABS

Frontier's 2017 report indicated that spot prices were, at that time, at their highest since the NEM began, with a significant increase between 2016/17 and 2017/18 driven by:

- the retirement of baseload generation capacity over recent years that has contributed to a tightening of the supply/demand balance
- higher gas prices which serves to increase the marginal cost of gas-fired generation.[19]

This is broadly consistent with the views taken by the ACCC in its 2018 report[20] and the AEMC in its 2017 report[21]. Both concluded[22] that NSW wholesale prices began to decrease early in 2018 and were expected to continue to do so in 2018/19, driven mainly by the very large volume of renewable large-scale generation coming online during the period and also, per the AEMC, the return to service of the Swanbank E gas power station. We agree that these are likely to be the key drivers over this period. We also note that the generation from a number of the NSW coal fired power stations has continued to recover from the reduced output observed in 2017 due to coal supply constraints.

3.3 Conclusion

In Frontier's report last year, the application of the four methods used above resulted in similar changes in wholesale electricity prices from 2016/17 to 2017/18. However, as set out above, they do not result in similar changes between 2017/18 and 2018/19 with:

- the one day and one month expected price methods suggesting a decrease in the order of between 34 and 38%
- these results being broadly consistent with the 15% decrease using the actual 2017/18 spot price versus expected 2018/19 baseload calendar strips and
- the two year averaging method results in an estimated increase in the cost of wholesale electricity purchases of around 22%.

19 Frontier 2017 report, pp 23-24.

20 ACCC 2018 report, p 48.

21 AEMC 2017 report, pp v-vi.

22 ACCC 2018 report, p 48 and AEMC 2017 report, p v-vi.

The one day, one month and actual versus expected results are consistent with the recent reductions in wholesale electricity prices observed above. The two year results are consistent with the view that retailers stagger their contracts over time as a means of hedging their exposure risk. The implications that can be drawn from the difference between these outcomes are discussed in Section 7.3 below.

We note that:

- the estimated changes may be different had we assumed different averaging periods, dates when retailers set their prices (1 June each year) or used a different mix of futures products.
- wholesale electricity costs for retailers are not determined solely by spot or futures contract prices but also the cost of hedging, market fees and managing price exposure
- for vertically integrated businesses, the costs would partly reflect the transfer price imposed on internal generation used to support their retail operations.

Assessing the second and third of these matters would involves taking into account a range of factors and conducting detailed modelling that lie beyond the scope of this report.

4 GREEN COSTS

In supplying electricity to small retail customers, retailers must incur costs associated with complying with green schemes, including the costs that retailers face in complying with their obligations under the Commonwealth's Large-Scale Renewable Energy Target (LRET) and Small-Scale Renewable Energy Scheme (SRES) and the NSW Government's Energy Savings Scheme (ESS).

By comparing the prices of large scale generation certificates (LGCs), small scale technology certificates (STCs) and Energy Savings Certificates (ESCs) and their corresponding Renewable Price Percentage (RPP), Small-scale Technology percentage (STP) and ESC Target, we can estimate the change in the cost of complying with these schemes from 2017/18 to 2018/19.

4.1 Approach

We have compared the price of LGCs and STCs for 2017/18 and 2018/19 using two types of time series data from Mercari:

— Consistent with Frontier's approach last year, spot prices.

— For LGCs, futures contract prices. There was insufficient trading data to assess STC prices in this way.

Consistent with the analysis of wholesale electricity costs, we have adopted three different methodologies to estimate the cost of complying with green schemes. These are:

— looking at prices on the day closest to the time retailers are likely to make their decision on retail prices which we assume to be 1 June each year (one day method)

— looking at time-weighted settled prices averaged over one month leading up to that time (that is, from 1 May to 1 June each year) (one month method)

— looking at time-weighted settled prices averaged over the two years leading up to 1 June (two years method.

The RPP and STP provide an indication of the rate of liability under the LRET and SRES, respectively. Using published estimates from the Clean Energy Regulator, we can estimate the change in the number of certificates that retailers need to surrender from 2017/18 to 2018/19.

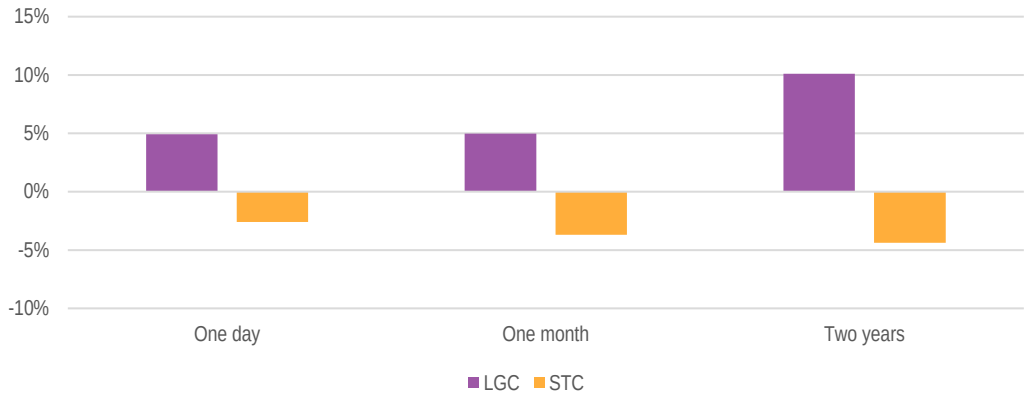
ESCs make up a much smaller component of the typical NSW small retail customer bill (around 0.5%). Given this, we have only analysed 1 June spot price data for ESCs.

