AEMC

REVIEW

Australian Energy Market Commission

FINAL REPORT

2014 Residential Electricity Price Trends

To COAG Energy Council 5 December 2014

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AEMC, 2014 Residential Electricity Price Trends Report, 5 December 2014, Sydney.

About the AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

Box 1 Note on this year's report

The 2014 Residential Electricity Price Trends report provides information about the factors expected to drive movements in residential electricity prices in each state and territory of Australia over the next three years.

The purpose of the report is to provide an understanding of:

(a) the cost components of the electricity supply chain that contribute to the overall price paid by residential consumers; and

(b) the expected trends in each of these components.

By providing this information, the report seeks to strengthen consumer understanding and engagement in the electricity market.

The average prices presented in this report are specific to the 'representative consumer' and do not reflect the pricing outcomes for all residential consumers. The representative consumer is different for each jurisdiction and is determined using a representative annual consumption level provided to us by state and territory government officials.

This report does not provide, and should not be regarded as providing, forecasts of future prices, including those which are set by jurisdictional regulators or governments.

The information on prices and trends in the report has been based on information from the jurisdictions, retailers and the Australian Energy Regulator up to 1 December 2014, and modelling undertaken for the Australian Energy Market Commission.

It is important to recognise that our results are limited by the data used and the underlying assumptions made in determining average prices and trends.

Information on average prices in future years may differ from actual outcomes as they are sensitive to uncertainties and changes in the factors that drive prices across the electricity supply chain. These include changes in:

- energy consumption by consumers across the states and territories;
- government policies, such as those relating to the Renewable Energy Target and jurisdictional environmental schemes;
- network prices following the finalisation of new regulatory determinations for individual network businesses; and
- retail price deregulation, as jurisdictions may review their existing approaches for setting regulated prices.

Executive summary

This is the fifth annual residential electricity price trends report prepared by the Australian Energy Market Commission (AEMC) at the request of the Council of Australian Governments' (COAG) Energy Council.

The report provides information on the supply chain components expected to affect the trends in residential electricity prices for each state and territory of Australia over the three years from 2013/14 to 2016/17. By providing information on the drivers of potential movements in prices, the report seeks to strengthen consumer understanding and engagement in the electricity market.

Residential electricity prices are expected to fall in 2014/15 in most states and territories following the removal of the carbon price. The extent of this decrease varies between jurisdictions, as the savings are offset by changes in other supply chain components that make up electricity prices.

In 2015/16 and 2016/17, prices are expected to show modest declines or be stable across most states and territories. This trend is being driven by subdued wholesale energy costs and lower network prices. Network prices are expected to fall in response to reduced financing costs and declining growth in peak demand. These factors are offset to a degree by upward pressure from the costs of different government environmental policies.

We note that the underlying price trends and their drivers will vary across jurisdictions and over time. This reflects differences between population, climate, consumption patterns, government policy and other factors across the states and territories.

Key drivers and trends of residential electricity prices

Price trends identified in this report are not a forecast of actual prices, but rather a guide as to what may influence prices based on current expectations, assumptions and government legislation. Actual price movements will be influenced by how retailers compete in the retail market and changes in government legislation.

Key drivers

We have identified two key drivers of price trends over the period 2013/14 to 2016/17:

- **Repeal of the carbon pricing mechanism:** Carbon pricing changed the relative cost of different generation technologies, making low emissions generators, such as wind and gas, cheaper relative to coal-fired generators. As most electricity in Australia is supplied by coal-fired generators, a price on carbon emissions increased wholesale energy purchase costs. These additional costs were reflected in the retail electricity prices paid by consumers. With the carbon price now repealed, generators no longer face these costs.

Across Australia, the carbon price was estimated to have made up 5.4 per cent to 10.5 per cent of the representative consumer's bill in 2013/14, depending on the jurisdiction. On a national average basis over the same period, the carbon price was estimated to have contributed around 8 per cent to the representative consumer's bill in 2013/14. While savings from the repeal of the carbon price will differ by jurisdiction and by retailer, the reductions presented in this report are broadly similar to those announced by retailers and reported on by the Australian Competition and Consumer Commission.[1]

- **Falling electricity consumption:** Declining annual electricity consumption has contributed to excess generation capacity in the National Electricity Market. This has put downward pressure on wholesale electricity prices, which is expected to continue over the period of this year's report.

  Analysis by Frontier Economics shows that if electricity consumption declines further than is forecast, wholesale electricity prices are unlikely to fall materially further. Prices in the spot market are currently close to the variable costs of generators. This effectively acts as a price floor because generators that cannot recover their variable costs are unlikely to offer capacity into the market and may temporarily or permanently exit.

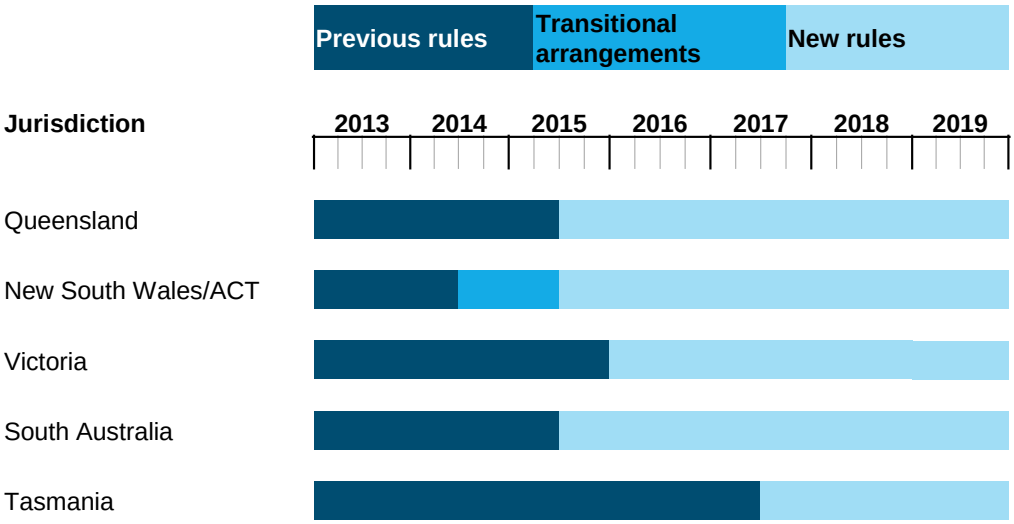
  Low wholesale electricity prices are unlikely to be sustained if unprofitable generators exit the market. The 1,000 MW Wallerawang power station and the 150 MW Redbank power station, both in New South Wales, closed permanently in 2014, along with a number of announced temporary closures, such as the 385 MW Swanbank E in Queensland. As generators exit the market, the reduction in supply will eventually cause wholesale prices to rise to a level that supports the financial viability of the remaining generators.

An additional factor that will influence price trends is the new network regulatory arrangements that were implemented in November 2012. The new rules provide the Australian Energy Regulator (AER) with more tools to determine the efficient costs of regulated network businesses, including the ability to use different approaches to estimate the regulated rate of return and requirements to benchmark network businesses against each other and publish performance reports.

The full application of the new rules will apply to the next regulatory determination cycle, which starts in July 2015 for the Queensland, New South Wales, Australian Capital Territory and South Australian distribution networks, as shown in Figure 1. A detailed overview of the network regulation reform process is in Chapter 2.

1 Australian Competition and Consumer Commission (ACCC), *Monitoring of prices, costs and profits to assess the general effect of the carbon tax scheme in Australia*, report to the Minister, ACCC, October 2014.

Figure 1 Stages of distribution network regulation reform



Trends in the supply chain cost components

In setting out the drivers of movements and trends in residential electricity prices for each state and territory of Australia, we have analysed the following components of the electricity supply chain:

- **Competitive market sector**: Wholesale electricity purchase costs and the costs retailers face in supplying electricity to residential consumers.
- **Regulated network sector**: Prices associated with the transmission and distribution networks that connect power stations and end users.
- **Environmental policies**: Policies introduced by the Commonwealth and/or state and territory governments to reduce greenhouse gas emissions and support other environmental objectives.

Competitive market sector

Wholesale electricity prices are expected to remain generally stable over the reporting period as electricity consumption growth is forecast to remain weak and there is currently an oversupply of generation capacity. In addition to falling electricity consumption, the Renewable Energy Target is also contributing to the oversupply, with the additional costs of this form of generation partially offset by suppressed wholesale prices.

However, this effect is unlikely to be sustained, as depressed wholesale prices will continue to force unprofitable generators to exit the market and the reduction in supply will eventually put upward pressure on wholesale electricity prices. As this occurs, the costs of the Renewable Energy Target will become more apparent through consumers' retail bills.

We note that the precise time at which a generation business decides to remove capacity from the market is uncertain as it is subject to a range of commercial,

economic and strategic considerations. The recovery in wholesale energy prices in response to generator withdrawals is an important market rebalancing mechanism, as it will likely result in prices moving to a level that supports the financial viability of the generators in the industry.

The retail component of competitive sector costs is not explicitly estimated in this report. This is because retailers have different business models and costs structures, and estimating the retail component based on a representative price is unlikely to be a true reflection of individual retailers' operating costs and return on investment.

Competitive market sector costs account for around 40 per cent of the national average electricity price in 2014/15 and this proportion is expected to be stable over the period of this year's report.

Regulated network sector

Growth in regulated network prices is expected to continue to moderate. This reflects a reduction in factors such as the regulated rate of return, expectations of peak and average demand and changes to jurisdictional reliability standards. In particular, the regulated rate of return, which is a significant driver of network prices, has been decreasing in recent years reflecting lower financing costs.

The AER will make a series of regulatory determinations applying to New South Wales, the Australian Capital Territory, South Australia and Queensland in 2015, Victoria in 2016 and Tasmania (distribution) in 2017. These determinations will be made under the new network regulation rules introduced in 2012. Future movements in network prices will depend on the outcomes of the final determinations.

The AER's draft decisions for the New South Wales, Australian Capital Territory and Tasmanian (transmission) network businesses were published on 27 November 2014 and proposed reductions in revenue of between 20-30 per cent compared to the previous regulatory period.

A rule change request related to the way distribution businesses set and structure network prices was recently considered by the AEMC. In the final rule determination, which was published on 27 November 2014, the AEMC amended the distribution network pricing principles to require distribution businesses to set and structure network prices on a more cost reflective basis, which will provide more efficient pricing signals to consumers. Network prices based on these new arrangements will take effect no later than 2017 in all states and territories.[2]

Finalisation of the distribution network pricing rule change, combined with the new network regulatory arrangements that are currently being implemented by the AER, will conclude a substantial body of work that has reformed the rules that govern the way network businesses are regulated in Australia. As these changes are applied to

2 AEMC, *National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, final rule determination, 27 November 2014.

future regulatory determinations by the AER, consumers will realise the benefits of greater efficiencies.

Regulated network prices account for around half of the national average electricity price in 2014/15. This proportion is expected to be stable over the period of this year's report.

Environmental policies

Environmental policy costs are expected to increase across most jurisdictions due to rises in the costs associated with the Renewable Energy Target in its current form and the effect of legacy solar feed-in tariff schemes.

On a national average basis, retail costs associated with the Renewable Energy Target are expected to increase at an annual average rate of 4.6 per cent over the reporting period. This is based on existing government legislation and assumes that the Renewable Energy Target scheme continues to be applied over the reporting period under its existing design.

Renewable Energy Target and jurisdictional environmental schemes account for 8 per cent of the national average electricity price in 2014/15. By 2016/17, this is expected to increase to over 8 per cent under the current policy settings. Costs associated with the solar feed-in tariff schemes are higher in some jurisdictions and expected to be are a key driver of price movements in Queensland.

Summary of jurisdictional results

Average prices in this report are based on representative consumption levels that are specific to each jurisdiction and were provided to us by respective government departments. The consumption level for the representative consumer has a significant impact on the level of prices reported and, to a lesser degree, the expected price movements.

Information on expected trends in *standing offers* and, where possible, *market offers* for the representative consumer is provided in this report. The results are expressed as nominal cents per kilowatt hour (c/kWh) values. These values are exclusive of GST.

A summary of the trends and drivers of residential electricity prices over the reporting period 2013/14 to 2016/17 follows for each state and territory. Where possible, potential savings available to the representative consumer from switching from the *standing offer* to a *market offer* have been identified.

The *market offer* value presented in this report is unlikely to be the cheapest price available to residential consumers. There a range of different products available in the market and the actual savings for consumers will depend on their own individual circumstances.