4.2 Assessment

Figure 4.1 overleaf provides an indication of the change in LGC and STC prices between 2017/18 and 2018/19 based on spot price data. For STCs, we see that there is a relatively minor reduction over

time regardless of the method we adopt. For LGCs, we see that there is around a 5% increase using the one day and one month method and a 10% increase using the two year method.

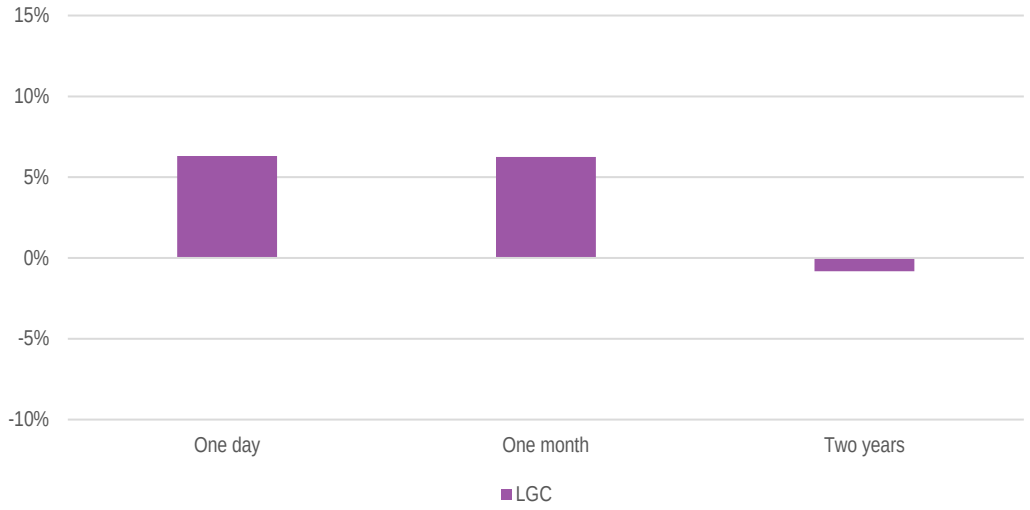
FIGURE 4.1 PERCENTAGE CHANGE IN LGC AND STC SPOT PRICES BETWEEN 2017/18 AND 2018/19 (NOMINAL)



SOURCE: MERCARI

Figure 4.2 sets out the estimated change in LGC prices between 2017/18 and 2018/19 using futures prices. Consistent with the spot price method, the one day and one month methods result in 6% increases. The two year approach results in a slight decrease which differs from the increase suggested by the spot price method.

FIGURE 4.2 PERCENTAGE CHANGE IN LGC FUTURES PRICES BETWEEN 2017/18 AND 2018/19 (NOMINAL)

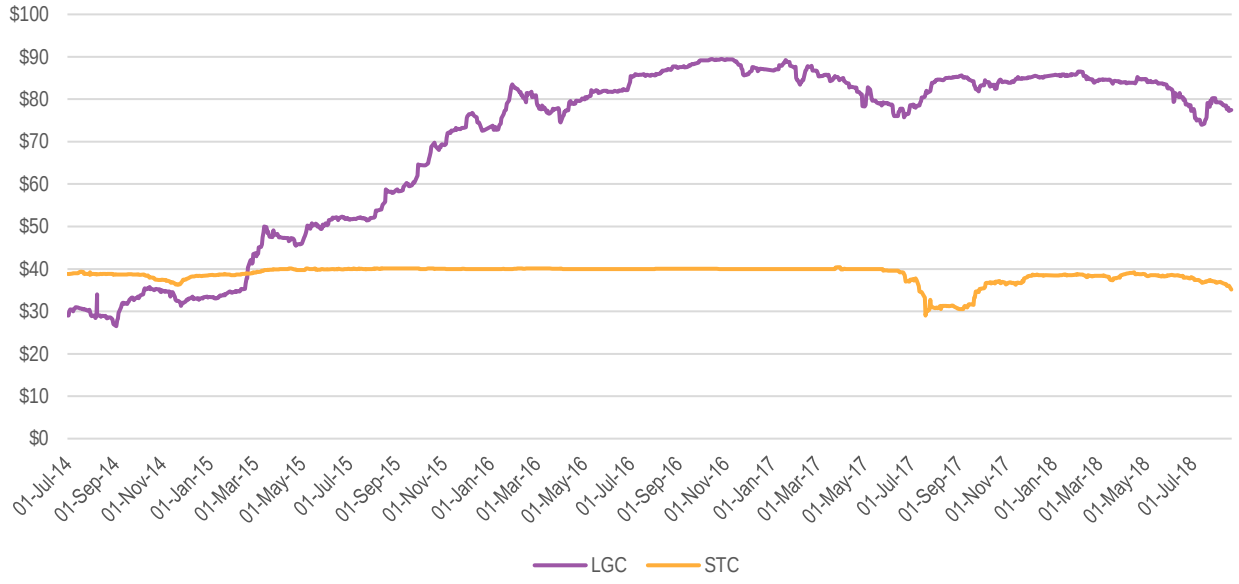


SOURCE: MERCARI

Figure 4.3 sets out the time series of LGC and STC spot prices in recent years and Figure 4.4 sets out LGC futures curves over the last four years. Consistent with Frontier's views in its 2017 report, the high spot prices for the latter over the last two years appear to have been driven by some businesses facing a short-term shortage of LGCs. This means that they must acquire the additional LGCs through the spot market rather than through power purchase agreements with large scale renewable generators. This reflects the recent unprecedented rise in the volume of large scale renewable generation projects coming on-line (as well as being announced) as it became clearer that the LRET obligation would be likely to continue to apply beyond 2020.

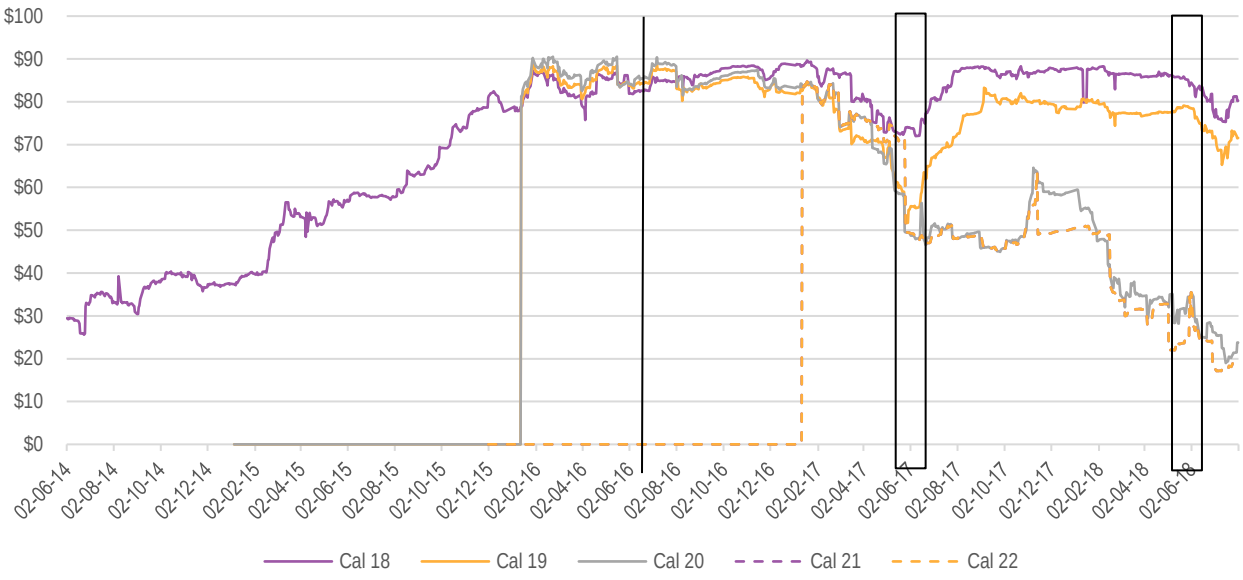
However, that volume of additional generation has also led to a decline in LGC futures prices over time, although recent prices have seen a modest increase over their equivalents from one year ago. We note that the Finkel review[23] was published about one year ago and that there was considerable uncertainty at that time concerning the future of the LRET and the value of LGCs.

FIGURE 4.3 TIME SERIES OF LGC AND STC PRICES ($/CERTIFICATE, NOMINAL)



SOURCE: MERCARI

FIGURE 4.4 TIME SERIES OF LGC FUTURES PRICES ($/CERTIFICATE, NOMINAL)

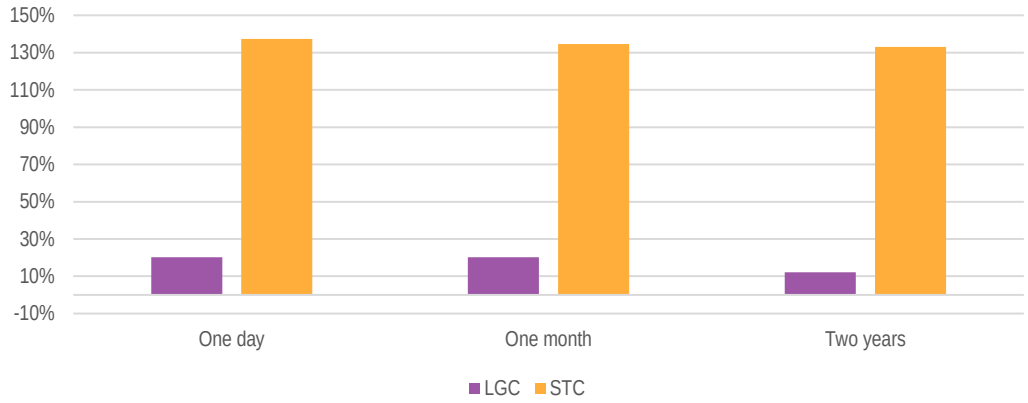


SOURCE: MERCARI

Combining the changes in LGC and STC prices with changes in the RPP and STP, Figure 4.5 overleaf provides an indication of the percentage change in the cost of complying with the LRET and the SRES from 2017/18 to 2018/19 across the three methods. We have used the futures prices for LGCs combined with the spot prices for STCs.

[23] Expert Panel, Independent review into the future security of the National Electricity Market: blueprint for the future, June 2017 (Finkel review).

FIGURE 4.5 PERCENTAGE CHANGE IN COST OF COMPLYING WITH THE LRET AND SRES BETWEEN 2017/18 AND 2018/19 (NOMINAL)



SOURCE: ACIL ALLEN ANALYSIS

For LGCs, we see that the increase in the RPP between 2017/18 and 2018/19 means that the change in expected costs of complying with the LRET is positive under all three methods (between 12% and 20%). The more significant impact concerns STCs where the change exceeds 130% regardless of the approach.

By way of background, each year the difference between the sum of STCs created in previous years and the sum of STCs surrendered in those years is calculated and used to adjust for disparities between the estimates made in previous years and the actual amounts. This cumulative adjustment aims to account for over- or under- supply of STCs in earlier years and aligns with the aim that all STCs are surrendered over time.

Differences arise due to the estimates for the STC creation number, relevant acquisitions and surrenders and exemptions for earlier years varying from later verified amounts. There may also be changes in the amount of liability reported by liable entities, for example because of error or resolution of a disputed amount.