Queensland

- Residential electricity prices in South East Queensland are expected to decrease by 0.9 per cent in 2014/15 and then increase by 6.2 per cent in 2015/16 and 4 per cent in 2016/17. This is equivalent to an average annual increase of 3.2 per cent for the representative consumer over the reporting period.

- In 2014/15, the savings from the removal of the carbon pricing mechanism are mostly offset by increases in Queensland Solar Bonus Scheme costs and network prices. The main driver of increased network prices in 2014/15 is lower than forecast electricity consumption.

- In Energex's regulatory proposal for the 2015-20 regulatory period, distribution network prices are proposed to increase by 15 per cent in 2015/16 and are the main driver of the 6.2 per cent increase in total price in this year. In 2016/17, a number of different factors are expected to contribute to the 4 per cent price increase, including environmental policy costs, wholesale energy costs and network prices.

- Actual outcomes over the next two years will depend on the AER's final distribution network determination for Energex and policy decisions made by the Queensland Government on the recovery of costs associated with the Queensland Solar Bonus Scheme.

- In 2013/14, the representative consumer may have saved around 7 per cent by switching from the regulated *standing offer* to the representative *market offer*. This equates to a saving of $93 off the total annual bill.

New South Wales

- Residential electricity prices in New South Wales are expected to decrease by 9.7 per cent in 2014/15 and 11 per cent in 2015/16, before increasing by 2.2 per cent in 2016/17. This is equivalent to an average annual decrease of 5.8 per cent for the representative consumer over the reporting period.

- The decrease in 2014/15 reflects the removal of the carbon price and small decreases in distribution network prices. The trend in prices between 2014/15 and 2016/17 reflects a decrease in distribution network prices in 2015/16, as set out in the AER's draft decisions for the 2014-19 regulatory period. The AER has proposed large reductions to the network businesses' rate of return, and capital and operating expenditure, compared to the 2009-14 regulatory period. The trend in network prices is subject to the AER's final decision in April 2015.

- In 2013/14, the representative consumer may have saved around 8 per cent by switching from the regulated *standing offer* to the representative *market offer*. This equates to a saving of $165 off the total annual bill.

Australian Capital Territory

- Residential electricity prices in the Australian Capital Territory (ACT) are expected to decrease by 7.2 per cent in 2014/15 and 7 per cent in 2015/16 before increasing by 2.1 per cent in 2016/17. This is equivalent to an average annual decrease of 4 per cent for the representative consumer over the reporting period.

- In 2014/15, prices have decreased by 7.2 per cent for the representative consumer, reflecting the removal of the carbon price and lower distribution network prices. In 2015/16, prices are expected to fall following the proposed reductions in network revenues set out in the AER's draft decisions for ActewAGL and Transgrid for the 2014-19 regulatory period. In 2016/17, this trend is reversed with a moderate increase in prices expected.

- Most consumers in the ACT are on the regulated *standing offer*, although residential consumers have the opportunity to shop around for more competitive *market offers*. We note that Origin Energy has recently entered the retail market, which will expand the choice of *market offers* available to consumers.

Victoria

- Residential electricity prices in Victoria are expected to decrease by 5.5 per cent in 2014/15, before increasing by 2.3 per cent in 2015/16 and 1.5 per cent in 2016/17. This is equivalent to an average annual decrease of 0.6 per cent for the representative consumer over the reporting period.

- In 2014/15, the savings due to the removal of carbon pricing mechanism are partially offset by increases in distribution network prices set under the current AER determination, which is the last regulatory period in which the now superseded network regulatory arrangements apply. The trend in price movements between 2014/15 to 2016/17 reflects below inflation increases in most supply chain cost components.

- In 2013/14, the representative consumer may have saved around 16 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $246 off the total annual bill.

South Australia

- Residential electricity prices in South Australia are expected to fall in the first two years of the reporting period, with decreases of 3.9 per cent expected in 2014/15 and 3.5 per cent in 2015/16, followed by an increase of 0.2 per cent in 2016/17. This is equivalent to an average annual decrease of 2.4 per cent for the representative consumer over the reporting period.

- In 2014/15, the savings due to the repeal of the carbon price are partially offset by expected increases in network prices, as determined under the previous

network regulatory arrangements, and South Australia's solar feed-in tariff scheme. The downward trend in prices in the following two years reflects expected falls in most supply chain cost components, particularly wholesale energy.

- Wholesale energy costs are expected to fall by around 20 per cent in the South Australian region across the reporting period due to a growing oversupply of generation capacity. The oversupply is a result of falling energy consumption and growth in renewable generation under the Renewable Energy Target, most of which has occurred in South Australia.

  Low wholesale energy prices offset the costs of the Renewable Energy Target for South Australian consumers in the short term. In the medium term, wholesale prices are likely to rise in response to unprofitable generators exiting the market. If this occurs, the cost of meeting the Renewable Energy Target will become more apparent through South Australian consumers' retail bills.

- In 2013/14, the representative consumer may have saved around 10 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $189 off the total annual bill.

Tasmania

- Residential electricity prices in Tasmania are expected to decrease by 10.3 per cent in 2014/15 and 0.7 per cent in 2015/16, and then increase by 2.3 per cent in 2016/17. This is equivalent to an average annual decrease of 3 per cent for the representative consumer over the reporting period.

- The main driver of the price trend in Tasmania is the removal of the carbon price in 2014/15 and falling wholesale energy purchase costs. Environmental policy costs and regulated network prices are expected to increase moderately over the reporting period.

- The Tasmanian retail electricity market is undergoing a period of change with the introduction of full retail competition from 1 July 2014. As this has only recently occurred, competition is yet to become effective for residential electricity consumers.

Western Australia

- Residential electricity prices in Western Australia are currently set by the Western Australian Government rather than through competition in the retail market or by an independent regulator. The Western Australian Government subsidises residential electricity prices such that 2013/14 residential prices would need to increase by 30 per cent to reflect the total estimated cost of supply.

- Electricity prices are expected to increase by an annual average of 3.3 per cent, which consists of a decrease of 4.1 per cent in 2014/15 and increases of 7 per cent

per year in 2015/16 and 2016/17, as set and determined by the Western Australian Government. The increases in 2015/16 and 2016/17 are budget assumptions and the Western Australian Government will make a decision on prices closer to the respective implementation dates.[3]

- The Western Australian Government is currently undertaking a wide-ranging review of the electricity market that will examine the wholesale and retail market structure and the incentives for participants to make efficient investments and minimise costs.

Northern Territory

- Residential electricity prices are set by the Northern Territory Government, which subsidises residential electricity prices such that the prices paid by consumers are less than the cost of supply.

- Residential electricity prices in the Northern Territory are expected to decrease by 0.6 per cent in 2014/15, before increasing by 3.7 per cent in 2015/16 and 2.5 per cent in 2016/17. This is equivalent to an average annual increase of 1.9 per cent for the representative consumer over the reporting period. As prices are set by the Northern Territory Government, the retail prices paid by consumers do not necessarily reflect underlying costs, nor follow cost trends.

- The key driver of the price trend is higher network costs due to a new asset management regime and higher regulatory depreciation allowance. This increase is offset in 2014/15 by the repeal of the carbon price.

- The Northern Territory Government intends to promote more competition in electricity supply through regulatory reform. Where competition is not possible or effective, there is an intention to more closely align the Northern Territory's regulatory arrangements with the National Electricity Market.

Overview of our methodology

For this report we are required to estimate *standing offer* and *market offer* prices where these are generally available in each state and territory.

The terms and conditions of *standing offer* contracts are regulated by law, which means that retailers cannot change them. For *market offer* contracts, the terms and conditions must adhere to minimum requirements governed by law, such as consumer protection requirements. Outside of these minimum requirements, retailers have greater flexibility in how they design their offers in response to consumer preferences and retail market conditions. Generally, the terms of *market offer* contracts vary from *standing offer* contracts and, for example, could include incentives, different billing periods, and additional fees and charges.

3 The Government of Western Australia, *2014-15 Budget, Economic and Fiscal Outlook*, Budget Paper No. 3, 8 May 2014.

Where retail prices are still regulated, *standing offer* prices are set by jurisdictional regulators or governments. In Queensland, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory (ACT) there is currently a regulated *standing offer* price for residential consumers. In the other jurisdictions, retail prices have been deregulated and *standing offer* prices are set by electricity retailers in the competitive market.

Consumers will typically be on a *standing offer* by default if they have not shopped around for their electricity. *Standing offer* prices are generally the benchmark prices against which retailers make discounted *market offers*.

***Standing offer* contracts**

Regulated *standing offer* prices used in this report are based on published prices that were available in 2013/14 and 2014/15. Where prices are set by governments, electricity offers published by the electricity retailers in those jurisdictions were used. Estimates of future movements in *standing offer* prices, where published *standing offers* are unavailable, have been determined according to the expected trend in the underlying supply chain cost components.

***Market offer* contracts**

Market offers are set by energy retailers and are provided to residential consumers under competitive market contracts. The 2013/14 *market offer* price for the representative consumer was determined using data and information supplied by retailers.[4] All discounts associated with the offers were assumed to be awarded, while no penalties were incurred. This offer price with discounts has then been used to extrapolate future price trends, according to estimates of movements in the supply chain cost components.

As part of this analysis, a range of *market offers* available to meet the different preferences and circumstances of consumers were identified. As well as a large dispersion in price, there are also different products designed for consumers with varying consumption levels, different billing structures and monetary and non-monetary discounts. Our analysis, presented in Chapter 4, demonstrates that consumers who are already on *market offers* may realise even greater benefits from shopping around and comparing offers.

Representative consumption levels and offer prices

The average price for the representative consumer for the base year of 2013/14 was estimated by converting each retailer's offer to a single c/kWh value. This conversion was based on an assumed set of annual consumption levels provided by the jurisdictions and which differ between each state and territory. The selection of these

4 For Victoria, two separate retailer market prices, for 2013 and 2014, were used as the basis of our representative *market offer*. This reflects that network prices in Victoria are adjusted on a calendar year basis.

consumption levels has a significant impact on the resulting c/kWh values, and to a lesser degree, the expected price movements presented in this report.

A representative offer price for each network region was then calculated by weighting the offers by the market share of the respective retailers. In jurisdictions where there are multiple network areas, the prices were weighted again by the share of residential consumers in each distribution area to calculate a jurisdictional average c/kWh value.

Consumers with different annual consumption levels to the representative annual consumption levels used in this report, and consumers who are on offers that are markedly different to the representative *standing offers* and *market offers* in this report, will experience different price outcomes.

The effect of different household consumption levels on the price paid by the representative consumer in 2013/14 was also considered. Table 1 shows the cost of electricity associated with low, medium and high consumption households for those jurisdictions where *market offers* are generally available. In general, as consumption increases, the c/kWh value of electricity decreases. The extent of this effect differs between jurisdictions, depending on the structure of the offer.

Table 1 Representative *market offer* price and total bill for a range of consumption levels

Jurisdiction	Low consumption (2,500 kWh)		Jurisdiction-specific representative consumption (indicated below)		High consumption (9,500 kWh)	
	cents per kWh	$ per annum	cents per kWh	$ per annum	cents per kWh	$ per annum
South East Queensland	31.98	$800	28.71 (4,533 kWh)	$1,302	26.61	$2,528
New South Wales	36.12	$903	28.76 (6,500 kWh)	$1,869	27.77	$2,638
Victoria	35.56	$889	28.82 (4,645 kWh)	$1,339	25.15	$2,389
South Australia	36.68	$917	32.65 (5,000 kWh)	$1,633	31.84	$3,025

As noted above, the objective of this report is to provide an overview of the possible movements and drivers of residential electricity prices. The information provided in the report seeks to strengthen consumer participation in the electricity market by providing information about the drivers of potential future movements in residential electricity prices. The numbers presented in this report are not forecasts of actual average prices that individual consumers may see on their bills.

Contents

1 Introduction

1.1 Purpose of this report

This is the fifth annual residential electricity price trends report prepared by the Australian Energy Market Commission (AEMC) at the request of the Council of Australian Governments' (COAG) Energy Council (formerly called the Standing Council on Energy and Resources).[5]

This year's report provides information on possible future trends in residential electricity prices for each state and territory across Australia from 2014/15 to 2016/17, with 2013/14 used as the base year for estimating price movements in the following years. Trends in the electricity supply chain cost components that are expected to contribute to the overall prices paid by households over the next three years are identified and discussed.

By providing information about the factors that are likely to influence residential electricity prices in the future, this report seeks to strengthen consumer participation in the electricity market.

Importantly, our analysis of possible future price trends is based on assumptions and modelling of future costs and are not forecasts of either regulated prices set by jurisdictional regulators and governments, or of prices offered by retailers in the competitive market.