By the end of 2017, 7.2 million more STCs had been created than liable entities were required to surrender. Consequently, this amount was added to the amount of STCs estimated to be created in setting the 2018 STP. We consider this to have driven the increase in the cost of complying with the SRES and this is consistent with the ACCC's analysis in its 2018 report[24].

The over-supply of STCs in 2017 was primarily due to a substantial boom in the installed capacity of solar photovoltaic (PV) systems which lead to a surge in STC creation. The estimate used in setting the 2017 STP of 15.1 million STCs was significantly below the actual creation amount for the year of 21.3 million. An over-estimate of relevant acquisitions in setting the 2017 STP was also a contributing factor.

The change in the cost of complying with ESCs between 2017/18 and 2018/19 is mainly driven in a half percentage point increase in the ESC Target rate from 8.0% to 8.5%. Noting once again the very small component of the typical small retail customer bill ESCs represent, we have measured the change as negligible (less than 0.1%).

The average increase across the one day, one month and two year methods in the total cost of complying with the LRET, SRES and ESC between 2017/18 and 2018/19 is around 54%. This contributes an average 3.2% and 4.3% increase to the total typical residential and small business customer bill, respectively. The different total bill increases reflect the different proportions of those bills represented by green costs (6% for residential customers and 8% for small business customers).

[24] ACCC 2018 report, p 216.

4.3 Conclusion

Each of the methods we adopted provide similar estimates of the change in the cost of complying with the SRES with the significant increase between 2017/18 and 2018/19 driven by the material rise in the number of certificates required to be surrendered.

For LGCs, the change in prices results suggest:

- increases using the one day and one month averaging methods for both spot and futures prices
- an increase using the two year spot price method and a slight decrease using the two year futures prices approach.

However, when combined with the increase in the RPP, the cost of complying with the LRET is expected to increase between 2017/18 and 2018/19 regardless of the specific pricing approach.

The key uncertainty with these results is the extent to which current (or past) spot and futures prices for LGCs and STCs provide a reasonable indicator of the likely LGC and STC prices in 2018/19. In this regard, we note that retailers operate with the same information that we have used.

As noted above, the average increase in the total cost of complying with green schemes between 2017/18 and 2018/19 is around 54% leading to an average 3.2% and 4.3% increase in the total residential and small business customer bill, respectively.

5 NETWORK COSTS

In supplying electricity to small retail customers, retailers incur network costs that include payments for the use of the transmission and distribution networks. We have estimated those network costs using publicly available tariff information.

5.1 Approach

Network tariffs for the three NSW electricity distribution businesses are publicly available. Through information on the components of those tariffs and the estimates of electricity consumption for a typical residential and small business customer, we can estimate the costs incurred by retailers supplying those customers in NSW for each year. A comparison between the bill of the typical customer in 2017/18 and 2018/19 provides an indication of the changes in costs incurred by retailers in supplying small retail customers.

5.2 Assessment and conclusion

Table 5.1 provides the results of the analysis for those typical customers across each distribution area as well as averaged across NSW with the latter weighted by the customer numbers in each area[25].

TABLE 5.1 PERCENTAGE CHANGE IN NETWORK TARIFFS BETWEEN 2017/18 AND 2018/19 (NOMINAL)

Distributor	Residential customer (6,500 kWh pa)	Small business customer (10,000 kWh pa)
Ausgrid	-0.65%	-0.45%
Essential Energy	2.33%	2.46%
Endeavour Energy	-0.51%	0.53%
NSW average	0.09%	0.65%

Note: NSW average weighted by distribution network customer numbers in 2017 Regulatory Information Notices to the Australian Energy Regulator (AER).

SOURCE: ACIL ALLEN ANALYSIS

The Table indicates that network charges have changed moderately between 2017/18 and 2018/19. Ausgrid has decreased its charges to both customer types, Essential Energy has increased its charges to both while Endeavour Energy has decreased residential charges and increased small

[25] Customer numbers obtained from each distribution network business's most recent Economic Benchmarking Regulatory Information Notice response available on the Australian Energy Regulator's (AER's) website located at https://www.aer.gov.au/networks-pipelines/network-performance?f%5B0%5D=field_accc_aer_report_type%3A1495.

customer charges. The NSW average changes are increases for both customer types reflecting the number of customers across the three distribution areas.

The AEMC's 2017 and 2018 reports and the ACCC's 2018 report did not draw conclusions regarding changes in NSW network prices between 2017/18 and 2018/19. The latter observed that NSW network costs appear to have levelled off or slightly declined in the last few years up until 2017/18[26].

[26] ACCC 2018 report, pp 34-35.

6 RETAIL COSTS

In supplying electricity to small retail customers, retailers must incur retail operating costs (the costs that a retailer incurs in supplying electricity to its customers) and cover their retail margin.

6.1 Approach

In last year's review, Frontier assessed its change in retail costs between 2016/17 and 2017/18 by first estimating what those costs were in 2016/17 and then determining the extent to which they had changed. It based the 2016/17 costs on allowances for retail operating costs and retail margins made by jurisdictional regulators in previous years.[27] Frontier noted the jurisdictions typically allowed between $100-120 per customer for retail operating costs plus a net real retail margin of between 5% and 6% and that some regulators also allowed an additional $40-50 for customer acquisition costs.

Frontier noted that the ACCC, in its 2017 Retail Electricity Pricing Inquiry Preliminary Report estimated NSW retail operating costs over the period between 2013/14 to 2015/16 at around $225 to $250 per customer with a retail margin over the period between 3% and 8%.

Frontier preferred the jurisdictional estimates on the basis that the ACCC provided little explanation of how it derived its estimates, noting that the use of the jurisdictional estimates was consistent with the AEMC's estimates of the proportion of total costs accounted for by each cost component for 2016/17.

Frontier then concluded that there was no publicly available evidence that these allowances had changed between 2016/17 and 2017/18.

We have estimated the change in retail costs using a different approach to that used by Frontier. We have based our assessment of the 2017/18 costs on a detailed study of efficient retailer costs and margins that we undertook for the Queensland Competition Authority (QCA) in May 2016[28]. That assessment involved:

- noting that the efficient retailer costs and margins have a fixed component and a variable component
- benchmarking those retailer costs and margins by analysing a large set of residential and small business retail electricity tariffs in NSW, Queensland, South Australia and Victoria and removing other cost components from those bills
- applying a line of best fit to the retailer operating cost and margin data to determine the relationship between the fixed and variable cost components with the fixed retailer costs and margins set at the mean value for the dataset.

[27] Frontier 2017 report, p 33.

[28] ACIL Allen, *Regulated Retail Prices for 2016/17: Estimating the Efficient Retailer Costs, Final Report*, May 2016.

This resulted in the following costs for 2015/16:

- a fixed component of $127.93 for residential customers and $181.56 for small business customers[29]
- a variable component (in cents per kWh) calculated for residential customers using formula (1) and for small business customers using formula (2):[30]

$$\text{Variable cost} = -0.0163 \times \text{Fixed cost} + 4.3382 \quad (1)$$

$$\text{Variable cost} = -0.0063 \times \text{Fixed cost} + 3.7274 \quad (2)$$

The variable component for 2015/16 is therefore 2.25 cents per kWh for residential customers and 2.58 cents per kWh for small business customers.

In the absence of benchmarking in subsequent years, we have assumed that the retailer costs and margin increased by CPI from 2015/16.

6.2 Assessment

The above approach leads to the estimates of the combined retailer operating costs and margins for the small residential and small business customer types set out in Table 6.1.

TABLE 6.1 ESTIMATE OF RETAILER OPERATING COSTS AND MARGINS, 2017/18

	Fixed	Consumption (kWh pa)	Variable component	Total
Small residential customer	$132.61	6,500	$141.48	$274.09
Small business customer	$188.20	10,000	$254.97	$442.37

SOURCE: ABS 6401.0 ALL GROUPS WEIGHTED AVERAGE OF CAPITAL CITIES CPI AND ACIL ALLEN ANALYSIS

By way of comparison, the ACCC, in its 2018 report, assessed retail operating costs (excluding the retail margin) for NSW residential customers as 8% of the total bill or around $130 per customer in 2016/17.[31] As set out further above, it also assessed retail margins at 10% of the typical residential customer retail bill of $1,697[32] or $170. On this basis, total retail costs and margin are around $300 per residential customer. Applying the AEMC's 2018 total retail costs and margin of 20% to the ACCC's typical residential customer retail bill of $1,697[33] equates to $339.40 for residential customers. Both these numbers are higher than our own estimate.

The ACCC did not report the electricity consumption figures that underlie its estimates. If the ACCC's consumption figures were higher than those for residential customers set out in Table 6.1 upon above, then the ACCC's estimate of total retail costs and margins would be closer to our own estimate.

The ACCC reported 2017/18 cost estimates for small business customers NEM-wide where retail operating costs were estimated at 4% (lower than residential 8%) and retail margin at 8% (same as residential)[34]. Typical NEM-wide bills were estimated at 26.5 c/kWh. Again, these are NEM wide numbers and the consumption amounts and weightings of small business customer numbers across the NEM regions were not identified in the ACCC's report. The ACCC also makes it clear that its small business estimates are based on a smaller (unquantified) sample.

Applying the c/kWh figure and margins provided to the small business customers consumption level above suggests total retail costs and margins for a small business customer of $318. This is lower than our own estimate.

We have estimated the 2017/18 retail operating costs and margins for NSW small retail customers using the costs set out in Table 6.1. This is because they are based on the analysis that we conducted

29 Id, p. 39.

30 ACIL Allen, *Regulated Retail Prices for 2016/17: Estimating the Efficient Retailer Costs, Final Report*, May 2016, pp vii and ix.

31 ACCC 2018 report, p 221 et seq.

32 Id, p 8.

33 The AEMC 2018 report did not quantify average electricity bills nor consumption figures. Figure 2, p vii indicates that median residential bills for NSW customers were around $1,500 in the second half of calendar 2017.

34 Id, fig 1.28, p 31.

for the QCA where the relevant bills and consumption data were known. That information was not publicly available for the ACCC and AEMC estimates.

We have found no evidence that there has been a real change in those costs and margins between 2017/18 and 2018/19. Neither the ACCC in its 2018 report nor the AEMC in its 2017 and 2018 reports assessed 2018/19 NSW retail costs and margins. We note that the ACCC considered that the retail operating costs and retail margins did not materially change across the NEM between 2015/16 and 2017/18[35] and the AEMC in its 2017 and 2018 reports did not draw the conclusion that retail costs and margins had materially changed in 2017/18. Accordingly, we have indexed the 2017/18 costs to 2018/19 using an inflation estimate of 1.81%[36].

6.3 Conclusion

We have estimated the 2017/18 retail operating cost and margins for NSW small retail customers using the costs set out in Table 6.1. This is because they are based on the analysis that we conducted for the QCA where the relevant bills and consumption data were known. That information was not publicly available for the ACCC and AEMC estimates.

In the absence of evidence that there has been a real change in those costs and margins between 2017/18 and 2018/19, we have indexed those 2017/18 figures using an inflation estimate of 1.81%. Thus, our estimated change in nominal retail costs and margins between 2017/18 and 2018/19 is 1.81%. We note that the results of our comparison between the changes in retail prices and estimated total costs between 2017/18 and 2018/19 set out in the next Chapter would not change were we to have adopted a different retail operating costs and margin change amount within a reasonable range.