1.2 COAG Energy Council Terms of Reference

In accordance with the COAG Energy Council Terms of Reference, this report provides:

- trends in both *standing offer* and *market offer* prices, expressed as a single nominal cents per kilowatt hour (c/kWh) value. This is based on a representative residential consumption level for each state and territory;[6] and
- a breakdown of the supply chain cost components that contribute to residential retail electricity prices. These are again expressed as a c/kWh value for each state and territory.[7]

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5 At its 30 April 2009 meeting, COAG tasked the then Ministerial Council on Energy (MCE) to provide it with three reports detailing possible future trends in residential electricity prices for each state and territory of Australia. The first electricity price trends report was undertaken by the Commonwealth Department of Resources, Energy and Tourism and provided to the MCE in November 2009. Following that, the former MCE requested that the AEMC prepare the report on an annual basis. Copies of previous reports can be found on the AEMC website at http://www.aemc.gov.au/.

6 State and territory jurisdictions provided consumption values that reflect the annual electricity consumption of a representative consumer. These values are set out in Table 1.1.

Using 2013/14 as the base year, possible trends in residential retail electricity prices have been provided for each year to 2016/17 (the reporting period). Our analysis is presented separately for each state and territory, as well as in an aggregated form for the national summary. All prices are exclusive of GST.

1.2.1 Definition of supply chain cost components

In our report, the supply chain cost components have been grouped into the following segments:

- The *competitive market sector* for the purchase of wholesale electricity and the retail sale of electricity. Wholesale electricity costs include purchases from the spot market and financial hedging contracts, ancillary services, market fees and energy losses from transmission and distribution networks. The retail component captures all of the costs that arise from retailing electricity and marketing to consumers, as well as any return to the owners of the retailer for investing in the business.

- The *regulated network* sector connects power stations to the end users who consume electricity. Regulated network costs refer to the costs associated with building and operating transmission and distribution networks, including a return on capital and metering costs. These costs are regulated by the AER in the National Electricity Market (NEM), the Economic Regulation Authority (ERA) in Western Australia, and the Utilities Commission in the Northern Territory.

- *Environmental policies*, introduced by Commonwealth and/or state and territory governments. There are a number of environmental policies or programs that directly impact or integrate with the electricity market. These include the Renewable Energy Target and the various state and territory feed-in tariff and energy efficiency schemes.[8] The carbon pricing mechanism was included only in the base year (2013/14) of the reporting period.

A range of different drivers may affect each of these supply chain cost components. Chapter 2 provides a detailed overview of these drivers and their current impacts across the electricity supply chain.

Factors that affect each of the components may also be different across jurisdictions due to unique conditions and regulatory arrangements. These are discussed in each of the relevant state and territory sections in Chapter 3.

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7 The COAG Energy Council has not made any changes to the Terms of Reference since the 2013 report. A copy of the Terms of Reference for the 2014 Electricity Price Trends report can be found on the AEMC website.

8 The Renewable Energy Target comprises the Large-scale Renewable Energy Target and the Small-scale Renewable Energy Scheme.

1.3 Overview of methodology

As noted above, this report provides estimates of trends in both *standing offer* and *market offer* prices for each jurisdiction, where applicable.

Standing offer contracts are basic electricity contracts with terms and conditions that are set by governments or jurisdictional regulators, which may or may not include price. *Market offers*, or market retail contracts, are electricity contracts that include minimum terms and conditions prescribed by law, with prices set by energy retailers in the competitive market. The terms and conditions of market retail contracts generally vary from *standing offer* contracts.

Consumers will typically be on a *standing offer* by default if they have not shopped around for their electricity. These are generally the benchmark prices against which retailers offer discounts from *market offers*.

Our approach to determining *standing offer* and *market offer* price trends and supply chain cost components is summarised below.

1.3.1 *Standing offer* price trends

Standing offer prices are set by either jurisdictional regulators or governments if there is a regulated retail price or by electricity retailers if retail prices have been deregulated. In Queensland, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory (ACT) there is currently a regulated *standing offer* price for residential consumers. Retail prices have been deregulated in Victoria (since 2009), South Australia (since 2013) and New South Wales (since 1 July 2014) and in these jurisdictions the *standing offer* prices are set by electricity retailers in the competitive market.[9]

In September 2014, the Queensland Parliament passed legislation to remove retail price regulation for small consumers in South East Queensland. It is expected that the new arrangements will commence on 1 July 2015.[10]

Standing offers are generally provided under a standard retail contract with regulated terms and conditions.[11]

The *standing offer* prices in this report are based on published *standing offer* prices that were available in 2013/14 and 2014/15. Information was obtained from retail price determinations, state government gazettes, retailer pricing proposals, retailer's

9 In South Australia and New South Wales, consumers who were on a *standing offer* when retail price deregulation was announced are eligible for a transitional *standing offer*.

10 M McArdle (Minister for Energy and Water Supply), *Families to benefit from electricity reforms*, media statement, 10 September 2014.

11 *Standing offer* contracts are sometimes referred to as 'standing contracts', 'standard retail contracts' or regulated contracts. For example, in jurisdictions that have adopted the National Consumer Energy Framework, the terms and conditions of a standard retail contract are set out in the National Energy Retail Rules.

websites and relevant jurisdictional regulators' websites.[12] Where prices are set by the relevant governments, as in the Northern Territory and Western Australia, we used the information supplied by the respective departments or publically available information.

The representative *standing offer* price for the base year of 2013/14 was estimated by converting the published prices to a single c/kWh value. This conversion was based on an assumed set of annual consumption values provided to us by each jurisdiction as set out in Table 1.1.

Estimates of future movements in *standing offer* prices, for the years where published *standing offers* are unavailable, have been determined according to the expected movements in the underlying supply chain cost components.

1.3.2 *Market offer* price trends

Market offers are set by energy retailers and sold to residential consumers under competitive market contracts. *Market offers* can differ between retailers and may include discounts and/or non-monetary incentives.

Currently, *market offers* are available to residential consumers in New South Wales, South East Queensland, South Australia, Victoria and the ACT.[13]

For this report, *market offer* prices have been estimated for the base year of the reporting period, which is 2013/14. The expected 2013/14 *market offer* price has then been used to extrapolate future price trends, according to estimates of movements in the underlying supply chain cost components.

The 2013/14 *market offer* price for the representative consumer was estimated using retailer data and information supplied to the AEMC.[14] Specifically, retailers active in New South Wales, South East Queensland, South Australia and Victoria were asked to nominate their lowest generally available *market offer* for each distribution network region as at 1 February 2014.[15]

Retailers' nominated *market offers* were required to meet a number of conditions, including that the offers were:

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12 In jurisdictions that have implemented the National Energy Consumer Framework (NECF), retailers must publish their *standing offer* prices on their website. This still applies if retail price deregulation has come into effect.

13 In Tasmania, full retail competition was introduced on 1 July 2014 for residential consumers. Retailers are able to offer market contracts, however no retailers have announced plans to enter the small customer market and almost all small customers remain with the incumbent retailer.

14 For Victoria, two separate retailer market tariffs, for 2013 and 2014, were used as the basis of our representative *market offer*. This was done to reflect that network tariffs are adjusted on a calendar year basis in Victoria.

15 Our analysis did not include the ACT because there were only two active retailers in this market and the offers available are very similar; approximately 19 per cent of consumers are on a *market offer*.

- available to all consumers in the relevant distribution area;
- a single rate, inclining block or seasonal block pricing type; and
- published, either on the retailer's website or a generally available comparator website.

Discounts associated with the *market offer* were assumed to be awarded, while no penalties (such as for late payment) were incurred.

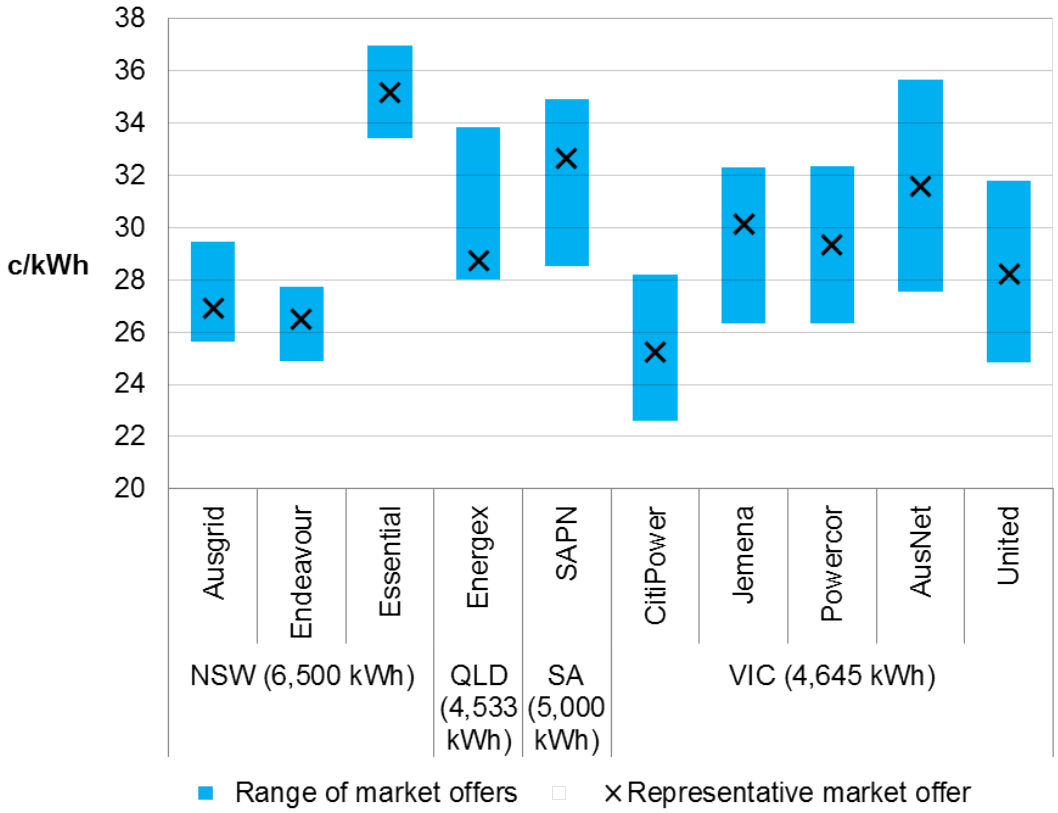
The representative *market offer* price for the base year of 2013/14 was estimated by converting each retailer offer to a single c/kWh value. This conversion was based on an assumed set of annual consumption values provided to us by each jurisdiction as set out in Table 1.1. A representative offer price for each network region was calculated by weighting the offers by the market share of the respective retailers. In jurisdictions where there are multiple network areas, the values were then weighted by the share of residential consumers in each distribution area to calculate a jurisdictional average.

Figure 1.1 is a summary of the range of lowest *market offers* collected from retailers for each distribution area and the representative nominal c/kWh value used in this report. This figure shows that consumers face a wide range of potential *market offers* and therefore the actual prices paid by consumers are likely to differ from our representative *market offer*.

Representative *market offers*, on a c/kWh basis, are expected to be higher for jurisdictions with lower consumption values, such as Victoria and South Australia, as the fixed cost component of the retail offer is spread over a smaller volume of electricity consumption.

Using the annual consumption values provided by the jurisdictions, the representative *market offers* for Ausgrid (New South Wales) and United Energy (Victoria) are 26.90 c/kWh and 28.21 c/kWh respectively, as shown in Figure 1.1 - a difference of 1.31 c/kWh. This comparison could be misleading as it is based on different consumption levels. If a uniform consumption level of 5,000 kWh per year is applied to both, then the representative *market offer* is 27.87 c/kWh for Ausgrid and 27.19 c/kWh for United Energy, a smaller difference that makes the offers more comparable across the two states.

Figure 1.1 Summary of *market offers* provided by retailers in March 2014[16]



Data source: Electricity retailers; AEMC analysis.

Determining trends in *market offer* prices is inherently uncertain as wholesale market conditions, the type of products retailers offer and the behaviour of consumers are dynamic and subject to change. Chapter 4 discusses some of the factors that may cause consumers to experience price outcomes that differ from the representative c/kWh values presented in this report.

1.3.3 Representative consumption levels

Representative consumers are defined in terms of the total amount of electricity consumed in one year (measured in kWh) and how this consumption is split across the quarters of the year (the consumption profile).

Annual consumption values used in our analysis for each year of the reporting period were provided by the jurisdictional governments. The methodologies applied by the jurisdictions for determining the representative consumption level differ and, as such, are not directly comparable. The consumption levels and methodology used in each jurisdiction are outlined in Table 1.1.