35 ACCC 2018 report, fig 10.1, p 221.

36 ABS series 6401.0, All groups weighted average of capital cities CPI.

7 SUMMARY OF ANALYSIS AND CONCLUSION

In competitive markets, changes in prices would be expected to reflect changes in the cost of supply. This chapter:

- sets out the relevant 2017/18 and 2018/19 price offers to NSW residential and small business retail electricity customers (section 7.1)
- summarises our estimates of the 2018/19 costs that result from applying the change factors in costs to the 2017/18 retail cost components identified in the previous sections of this report (section 7.2)
- sets out the differences between the changes in offers and estimated costs between 2017/18 and 2018/19 (section 7.2)
- discusses the implications of that comparison and draws a conclusion (sections 7.3 and 7.4)

7.1 Offers

Table 7.1 sets out the weighted averages of offers for both residential (consuming 6,500 kWh pa) and small business customers (consuming 10,000 kWh pa) in each distribution area and across NSW in 2017/18 and 2018/19 as well as the percentage change between each.

We have weighted the sets of offers as follows:

- 17% of NSW customers are assumed to be on the average of standing offers[37]
- 83% of NSW customers are assumed to be on market offers where:
  - 10% of these are assumed to be on the lowest market offers (which equates to 8.3% of all NSW customers on lowest market offers) and
  - the remaining 90% of customers on market offers (74.7% of all NSW customers) are assumed to be on an offer set at the midpoint between the average standing offer and lowest market offer.

TABLE 7.1 WEIGHTED AVERAGES OF CUSTOMER OFFERS AND PERCENTAGE CHANGES BETWEEN 2017/18 AND 2018/19 (NOMINAL INCL. GST)

Area	Residential customer			Small business customer		
	2017/18	2018/19	Change (%)	2017/18	2018/19	Change (%)
Ausgrid	$2,197	$2,185	-0.5%	$4,072	$4,013	-1.4%
Essential Energy	$2,482	$2,445	-1.5%	$4,316	$4,261	-1.3%
Endeavour Energy	$2,191	$2,161	-1.4%	$3,239	$3,262	0.7%
NSW average	$2,263	$2,240	-1.0%	$3,937	$3,900	-0.9%

SOURCE: IPART AND ACIL ALLEN ANALYSIS

[37] The proportions of customers on standing and market offers are sourced from the AER at https://www.aer.gov.au/retail-markets/retail-statistics/nsw-small-customer-contract-types.

7.2 Costs and differences

In its previous reviews of retail electricity market performance, IPART found that, overall, prices have risen in line with rises in total costs, even where individual components of those costs may have decreased year to year.

This year is different. Our analysis suggests that, on average across NSW:

- prices overall decreased slightly from 2017/18 (by around 1% in nominal terms)
- network and retail costs increased very slightly (each by less than 0.5% in terms of their impact on the average bill) and the cost of complying with green schemes increased slightly more (by up to 4.5% in terms of the average bill impact)
- wholesale electricity prices decreased in the lead up to 2018/19 with the impact on retail prices sensitive to the analysis
- the movement in total costs from 2017/18 to 2018/19 is driven by the change in the wholesale electricity cost and is therefore also sensitive to the analysis.

As noted in Chapter 3, the analysis of the change in wholesale electricity prices has been undertaken using the same approaches in previous years. That is, by measuring the changes in the (expected) average cost over one day, one month and two years. The wholesale electricity price and, therefore, the total retail electricity costs have decreased when the wholesale price is averaged over one day and one month and increased when averaged over two years.

Table 7.2 summarises the results of our analysis. It sets out in percentage terms for NSW as a whole:

- the average impact on average residential and small customer bills of the changes in cost components between 2017/18 and 2018/19. These have been weighted by the proportions they contribute to 2017/18 prices[38] under the three different averaging periods that we used to estimate the wholesale cost component
- the average year on year impact on average bills of the total cost changes
- the average retail price changes between 2017/18 and 2018/19
- the resulting differences between the changes in prices and estimated impact of the total cost changes between 2017/18 and 2018/19[39].

Using the one day and one month averaging periods, the reduction in prices is not as large as the cost reductions (indicated in the Table by a positive difference). Using the two year averaging period, prices reduce but total costs increase (indicated by a negative difference).

TABLE 7.2 ESTIMATED PERCENTAGE IMPACT OF THE CHANGES IN COST COMPONENTS ON AVERAGE SMALL RETAIL CUSTOMER BILLS BETWEEN 2017/18 AND 2018/19 AND THE RESULTING DIFFERENCES BETWEEN THE CHANGES IN PRICES AND THE TOTAL IMPACT OF THE COST CHANGES (NSW AVERAGES, NOMINAL)

Cost component/price/difference	Residential customer			Small business customer		
Averaging period	One day	One month	Two years	One day	One month	Two years
Wholesale electricity	-11.2%	-12.5%	7.3%	-14.3%	-16.0%	9.2%
Cost of complying with green schemes	3.4%	3.3%	3.0%	4.5%	4.5%	4.0%
Network costs	0.04%	0.04%	0.04%	0.25%	0.25%	0.25%
Retail operating costs and margin	0.33%	0.33%	0.33%	0.22%	0.22%	0.22%
Total impact of the cost changes	-7.5%	-8.8%	10.6%	-9.3%	-11.0%	13.7%
Change in prices	-1.0%	-1.0%	-1.0%	-0.9%	-0.9%	-0.9%
Difference between changes in prices and total cost change impact	6.5%	7.8%	-11.7%	8.4%	10.1%	-14.7%

NOTE: Cost totals and differences between changes in prices and total cost change impacts may not add up due to rounding.