16 The representative *market offer* provided by retailers is converted to a single c/kWh value by the AEMC to undertake the analysis in this report. This requires an assumption to be made around the annual consumption of a representative consumer, which was provided by each jurisdiction.

Table 1.1 Annual consumption values used in this report

Jurisdiction	Annual consumption value (kWh)	Methodology for determining annual consumption
Queensland	4,533	Total residential consumption within the Energex network divided by residential customer numbers
New South Wales	6,500	Total residential consumption divided by the number of residential customers
Australian Capital Territory	7,180	Total residential consumption divided by the number of residential customers[17]
South Australia	5,000	Based on the consumption of a 'typical' consumer, as determined by ESCOSA[18]
Victoria	4,645	Average customer usage in each distribution zone weighted by the number of residential customers in each distribution zone
Tasmania	7,627	Sourced from the Office of the Tasmania Economic Regulator[19], calculated using a weighted average median consumption level for the two most common tariff combinations
Western Australia	5,747	Total residential consumption divided by number of customers
Northern Territory	9,135	Total residential consumption divided by the number of connections

Data source: the jurisdictional government departments.

A range of factors lead to differences in the representative levels of consumption for each jurisdiction. Some of these are variations in climate, population density, economic conditions and the availability of natural gas.

Quarterly consumption profiles allocate household electricity consumption depending on the quarter of the year in which the electricity is used. Some retail offers are structured such that the first block of energy is charged at a different rate to subsequent

17 The number of residential customers as at 2012/13.

18 Essential Services Commission of South Australia.

19 OTTER, Comparison of 2014 Australian Standing Offer Energy Prices, September 2014, p.21.

blocks. When this is the case, the way in which consumption is distributed throughout the year may impact on the total bill that a household will pay.[20]

Quarterly consumption profiles that are representative of an average residential consumer in each jurisdiction were used for the analysis. These profiles were developed for the 2013 Residential Price Trends Report.[21]

Actual annual consumption levels will vary among residential consumers, as well as between different states and territories. In this report we have considered how price outcomes will vary depending on different household consumption levels for each jurisdiction.

1.3.4 Process for determining supply chain cost components

The supply chain cost components were determined in different ways depending on the availability of data and whether costs are set by a market or regulatory process. Our general methodology is summarised below.

- **Competitive market sector:** These costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers, but exclude environmental costs such as those associated with the carbon price and Renewable Energy Target. Our wholesale energy cost estimates are based on modelling that was undertaken by Frontier Economics. For jurisdictions where prices are set by a jurisdictional regulator, the jurisdictional approach was replicated when estimating wholesale energy purchasing costs.

  Wholesale energy purchase costs include spot prices, hedging costs, market fees and ancillary service costs. Hedging costs will depend on the specific hedging strategy adopted by a retailer, which in turn depends, among other things, on its expectations of future price volatility and its appetite for risk. A single hedging strategy was assumed across all regions. This involved the purchase of peak and off-peak swap contracts to cover a fixed proportion of the assumed load on a quarterly basis and cap contracts to cover the remaining load. Contract prices are assumed to represent a 5 per cent premium on spot prices for all retailers.[22]

  The retail component is not directly observable and is not directly reported on. This is because retailers have different business models and costs structures, and estimating the retail component based on a representative price is unlikely to be a

20 For example, it is common for retail offers available to customers in the Ausgrid distribution network region in NSW to feature different c/kWh rates for the first 1,000 kWh per quarter, the next 1,000 kWh per quarter, and any consumption in excess of 2,000 kWh per quarter.

21 AEMC, *2013 Residential Electricity Price Trends*, AEMC, 13 December 2014, Sydney, p. 129.

22 The contract premium value was established based on initial analysis of spot and contract price data over 2006-2007 as part of Frontier Economics' advice to the Independent Pricing Regulatory Tribunal's (IPART) 2007 retail price determination. In practice, there is no single percentage or absolute contract premium value that applies exactly to all retailers in all jurisdictions at all times. Expectations around both the level and volatility of spot and contract prices evolve over time and differ by jurisdictions.

true reflection of individual retailers' operating costs and return on investment. Retail markets are dynamic and hence the retail component could change over time as retailers respond to changes in costs and competition.

For our modelling of price trends, we have used the residual when all of the non-retail cost components are subtracted from the representative *market offer* price in 2013/14 as an approximate proxy for the retail component (this is shown in Figure 1.2). By nature of using this residual method, the retail component also includes any errors, positive or negative, in our estimates of the other supply chain cost components. For example, if the wholesale contracting premium is more than 5 per cent, then this method of calculation would overestimate the size of the retail component.

Figure 1.2 Graphical representation of residual method

In aggregate, the retail component consists of the retailer operational expenditure (OPEX), customer acquisition and retention costs (CARC), return for investing in the business and any errors in the other supply chain cost components, as shown in Figure 1.3.

Figure 1.3 Graphical representation of retail component

As the retail component is not reported on, the individual sub-components shown in Figure 1.3 are also not reported on.

- **Regulated networks:** These costs are regulated by the AER in the NEM, the Economic Regulation Authority in Western Australia and the Utilities Commission in the Northern Territory. Where appropriate, determinations from these entities were used for the current regulatory period. Where current determinations conclude before the end of the reporting period, AER draft decisions or regulatory proposals from network companies were used if they were available or it was otherwise assumed that network prices will remain constant in nominal terms.

- **Environmental policies:** These costs are associated with schemes implemented by the Commonwealth and state and territory governments. For the schemes that apply on a national basis, such as the carbon pricing mechanism and the Renewable Energy Target, costs were estimated by Frontier Economics. The costs of the jurisdictional schemes were derived from information sourced from state

and territory governments and jurisdictional regulators. Carbon costs only apply in the base year (2013/14) as the carbon price has been repealed effective 1 July 2014.

In future years, the supply chain costs are expected to change in response to events and conditions in the energy markets. Chapter 2 provides an overview of these general energy market trends and how they may impact the supply chain cost components.

Changes in the components that make up the electricity supply chain are also likely to differ between jurisdictions owing to the specific conditions and regulatory arrangements in each state and territory. These are discussed further in Chapter 3 and the jurisdictional appendices.

Estimates of trends in residential electricity prices are limited by the data used and the underlying assumptions that have been made. A detailed overview of the methodology used for the report is provided in Appendix J, including an overview of the relevant data inputs and limitations.

1.4 Structure of the report

This report is structured as follows:

- Chapter 2 provides a summary of the factors and developments that are likely to influence movements in residential electricity prices between 2013/14 to 2016/17.
- Chapter 3 is a summary of the jurisdictional results, including forecast changes in each supply chain cost component and the national and jurisdictional factors that are contributing to these changes. A national summary is also provided in this chapter.
- Chapter 4 provides a discussion of factors that may cause consumers on *market offers* to experience price outcomes that differ from the representative c/kWh values presented in this report.

Appendices

- Appendix A to I: Detailed jurisdictional results for each state and territory.
- Appendix J: Methodology for the 2014 report.

Consultant reports

- Frontier Economics, *2014 Residential Electricity Price Trends*, Final Report, August 2014.

2 Key trends in prices and cost components

Chapter 2 provides a summary of the factors and developments that are likely to influence movements in residential electricity prices between 2013/14 and 2016/17.

Section 2.1 discusses the key drivers of residential electricity prices out to 2016/17, while section 2.2 provides an overview of the factors that are expected to influence the three supply chain cost components, which are the competitive market sector, the regulated network sector and government environmental policies.

2.1 Key drivers influencing residential electricity prices

We have identified two primary factors that are expected to influence residential electricity price trends over the reporting period - the removal of the carbon price and declining annual energy consumption. Each of these is discussed below.

2.1.1 The carbon pricing mechanism

Repeal of the *Clean Energy Act 2011*, which abolished the carbon pricing mechanism, has resulted in a reduction in residential electricity prices relative to what they would have otherwise been.

On a national average basis, Frontier Economics estimates that the carbon price accounted for 8 per cent of the residential price for the representative consumer in 2013/14. The impact of the carbon price on residential electricity prices various by jurisdiction, reflecting the different generation mix and representative consumption levels in each region.

Carbon pricing changed the relative cost of different generation technologies based on their emissions per unit of output - referred to as the emissions intensity of the generator. Under a carbon price, the operating costs of a generator are increased by an amount equal to the emissions intensity multiplied by the carbon price. For example, with a carbon price of $24.15 per tonne of carbon dioxide, the operating costs for a combined cycle gas turbine with an emissions intensity of 0.5 increased by around $12 for each megawatt hour (MWh) of energy it generated.

As the NEM and South-West Interconnected System (SWIS) in Western Australia are predominately supplied by coal and gas-fired generators, a price on carbon emissions increased the wholesale costs of generation. These costs were incurred by generators who, to the extent possible, passed them on to retailers. How this occurred depended on the retailer's energy purchasing strategy. For instance, the carbon price could have been reflected in the spot price, futures contracts and/or under the terms of bilateral hedge contracts that retailers enter into with generators. Retailers generally passed these costs on to consumers through their electricity bills.

Repeal of the carbon pricing mechanism

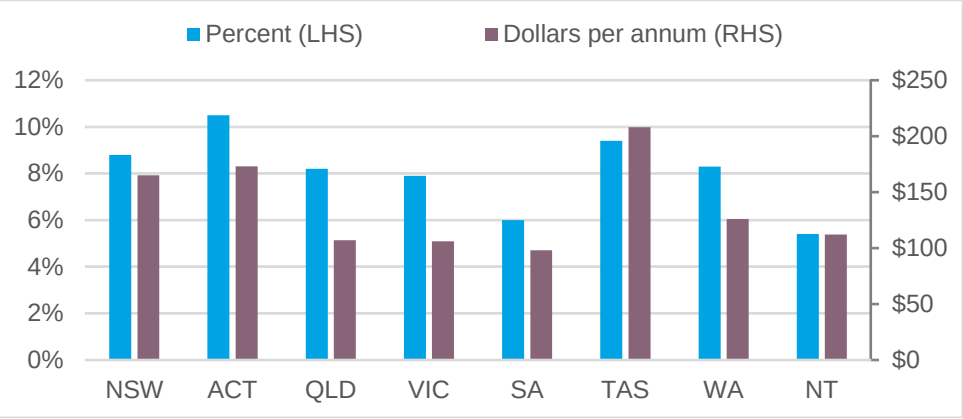
The repeal of the carbon price has decreased wholesale electricity prices faced by retailers, putting downward pressure on the wholesale energy component of consumers' retail bills.

Consumer savings from the repeal of the carbon price are different for each jurisdiction and retailer. This is due to variations in the average emissions intensity of the generation fleet between jurisdictions and differences in the wholesale energy purchase strategies and business models of retailers. Carbon savings will also vary between consumers with different annual consumption levels.

In 2013/14, the cost of the carbon price ranged from 5.4 per cent (or $127) of the total annual bill in the Northern Territory to 10.5 per cent (or $173) of the total annual bill in the Australian Capital Territory. The variations across the states and territories are shown in Figure 2.1.[23]

The average carbon price cost estimates for each jurisdiction in Figure 2.1 are broadly similar to the savings announced by retailers in 2014/15 and reported on by the Australian Competition and Consumer Commission.[24]

Figure 2.1 Estimated impact of the carbon price for the representative residential consumer in 2013/14



Estimates of the carbon price impact are based on modelling undertaken by Frontier Economics for this report, with the exception of Tasmania, ACT, Western Australia and the Northern Territory, where we have used information provided by the respective jurisdictions. As such, the data presented in Figure 2.1 may not be directly comparable.

23 As discussed in Chapter 1, the "representative consumer" is different for each jurisdiction and is determined based on a representative consumption level.

24 For information on retailers' announcements see Australian Competition and Consumer Commission, *Monitoring of prices, costs and profits to assess the general effect of the carbon tax scheme in Australia*, report to the Minister, ACCC, October 2014.