SOURCE: ACIL ALLEN ANALYSIS

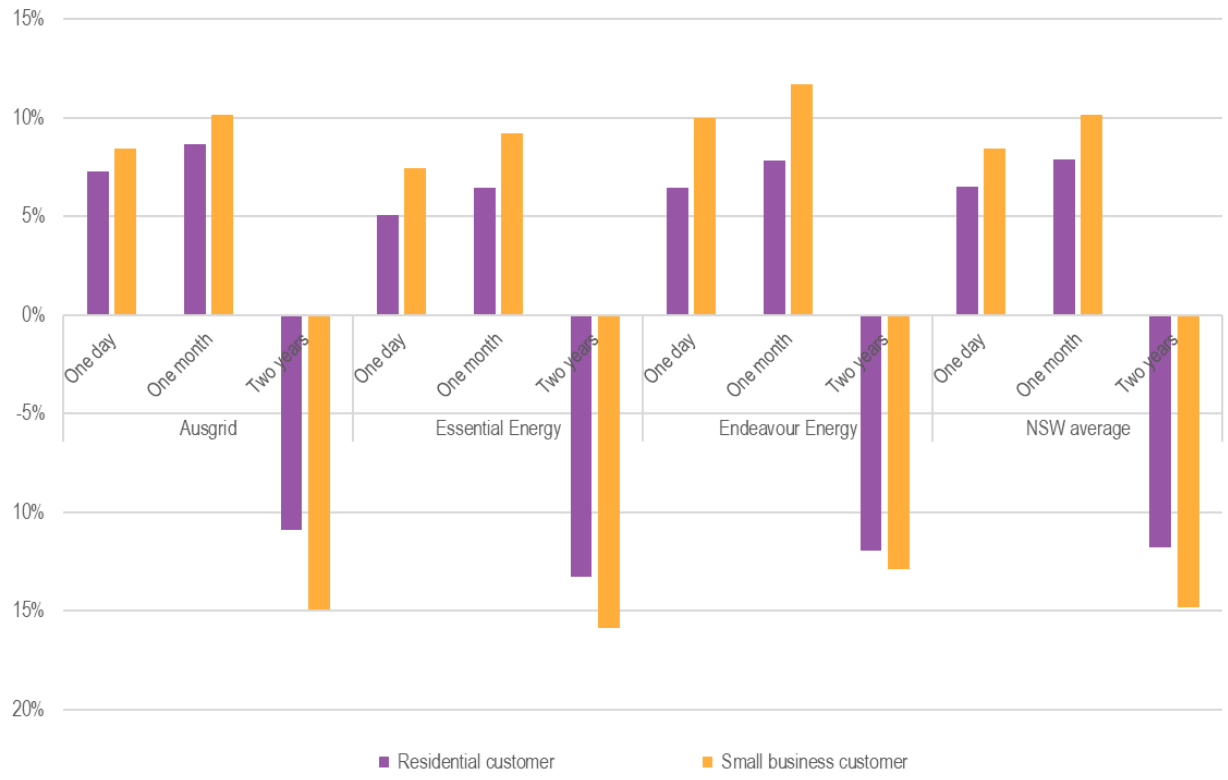
[38] The averages are also weighted across the different distribution network areas by network customer numbers to provide Statewide figures. See fn 14 for the source of network customer numbers. The full ranges by distribution network areas appear in Appendix A.

[39] The full range of 2018/19 costs by distribution network area appear in Appendix A.

The results are robust to variations on the proportions of customers on standing and market offers as well as the methodology for weighting the sets of offers and costs.

We also undertook the analysis for each NSW distribution area as the network cost component differs slightly in each[40]. Figure 7.1 below shows that those results are consistent with the Statewide averages above.

FIGURE 7.1 PERCENTAGE DIFFERENCES BETWEEN THE 2017/18 AND 2018/19 CHANGES IN PRICES AND ESTIMATED TOTAL IMPACT OF COST CHANGES (NOMINAL)



SOURCE: ACIL ALLEN ANALYSIS

7.3 Discussion

As noted above, where the changes in market prices over a period reflect the changes in costs, a conclusion can be drawn that the market is more competitive. Where price movements remain above those cost changes, it can be concluded the market is less competitive (given that, absent market barriers, there should be a greater opportunity for new providers to enter into the market).

From the analysis we have undertaken it could be inferred *both* that:

— because the reductions in prices between 2017/18 and 2018/19 appear smaller than the reductions in their estimated costs (based on the one day and one month averaging periods), there is a lack of competition in the NSW retail market for small electricity customers *and*

— because those prices have reduced while their estimated costs have increased (based on the two year averaging period), the market is competitive.

However, we consider it would be inappropriate to draw either inference based on one year on year change observed in isolation. Rather, we consider whether there may be (typically structural) market factors likely to have influenced that result and also assess it within the context of recent price and cost comparison trends[41].

40 The distribution area percentage differences appear in Appendix A.

41 This is known as the "workable competition" approach to assessing the effectiveness of competition.

In our view, a feature of the cost of purchasing wholesale electricity is relevant. That feature stems from the fact that that the wholesale electricity cost component is both material in terms of the total retail cost and, certainly in recent times, relatively volatile. One way that some retailers attempt to manage this risk is to absorb increases in this cost by reducing their operating margin. Instead, most retailers hedge that cost through other means including vertical integration (owning their own generation) and/or by contracting a mixture of financial hedging instruments. Because there is an inherent level of uncertainty involved in doing so, as well as transaction costs involved in changing hedged positions, changes in wholesale costs may take time to be passed through into retail prices[42].