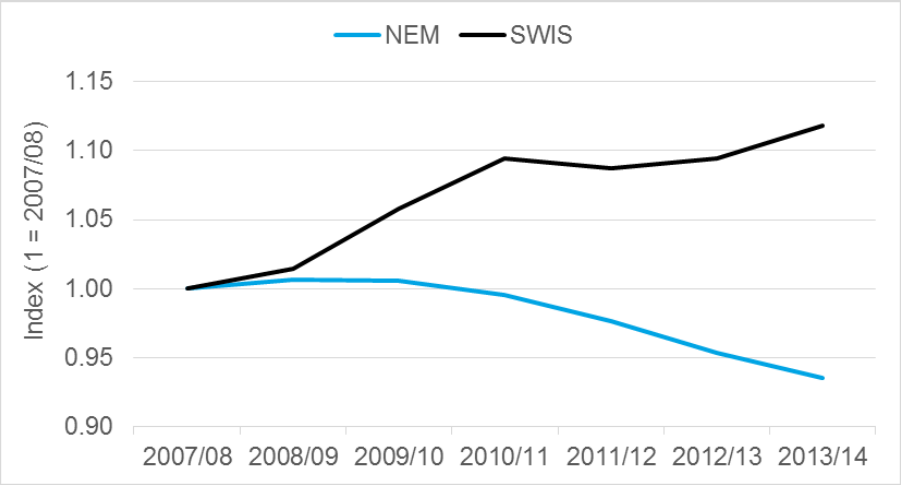
2.1.2 Falling electricity consumption

Electricity demand can be measured in different ways. 'Electricity consumption' represents the total amount of electricity that is used over a specific period and is generally measured in megawatt hours (MWh). 'Peak demand' represents the largest volume of electricity demanded at any one point in time and is generally measured in megawatts (MW).

Until recently, electricity consumption in the NEM had historically grown each year, driven by increases in population and economic growth. Since 2008/09, annual electricity consumption has fallen from around 195,000 gigawatt hours (GWh) to around 180,000 GWh in 2013/14.[25] Annual electricity consumption in the SWIS has also moderated, with periods of flat growth between 2010 and 2013, before increasing again in 2013/14.[26]

The trend in total annual electricity consumption for the NEM and SWIS is shown in Figure 2.2, which has been graphed as an index to compare the trends. Figure 2.2 shows that annual electricity consumption in the NEM has fallen by around 8 per cent between 2007/08 and 2013/14, while in the SWIS it has grown by over 10 per cent.

Figure 2.2 Annual energy consumption trend in the NEM and SWIS (base year = 2007/08)



Data source: AEMO, National Electricity Forecasting Report 2014; IMO Electricity Statement of Opportunities 2014.

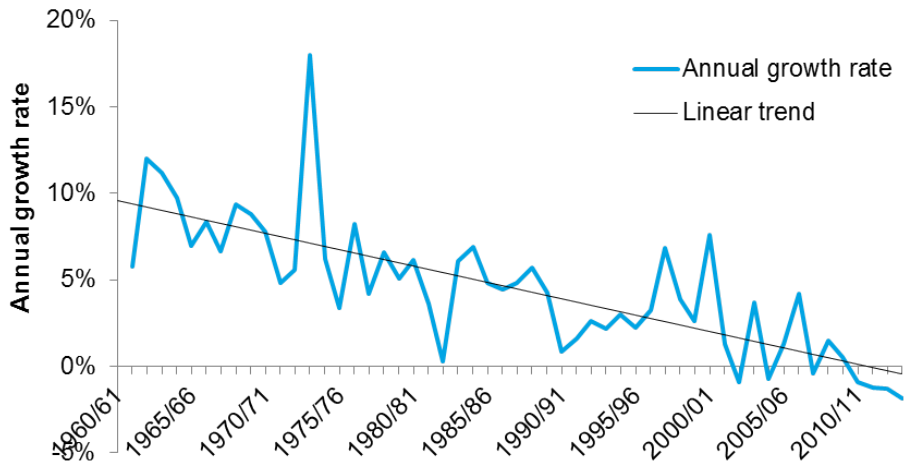
Over the long term, the annual *growth rate* of electricity consumption in the NEM has been declining since the 1960s, with negative growth first experienced in 2002/03, as shown in Figure 2.3. This is indicative of a structural change in the Australian economy

25 Australian Energy Market Operator (AEMO), *National Electricity Forecasting Report 2014*, AEMO, June 2014.

26 Independent Market Operator (IMO), *Electricity Statement of Opportunities 2013*, IMO, June 2013, Perth.

away from its agricultural and manufacturing origins, to one based on less energy intensive services, as well as gains in energy efficiency.[27]

Figure 2.3 Annual energy consumption growth rate for the NEM jurisdictions



Data source: BREE, Australian Energy Statistics 2013, Table I; AEMO, National Electricity Forecasting Report 2014.

Recent declines in annual electricity consumption have been due to the:[28]

- impact of government supported energy efficiency programs;
- growth in distributed generation, especially residential solar PV;
- reduction in large industrial loads, such as aluminium smelters, due to the structural shift in the Australian economy away from energy intensive industries; and[29]
- consumer response to electricity price rises.

A recent step-change in energy consumption has occurred in the NEM with the closure of major industrial electricity users. Between October 2011 and September 2012, the Port Kembla steelworks, the Kurri Kurri aluminium smelter and the Clyde oil refinery were partially or completely shut down. This removed around 3,600 GWh of annual

27 Reserve Bank of Australia (RBA), 'Structural change in the Australian economy,' *Bulletin - September Quarter 2010*, RBA.

28 Saddler, H., Power Down: Why is electricity consumption decreasing?, a report for The Australia Institute, December 2013, p. 4.

29 This includes the complete/partial closures of Port Kembla steelworks, Kurri Kurri aluminium smelter, Clyde oil refinery, Kurnell oil refinery and Port Henry aluminium smelter.

electricity consumption from the NEM.[30] More recent closures include the Point Henry smelter[31] and the Kurnell oil refinery,[32] which both ceased operations in 2014.

In the period to 2016/17, the Australian Energy Market Operator (AEMO) has forecast annual energy consumption growth of 0.4 per cent across the NEM. However, this growth is solely driven by the establishment of a liquefied natural gas (LNG) export industry in Queensland.[33] Without the LNG export industry, forecast average annual growth to 2016/17 would be negative 1.1 per cent.[34]

Falling electricity consumption and wholesale electricity prices

Falling energy consumption, along with growth in renewable energy capacity under the Large-scale Renewable Energy Target (LRET), has resulted in excess generation capacity in the NEM. The contribution of these two factors has, and is expected to continue to, put downward pressure on wholesale energy purchase costs.

The extent of the decline in energy consumption and oversupply of generation capacity in the NEM is evident in AEMO's 2014 Electricity Statement of Opportunities. For the first time since the commencement of the NEM, AEMO has forecast that no new capacity will be required in any NEM region to maintain supply-adequacy over the next 10 years.[35] This is the case under all of AEMO's demand scenarios.[36]

Jurisdictional analysis of wholesale energy purchase costs

Figure 2.4 shows Frontier's analysis of wholesale energy purchase costs for the NEM regions. AEMO's medium and low demand forecasts for the 2014 National Electricity Forecasting Report have been used for the base case and low demand scenario in Frontier's modelling. Energy consumption in the low demand scenario is approximately 3.5 per cent lower than in the base case scenario, although the reduction varies by region.

In the base case, wholesale energy purchase costs in New South Wales and Queensland are approximately constant in real terms from 2014/15 to 2016/17. Additional investment in renewable generation under the current LRET scheme acts to lower

30 Saddler, H., *Power Down: Why is electricity consumption decreasing?*, Institute Paper No. 14, The Australia Institute, December 2013, p. 5.

31 Alcoa 2014, *End of production at Point Henry Smelter*, Alcoa, viewed 30 October 2014, http://www.alcoa.com/australia/en/news/releases/2014_07_31_Pt_Henry_end_of_production.asp

32 Caltex Australia 2014, *Kurnell Site Conversion*, Caltex Australia, viewed 30 October 2014, http://www.caltex.com.au/CommunityAndEnvironment/KurnellSiteConversion/Pages/Home.aspx

33 Electricity is used in the process of producing, compressing and transporting the coal seam gas from the gas fields in western Queensland to the LNG production plants at Gladstone.

34 AEMO, *National Electricity Forecasting Report 2014*, AEMO, June 2014, p. ii.

35 This assumes that existing generation capacity available at the time of AEMO's analysis remains available over the next 10 years to 2023/24.

36 AEMO, *2014 Electricity Statement of Opportunities*, August 2014.

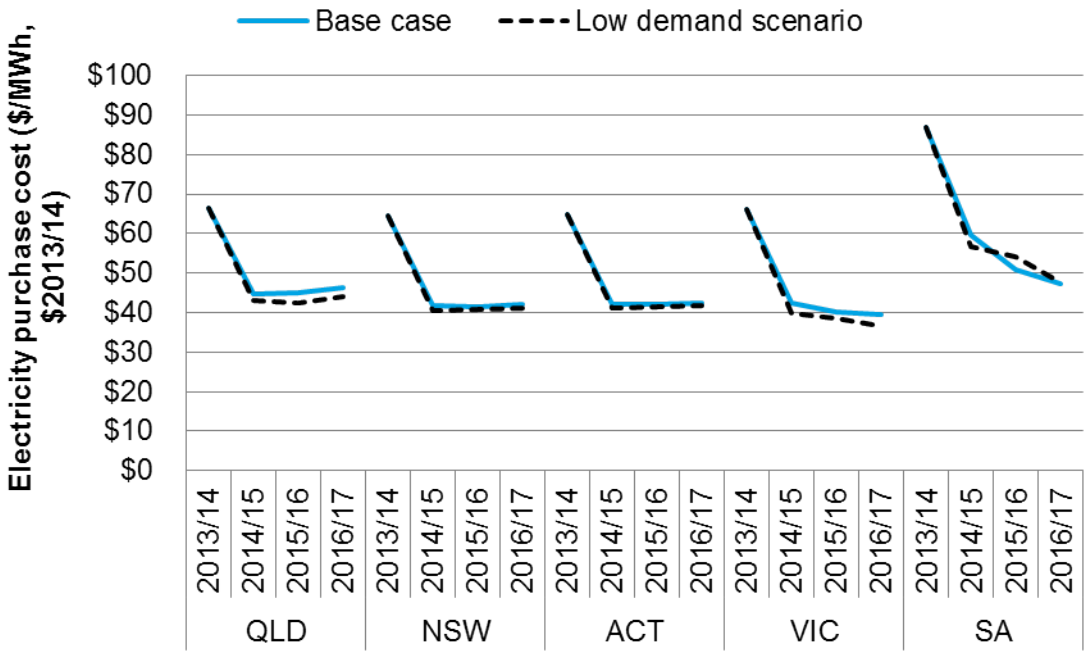
forecast wholesale energy purchase costs in Victoria by around 4 per cent and South Australia by around 20 per cent.[37]

Costs of meeting the LRET are expected to increase by 62 per cent nationally over the reporting period, which may offset any fall in wholesale energy costs.

Holding all other factors constant, a fall in energy consumption usually results in a reduction in wholesale energy purchase costs. Frontier's analysis indicates that any falls are likely to be small in magnitude, as wholesale prices are effectively at the variable operating cost floor due to the existing oversupply of generation capacity.[38] This is demonstrated by the minimal change in price between the base case and low demand scenarios in Figure 2.4 for each jurisdiction.

Accordingly, a further reduction in energy consumption, all else constant, is unlikely to result in materially lower wholesale energy purchase costs.

Figure 2.4 Wholesale energy purchase costs, comparison between base and low demand scenarios



Wholesale energy purchase costs and the LRET

In the short term, subsidised wind generation under the LRET has the effect of increasing supply and putting downward pressure on wholesale energy purchase costs. However, this may only be temporary, as depressed wholesale prices will likely

37 Estimated by Frontier Economics wholesale market modelling.

38 Variable operating costs relate to the fuel, operating and maintenance costs required to produce electricity. If a generator cannot recover these costs, it will likely withdraw capacity until prices in the wholesale market recover or permanently close.

force unprofitable generators to exit the market and the consequent reduction in supply will eventually put upward pressure on wholesale prices.[39]

Without lower wholesale prices, the costs of the LRET will become more apparent to consumers through their retail bills.

Additionally, LRET costs are spread equally between retailers in Australia, and therefore consumers, based on their total consumption. As investment in renewable generation has primarily been concentrated in the southern states, any reduction in wholesale energy costs in one jurisdiction is unlikely to be proportionate to the share of the scheme's costs recovered in that jurisdiction.

Consumers in jurisdictions with a high proportion of wind generation subsidised under the LRET, such as South Australia and Victoria, may experience a decrease in wholesale energy costs that offset the costs of the policy in the short term. Conversely, consumers in jurisdictions without significant wind investment from the LRET will not experience lower wholesale energy costs to the same degree, and are therefore likely to face a higher proportion of the costs of meeting the LRET.

Generator response to low wholesale energy purchase costs

Figure 2.5 illustrates two methods for estimating wholesale energy costs.[40] Stand-alone long run marginal cost (LRMC) estimates the wholesale energy purchase costs that would be necessary to cover a new generator's total costs. The market-based method estimates wholesale prices based on supply and demand conditions in the market.

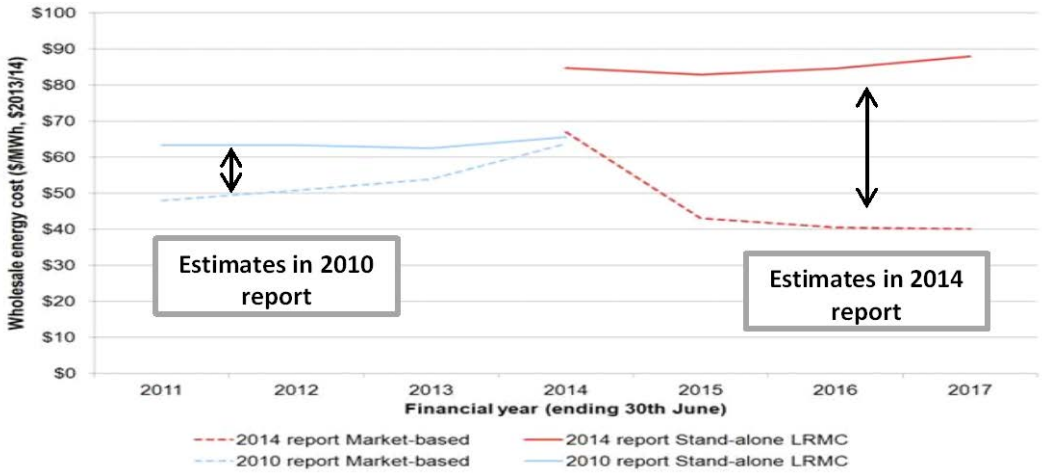
LRMC-based estimates have been rising over time, primarily due to higher international coal and natural gas prices, which increase the cost of new entrant generators using these fuels. Conversely, market-based approach estimates have fallen due to falling energy consumption and the resultant excess supply in the wholesale market.

The growing gap between the two highlights how far wholesale energy purchase costs need to rise for a new entrant generator to recover their total costs (fixed and variable) and earn a return on investment.

39 Frontier Economics, *RET Review Analysis: A Report Prepared for the Australian Energy Market Commission*, Frontier Economics, June 2014.

40 Citipower has been chosen as an illustrative distribution area. However, the changes in results over time discussed below apply more generally to the NEM and SWIS.

Figure 2.5 Wholesale energy cost estimates by methodology for the 2010 and 2014 retail price trends reports (RRN basis, $/MWh, real $2013/14, Citipower area)



In response to low wholesale energy purchase costs, some generating units have been shut down temporarily,[41] referred to as mothballing or standby outages, while others have been retired permanently.[42]

To the extent that the current oversupply continues for a sustained period, additional retirements from the market can be expected to occur. As generators withdraw capacity from the market, supply will decrease which will eventually put upward pressure on wholesale prices. In this way, wholesale prices are likely to increase to a level that supports the viability of the remaining generators in the industry.

2.2 Drivers of electricity supply chain costs

As outlined in Chapter 1, we have grouped our analysis of the drivers of residential electricity prices into three supply chain components: competitive market costs, regulated network costs and environmental policy costs. In this section we discuss the potential issues that could affect the trends of each of these components over the reporting period.

2.2.1 Competitive market sector

On average across Australia, competitive market costs are estimated to make up around 40 per cent of the representative consumer's electricity bill in 2014/15.

Wholesale energy purchase costs are expected to remain relatively stable over the reporting period due to the continuation of the current oversupply of generation capacity. Two factors that could influence this trend are changes in fuel costs and retailer hedging costs.

41 Such as Northern, Playford, Tarong, Swanbank E and Pelican Point.

42 Such as the Munmorah coal-fired power station, Swanbank B, Collinsville, Wallerawang units 7 and 8 and Redbank.

Generation fuel costs

Wholesale energy purchase costs are impacted by movements in underlying fuel costs. Higher fuel costs will result in higher input costs for generators and therefore higher prices in the wholesale electricity market.

Frontier Economics has estimated future coal and gas prices based on assumptions around expected fuel demand, international prices, foreign exchange rates and the costs of extraction and transport. The forecasts are specific to each power station and account for factors including coal mine ownership arrangements, exposure to international commodity prices and the operational regimes of gas-fired generators.

An important variable for future gas prices is the scale of the LNG export facilities in Gladstone. In the base case, Frontier assumes there will be six LNG export trains developed during the modelling period, with gas prices on the east coast ranging between $4 and $6 per gigajoule (GJ) in 2013/14 and increasing over the reporting period.

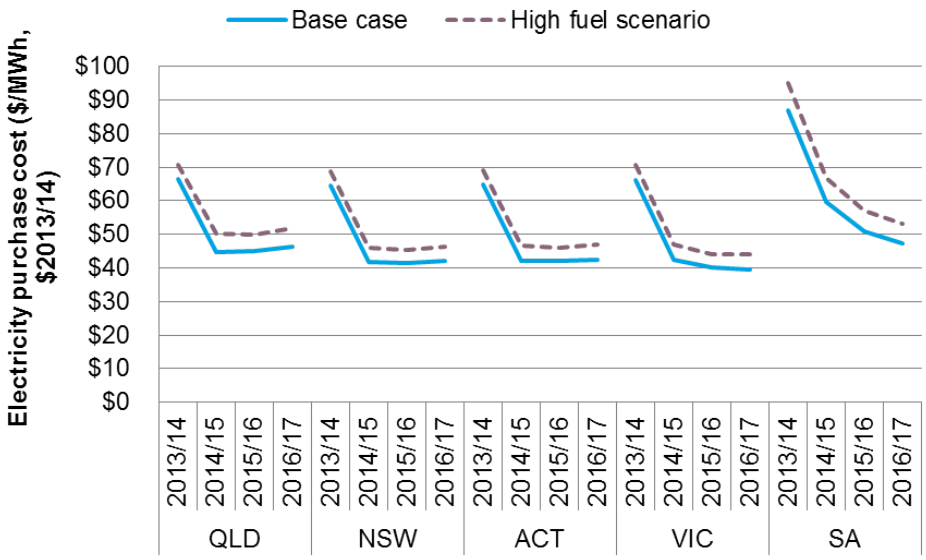
To examine the impact of potentially higher fuel costs than those used in the base case, Frontier undertook a 'high fuel cost' scenario where gas prices were around $1-2/GJ higher and coal prices $0.5/GJ higher than in the base case.[43]

Under the high fuel cost scenario, wholesale electricity purchase costs are around 10 per cent higher than in the base case across the NEM jurisdictions, which are shown in Figure 2.6. If realised, these results could feed through into higher residential electricity prices, subject to overall market conditions. South Australia and Queensland are particularly sensitive to higher gas prices assumed under the high fuel scenario, with gas-fired generation contributing around 52 and 20 per cent respectively of total generation in 2012/13.[44]

43 These higher prices were based on the assumption of international coal and gas prices being 10 per cent higher than the base case and a total of ten LNG export trains are developed at Gladstone.

44 Energy Supply Association of Australia, *Electricity Gas Australia 2014*; AEMO, *2013 South Australian Electricity Report*, August 2014.

Figure 2.6 Wholesale energy purchase costs, comparison between base and high fuel cost scenarios



Retailer hedging costs

Retailers and generators that buy and sell electricity in the wholesale spot market are exposed to the risk of spot price volatility that characterises the NEM gross pool market. Participants seek to manage these risks by entering into a range of financial relationships with each other and with financial market participants.[45]

Retailers use a number of instruments and strategies to hedge against spot price risk. The choice between various instruments is part of each participant's risk management strategy and depends on the unique situation of each participant. The most commonly used instruments are 'derivative' or 'hedge' contracts, which trade at a premium to wholesale spot prices.

Trends in the competitive market sector depend on retailers' costs of hedging spot price volatility. Each retailer will have a portfolio of different types of contracts and its hedging costs will depend on a range of different factors, including:

- the timing of entry into any hedge contracts;
- risk preferences; and
- expectations about future wholesale spot prices.

In estimating energy purchasing costs, Frontier did not attempt to replicate retailers' actual hedging costs. Instead a 5 per cent premium above wholesale spot prices was used as a reasonable proxy for all retailers.

In practice, the actual cost of hedging is likely to differ between retailers and jurisdictions, according to their risk appetite, the extent of generation owned by the

45 Rule 6.5.2 of the National Electricity Rules.

retailer, customer load profile and market conditions. Differences between retailers' actual costs of hedging and the 5 per cent premium assumption will affect the expected movements in residential prices in this report.

2.2.2 Regulated network sector

Regulated network prices paid by consumers are influenced by factors such as:

- expected changes in peak demand and annual energy consumption;
- the age of a network's assets and the need for these to be replaced;
- movements in input costs, such as labour and construction materials;[46]
- the number of new connections to the network;
- the weighted average cost of capital (WACC) allowance;
- the form of control that the Australian Energy Regulator (AER) applies to regulate the network; and
- network pricing structures.

In November 2012, the AEMC made changes to the National Electricity Rules related to the economic regulation of network businesses. The Economic Regulation of Network Service Providers rule change gave the AER more tools to determine efficient costs for each regulated business, including requirements for the regulator to benchmark network companies against each other and publish reports on their performance.

These new arrangements improve the application of economic regulation of network businesses through three broad changes:

- allowing greater use of incentives by the regulator to encourage network businesses to invest capital efficiently;
- improving the regulator's ability to determine the regulated rate of return; and
- clarifying the regulator's ability to use efficiency benchmarks when determining revenue allowances.

In November 2013, the AER published guidelines on its approach to regulating network businesses under the new arrangements. With respect to electricity, these rules will apply in NEM jurisdictions and not to Western Australia or the Northern Territory.

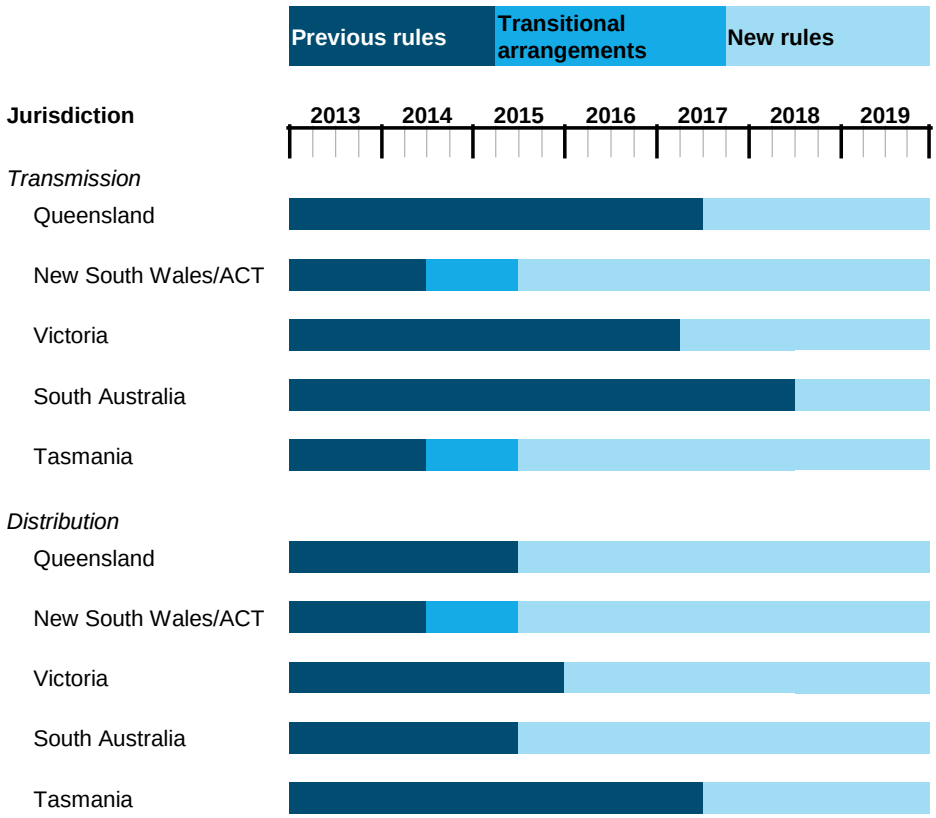
Figure 2.7 shows the timing of when the full application of the new rules will apply to transmission and distribution network determinations.

46 Construction materials include copper, steel, crude oil and aluminium. The exchange rate is also an important determinant as these materials are generally priced in US dollars.

On average across Australia, regulated network prices are estimated to make up around half of the representative consumer's electricity bill in 2014/15. As such, the trend in residential prices over the next two years will depend on the outcomes of the forthcoming round of network determinations to be made by the AER under the new rules.