This differs from two of the other retail cost components where there is normally a much higher degree of confidence regarding the expected costs and an ability to adjust retail prices more quickly for changes in them: network tariffs are published in advance and retail operating costs and margins are, generally speaking, less volatile and more manageable than wholesale electricity costs.

To recap, we consider that there is a feature of the wholesale cost component of retail electricity costs that can explain why the recent falls in that component between 2017/18 and 2018/19 (estimated using the one day and one month averaging period) have not been fully reflected in the movements in prices over that year.

We have considered the available evidence regarding the relationship between price and cost changes in recent years. In this regard we note that, since small retail customer prices were deregulated in NSW:

- IPART concluded that the abolition of the carbon tax, a green compliance cost, in 2014 was passed through into retail prices in 2014/15[43]
- the 2015 falls and subsequent rises in wholesale electricity costs have appeared to flow through to total retail costs:
  - IPART concluded in November 2016 that increases in wholesale costs between June and September 2016 were passed through to retail prices[44]
  - last year, Frontier Economics found that 2016/17 wholesale costs more than doubled using a point in time method but that the retail price changes implied that a much smaller proportion of costs were passed through[45]
- there is no evidence to suggest that the changes in total retail costs have otherwise differed from year to year minor increases or decreases in network charges and there has been no finding that retail operating costs and margins have materially changed during the period[46].

7.4 Conclusion

On the basis of the above analysis and evidence, we consider that competition continues to provide a restraint on prices and, therefore, the NSW small customer retail electricity market is a "workably competitive" market.

42 A view also reached by the ACCC (2018 report, p 48).

43 IPART, Review of the performance and competitiveness of the retail electricity market in NSW from 1 July 2014 to 30 June 2015, Energy – final report, November 2015, p 53.

44 IPART, Review of the performance and competitiveness of the retail electricity market in NSW from 1 July 2015 to 30 June 2016, Energy – final report, November 2016, p 59.

45 Frontier Economics, Cost drivers of recent retail electricity and gas prices for residential customers in NSW, November 2017, p 35.

46 See further the references to the IPART and Frontier reports in footnotes 5 to 7 as well as the ACCC 2018 report, fig 10.1, p 221.

A COST AND DIFFERENCE ANALYSIS DETAILS

Table A.1 sets out our estimates of the annual costs involved in supplying those residential and small business customers in each distribution area and across NSW in 2018/19. The estimates have been derived by applying the cost component proportions established in Chapter 2 and the change amounts set out in Table 7.2 to the 2017/18 offers set out in Table 7.1.

TABLE A.1 ESTIMATES OF SMALL RETAIL CUSTOMER COSTS 2018/19 (NOMINAL INCL. GST)

Area	Method	Residential customer	Small business customer
Ausgrid	One day	$2,026	$3,676
	One month	$1,996	$3,605
	Two years	$2,424	$4,614
Essential Energy	One day	$2,320	$3,944
	One month	$2,287	$3,869
	Two years	$2,770	$4,938
Endeavour Energy	One day	$2,022	$2,936
	One month	$1,992	$2,880
	Two years	$2,419	$3,682
NSW average	One day	$2,094	$3,572
	One month	$2,063	$3,503
	Two years	$2,504	$4,478

SOURCE: ACIL ALLEN ANALYSIS

Table A.2 and Table A.3 set out the range of estimated proportions for each 2018/19 cost component for both residential and small business customers across the three distribution network areas.

TABLE A.2 ESTIMATES OF PROPORTIONS OF COSTS FOR RESIDENTIAL CUSTOMERS IN 2018/19

Component	One day	One month	Two years
Wholesale electricity	23.3% to 23.6%	22.2% to 22.5%	36.1% to 36.5%
Cost of complying with green schemes	10.0% to 10.2%	10.1% to 10.3%	8.1% to 8.2%
Network costs	46.3% to 47.1%	47.0% to 47.8%	38.7% to 39.4%
Retail operating costs and margin	19.6% to 19.9%	19.9% to 20.2%	16.4 to 16.6%

TABLE A.3 ESTIMATES OF PROPORTIONS OF COSTS FOR SMALL BUSINESS CUSTOMERS IN 2018/19

Component	One day	One month	Two years
Wholesale electricity	30.3% to 30.7%	29.0% to 29.4%	44.8% to 45.2%
Cost of complying with green schemes	13.7% to 13.9%	13.9% to 14.1%	10.5% to 10.6%
Network costs	41.9% to 42.6%	42.7% to 43.4%	33.4% to 34.0%
Retail operating costs and margin	13.4% to 13.5%	13.6% to 13.8%	10.7% to 10.8%

SOURCE: ACIL ALLEN ANALYSIS

Table A.4 sets out on a distribution network area and Statewide average basis the percentage differences between the 2017/18 and 2018/19 changes in small retail customer offers and the estimated impact on average bills of the changes costs of supplying them set out in Table 7.2.

TABLE A.4 PERCENTAGE DIFFERENCES BETWEEN THE 2017/18 AND 2018/19 CHANGES IN PRICES AND ESTIMATED TOTAL IMPACT OF COST CHANGES (NOMINAL)

Area	Method	Residential customer	Small business customer
Ausgrid	One day	7.3%	8.4%
	One month	8.7%	10.2%
	Two years	-10.9%	-15.0%
Essential Energy	One day	5.1%	7.4%
	One month	6.5%	9.2%
	Two years	-13.3%	-15.9%
Endeavour Energy	One day	6.4%	10.0%
	One month	7.8%	11.7%
	Two years	-11.9%	-12.9%
NSW average	One day	6.5%	8.4%
	One month	7.8%	10.1%
	Two years	-11.7%	-14.7%

SOURCE: ACIL ALLEN ANALYSIS

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