The discussion in this section focuses on how trends in the WACC allowance, peak demand, annual energy consumption and network pricing structures can impact regulated network prices.

Figure 2.7 Stages of network regulation reform



Relationship between the regulated rate of return and network prices

The regulated rate of return (or WACC) is set by the AER at a level that is commensurate with the efficient financing costs of a benchmark network business. The rate of return is determined by the AER as a weighted average of the return on equity and the return on debt.

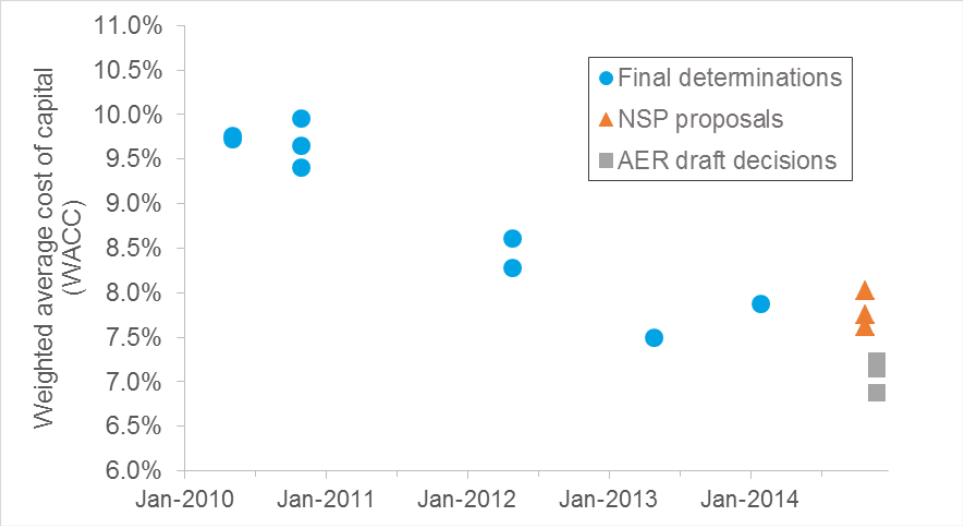
Among other things, the Economic Regulation of Network Service Providers rule change amended the way the AER is required to determine the regulated rate of return for network businesses. The new framework enables the AER to take a range of different approaches to estimate the return on debt, potentially allowing for reduced risk of debt financing for network businesses.

The AER's rate of return guidelines sets out its approach to considering a broader range of materials in arriving at its estimates, including using a trailing average portfolio approach to estimating the return on debt.[47]

As can be seen in Figure 2.8, the WACC allowed for network businesses has been decreasing for a number of years. From the latest information published by the AER and networks' regulatory proposals, it is likely that the WACC will remain below those levels approved in 2009 and 2010.

In its recent draft decisions for the New South Wales distribution businesses, the AER has proposed a WACC of 7.15 per cent for the 2014-19 regulatory control period. This compares to a WACC of 10.02 per cent over the previous regulatory period.[48]

Figure 2.8 Rate of return allowances in current AER determinations and network service providers' regulatory proposals



Data source: AER determinations and NSP regulatory proposals, available at http://www.aer.gov.au/.

The WACC allowance determined by the AER makes a significant contribution to network prices and will therefore be a primary driver of future trends in residential electricity prices. The likely moderation in the level of the WACC compared to the previous regulatory period will mean a reduction in revenue and potentially lower network prices.

To demonstrate the order of magnitude that a different WACC decision might have on network prices, Table 2.1 provides an indicative estimate of the impact on network revenue for 2013/14. If the WACC allowance was reduced by 1 per cent, network prices would decrease by 4.4 per cent for SA Power Networks and by up to 8 per cent for Powerlink in Queensland.

47 Australian Energy Regulator, *Better Regulation Rate of Return Guideline*, AER, December 2013, p4.

48 AER draft decision, NSW distribution revenue determinations 2014-19, 1 November 2014.

Table 2.1 Indicative impact of a change in the WACC on network revenue

Region	Business	Return on capital as a proportion of network revenue in 2013/14	WACC (percentage)	Reduction in network revenue from a 1% reduction in WACC (million)	Indicative impact on network revenue from a 1% reduction in WACC
Queensland	Powerlink	66%	8.61%	$71	8%
Queensland	Energex	68.4%	9.72%	$113	7%
New South Wales	Ausgrid	61%	10.02%	$125	6%
New South Wales	TransGrid	67.3%	10.05%	$62	7%
Victoria	Ausnet Services	51%	9.75%	$21	6.4%
South Australia	SA Power Networks	43.3%	9.76%	$36	4.4%
South Australia	ElectraNet	57.9%	7.5%	$20	7.7%

Relationship between peak demand and network prices

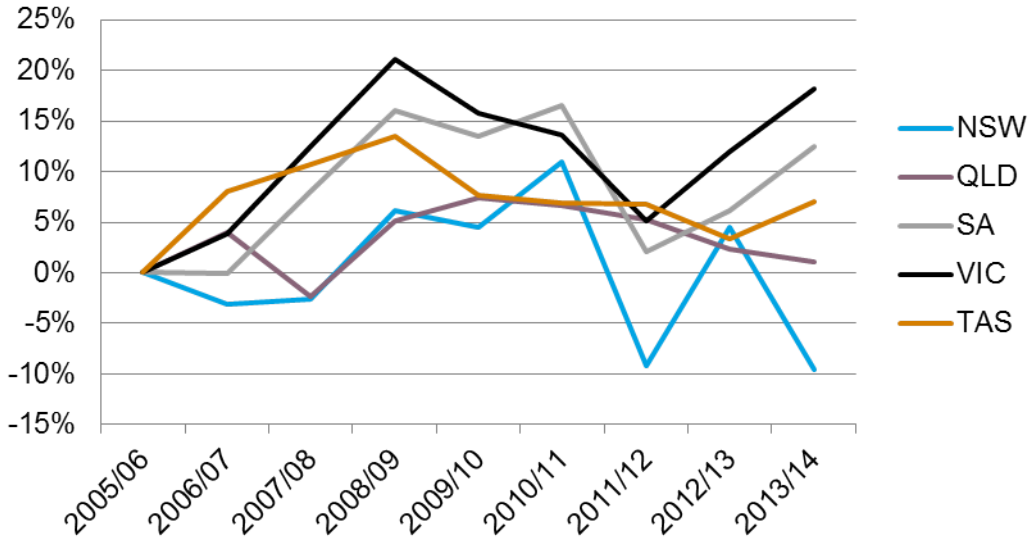
In order to ensure that network reliability standards continue to be met, the forecast level of peak demand is a primary driver of the need to upgrade transmission and distribution networks. Costs associated with the capital expenditure to undertake network expansions are paid for by consumers through their retail bills.

Investment in network infrastructure is dependent on regional and local load patterns that are often quite different between and within each jurisdiction. Therefore the relationship between peak demand and network prices is affected more by local factors than by the jurisdictional trends.

Figure 2.9 shows the cumulative growth of summer peak demand for the Queensland, New South Wales, Victorian and South Australian regions of the NEM since 2005/06. For example, summer peak demand in Victoria was 18 per cent higher in 2013/14 than it was in 2005/06. Peak demand in Queensland and New South Wales has been falling recently, while peak demand in South Australia and Victoria has been increasing. Summer peak demand in Tasmania declined between 2008/09 to 2012/13, before increasing in 2013/14.[49]

49 We note that maximum demand in Tasmania generally occurs in winter, while for the remaining states maximum demand is generally in summer.

Figure 2.9 Cumulative growth in summer peak demand as an index, by jurisdiction (base year = 2005/06)



Data source: AEMO National Electricity Forecasting Report 2014.

Capital expenditure to expand the capacity of a network is only one aspect of a network's capital expenditure program. The other aspects include:

- growth capital expenditure to upgrade the network to incorporate new customer connection requests; and
- replacement capital expenditure that is required to replace ageing assets.

While growth in peak demand may be moderating for some jurisdictions, there is likely to be equipment within specific areas of a network that requires replacement or upgrading due to age or the particular characteristics of that area. We note that, as costs associated with network capital expenditure are recovered over a 30 to 40 year period, this component of regulated network costs is generally not as strong a driver of network prices compared to the regulated rate of return.

In advice to the COAG Energy Council in 2013, the AEMC found that if peak demand-related capital expenditure was removed from distribution network prices in the previous regulatory periods, the impact on the average retail price would be less than 5 per cent in all jurisdictions.[50]

Relationship between annual energy consumption and network prices

Every five years the AER determines an efficient amount of network revenue to be recovered from consumers.[51] Depending on how network prices are set, such as

50 AEMC, *Consideration of Differences in Actual Compared to Forecast Demand in Network Regulation*, 26 April 2013, p22.

51 In Western Australia, the Economic Regulatory Authority determines network revenue.

through a revenue cap or weighted average price cap, the recovery of this revenue can be influenced by changes in annual electricity consumption.

Falling electricity consumption can contribute to higher average residential prices as network costs need to be recovered from fewer units of electricity delivered by the network. The extent to which declining annual electricity consumption places upward pressure on the regulated network component of a consumer's retail bill will be influenced by:

- the form of network regulation determined by the AER (particularly in the case of a revenue cap); and
- the structure of network prices designed by the network businesses.

Detailed information on how the form of network regulation and changes in annual energy consumption can influence network prices is available in advice prepared by the AEMC to the COAG Energy Council.[52]

Network pricing structures

Another factor that influences the prices consumers pay for electricity is the network pricing structure. Most network prices include a fixed daily charge and a variable consumption charge. The fixed charge is largely the same for all of a retailer's consumers within a distribution network area, whereas the variable charge can change with a consumer's level of electricity usage.

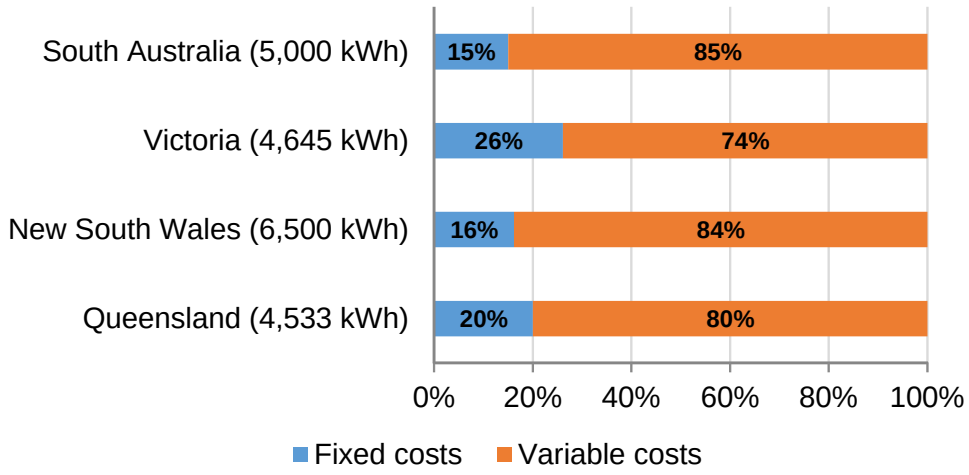
As can be seen in Figure 2.10, the fixed component makes up between 15 and 26 per cent of the total retail price in South Australia, Victoria, New South Wales and Queensland. Since the fixed charge is paid irrespective of energy consumption, consumers who decrease their usage may not see a comparable decrease in the network component of their retail bill.

The higher the proportion of the total bill relating to the variable charge, the more changes in energy consumption will affect the level of revenue recovered by network businesses. Hence, under the current pricing structures, when energy consumption declines, networks are likely to recover less revenue. Given that a high proportion of network prices relate to past investments, any under-recovery due to declining consumption would need to be offset by higher network prices.

The impacts of pricing structures on a consumer's annual bill are discussed further in Chapter 4.

52 Ibid.

Figure 2.10 Fixed and variable components as a share of the representative consumer bill



Note: Based on a survey of *market offers* available in July 2014. Fixed and variable charges have been calculated for jurisdictional representative consumption levels, as indicated above.

A rule change request related to the way distribution businesses set and structure network prices was recently considered by the AEMC. In the final rule determination, which was published on 27 November 2014, the AEMC amended the distribution network pricing principles to require distribution businesses to set and structure network prices on a more cost reflective basis, which will provide more efficient pricing signals to consumers. Network prices based on the new network pricing arrangements will take effect no later than 2017 in all states and territories.[53]

2.2.3 Environmental policy costs

Commonwealth and state and territory governments have introduced a number of policies to achieve greenhouse gas emission reductions and other objectives.[54] Commonwealth policies include the Renewable Energy Target and the now repealed carbon price. At the jurisdictional level, multiple solar feed-in tariff and energy efficiency schemes have been introduced.

On average across Australia, environmental policy costs are estimated to make up 8 per cent of an average residential consumer's electricity bill in 2014/15.[55] This is a decrease from 15 per cent in 2013/14 following the removal of the carbon price.

53 AEMC, *National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, final rule determination, 27 November 2014.

54 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

55 As the carbon pricing mechanism has been repealed this excludes the cost of carbon.

The Renewable Energy Target Review

The Renewable Energy Target comprises the LRET and the small-scale renewable energy scheme (SRES). The Commonwealth Government is currently undertaking a review of the Renewable Energy Target that may lead to changes during the reporting period.

The Renewable Energy Target Review Expert Panel has recommended options to change both the LRET and the Small-scale Renewable Energy Scheme.[56] With respect to the LRET, the Panel has put forward two different options:

- closing the scheme to new entrants and maintaining the subsidy for existing and committed renewable generators (grandfathering); or
- setting the target one year in advance based on 50 per cent of any forecast growth in demand.

At the time of publication, the Commonwealth Government had yet to announce any changes to the Renewable Energy Target. If modifications to the policy were implemented over the reporting period, this will likely affect the trend in environmental policy costs outlined in this report.

Large-scale Renewable Energy Target

The purpose of the LRET is to drive investment in large-scale renewable energy generation. The current target is for 41,000 GWh of energy to be supplied by renewable generation by 2020. The LRET provides an investment incentive by requiring liable entities (mostly retailers) to source a proportion of their electricity from renewable sources.

Eligible generators create large-scale generation certificates that retailers are required to purchase. The certificate price represents a subsidy to renewable energy generators and is paid for by consumers as part of their retail electricity bill. Frontier estimates that the costs of the LRET on a national average basis will increase from 0.60 c/kWh to 0.98 c/kWh, or by around 60 per cent, over the reporting period.

Increased supply of new generation tends to reduce overall wholesale spot market prices, particularly in the context of reductions in annual energy consumption described above. In this environment, more of the cost of meeting the LRET falls on existing thermal generators in the form of lower wholesale energy prices.

As explained in section 2.1.2, this effect may not be sustainable in the medium term, as depressed wholesale prices will likely force unprofitable generators to exit the market and the consequent reduction in supply will eventually put upward pressure on wholesale electricity prices. When this occurs, the cost of the LRET will become more apparent through consumers' retail bills.

56 Commonwealth of Australia, *Renewable Energy Target Scheme – Report of the Expert Panel*, August 2014.

The LRET can also create a separation or wedge between retail prices, which rise due to the cost of the policy, and wholesale prices, which may be lower due to an oversupplied market. Over time, a properly functioning market is likely to be unsustainable when wholesale prices are not informing consumer choices in the retail market.

Along with the direct costs of the scheme that consumers pay through their retail bills, the LRET can have other impacts on the efficiency of the wholesale market.

The NEM has been designed to support commercial investment decisions by signalling the value of generation to investors. The efficiency of the market would be undermined if generation entry or exit decisions became more dependent on government policies instead of market price signals that reflect current and future expectations of supply and demand in the market.

Where greater government intervention occurs, consumers bear more risk when inefficient subsidies to induce entry, or payments to generators for closure, are made

Evidence from international markets suggests that changes to wholesale electricity market designs to accommodate environmental policies are likely to result in consumers bearing greater risks and costs.[57] The AEMC's submission to the Renewable Energy Target review proposed two possible solutions to better integrate the LRET within the NEM design.[58]

Small-scale Renewable Energy Scheme

Similar to the LRET, small scale renewable generators create Small-scale Technology Certificates (STCs). Retailers are required to surrender STCs equal to a target set by the Clean Energy Regulator. Unlike the LRET, there is no annual target specified for how many STCs are to be surrendered in a given year.

STCs can be exchanged through the STC Clearing House, where the cost is fixed at $40 per STC. Our modelling undertaken for this review assumes that the costs of meeting the SRES would reflect this fixed value of $40/STC through the reporting period. This results in a decrease in the cost of the scheme over the reporting period from 0.62 c/kWh to 0.43c/kWh on a national average basis.

The SRES has contributed to a rapid increase in the uptake of rooftop solar PV generation in many regions of Australia.

State-based feed-in tariff schemes and energy efficiency schemes

Jurisdictions have in place a number of feed-in tariff and energy efficiency schemes. Over the reporting period, the costs of these schemes are estimated to remain flat for most jurisdictions, except in Queensland and the ACT.

57 AEMC, *Submission to the Review of the Renewable Energy Target*, May 2014.

58 Ibid.

In Queensland, the recovery of costs associated with the Solar Bonus Scheme is estimated to be $1.4 billion over the next five years.[59] This amount includes under-recovery of scheme costs in previous years. We note that the Queensland Government has announced a proposal to offset the costs of the solar bonus scheme as part of its Strong Choices plan to lease some government-owned assets.

Under this proposal, from July 2015 part of the funds from the asset leasing plan will be used to make feed-in tariff payments, replacing the current arrangements where the costs of the scheme are paid for by consumers through network prices. If this proposal is implemented, residential prices in Queensland would be lower from 1 July 2015 than the trends indicated in this report.[60]

For the ACT, the jurisdictional specific feed-in tariff scheme costs are estimated to increase by an average of 30 per cent per year in the reporting period. This is based on the assumption that cost impacts from the large-scale feed-in tariff scheme begin in 2014. Feed-in tariff scheme costs in the ACT are estimated to increase from 2.2 per cent of the total bill in 2013/14 to 4.3 per cent in 2016/17.

Costs associated with jurisdictional feed-in-tariff and energy efficiency schemes are recovered in different ways. Some may be charged to consumers as a separate item on their retail bills, while others are paid indirectly by consumers through distribution network prices. In some case, jurisdictional governments fund these schemes directly through taxation revenue. A detailed list of the characteristics of jurisdictional feed-in-tariff schemes is in Appendix B of the 2013 Residential Price Trends Report.

A number of jurisdictions have reduced or are reviewing existing feed-in tariff and energy efficiency schemes. For example, the mandated costs for customers that entered into the Queensland Solar Bonus Scheme in 2013/14 and prior is recovered through increased network prices, while new customers are to approach their retailer to obtain a market feed-in tariff.

The former Victoria Government also announced the closing of its energy efficiency scheme at the end of 2015, which has been reflected in this report.[61]

59 Energex, *Regulatory Proposal Summary 2015 -2020*, 30 October 2014, p7.

60 C Newman (Premier), *Queenslanders to get electricity price relief*, media statement, 12 October 2014.

61 R Northe (Minister for Energy and Resources), *VEET to operate in 2015 then close to save on bills*, 16 October 2014.

3 Summary of results

Chapter 3 sets out the drivers of possible future price trends for each jurisdiction and a national summary.

Key drivers of residential electricity prices differ by jurisdiction and are based on trends occurring in the underlying supply chain cost components, which are the competitive wholesale and retail market sector, regulated networks and government environmental policies.

Residential electricity prices are based on the consumption level of a representative consumer, which differs by jurisdiction. Representative consumers are defined in terms of the total amount of electricity consumed in one year (measured in kWh) and how this consumption is split across the quarters of the year (the consumption profile). *Standing offer* and *market offer* prices are considered throughout the analysis, where available.

3.1 Queensland

Residential electricity prices in South East Queensland are expected to decrease by 0.9 per cent in 2014/15, and then increase by 6.2 per cent in 2015/16 and 4 per cent in 2016/17. This is equivalent to an average annual increase of 3.2 per cent for the representative consumer over the reporting period.

For consumers on the *standing offer*, including all consumers in regional Queensland, the increase in 2014/15 is 4.3 per cent, as determined by the Queensland Competition Authority.[62]

In 2014/15, the savings from the removal of the carbon price are offset by expected increases in Queensland Solar Bonus Scheme costs.[63] Regulated network prices are also increasing due to lower than forecast electricity consumption, as network costs need to be recovered from a reduced volume of energy transported across the network.

The trend in 2015/16 and 2016/17 will depend on the Australian Energy Regulator's (AER's) distribution network decision for the 2015-20 regulatory period and policy decisions made by the Queensland Government on the recovery of costs associated with the Queensland Solar Bonus Scheme.

In 2013/14, the representative consumer may have saved around 7 per cent by switching from the regulated *standing offer* to the representative *market offer*. This

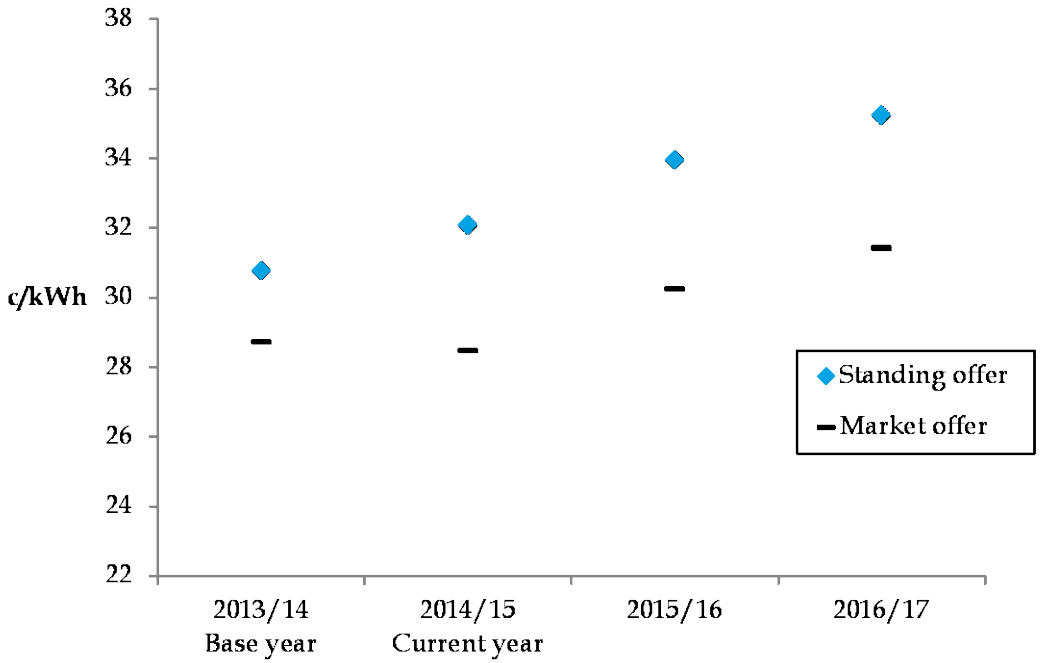
62 Queensland Competition Authority (QCA), *Regulated retail electricity prices 2014-15*, QCA, May 2014.

63 The Queensland Solar Bonus Scheme pays eligible customers for the electricity generated from eligible solar photovoltaic (PV) systems and exported to the Queensland electricity grid.

equates to a saving of $93 off the total annual bill for the representative consumer.[64] In 2014/15, this potential saving has increased to around 11 per cent.

Figure 3.1 shows expected movements in *standing offer* and *market offer* prices.

Figure 3.1 Trend in South East Queensland *market offer* and *standing offer* prices



3.1.1 Drivers of cost trends

The key drivers for cost increases in Queensland during the reporting period are regulated network prices and the Queensland Solar Bonus Scheme. As regulated network costs account for more than half of the total price, movements in this cost component in particular can have a large influence on the trend in overall prices.

Based on currently available information, the expected trends in these two cost components are:

- an average annual increase of 6.9 per cent in regulated network prices, including an increase of 4.5 per cent in 2014/15 and proposed increases of 15 per cent in 2015/16 and 1.5 per cent in 2016/17; and
- an average annual increase of 24 per cent in Queensland Solar Bonus Scheme costs, including a doubling of scheme costs in 2014/15, then a 28 per cent decrease in 2015/16 and 17 per cent increase in 2016/17.[65]

64 Actual savings will depend on individual circumstances, including annual consumption level.

65 The 2015/16 and 2016/17 costs are based on Energex's 2015-20 regulatory proposal.

The current network determinations by the AER for Queensland apply until 30 June 2017 for the transmission network and until 30 June 2015 for the distribution networks. For 2015/16 and 2016/17, as the distribution network determination has not yet been made, and we have instead used Energex's 2015-20 regulatory proposal. We note that the distribution network trend may change as a result of the AER's final decision, which will be made under the new network regulatory framework, as discussed in Chapter 2.

During the 2015-20 regulatory period, Energex proposes to spend around $650 million per year on capital expenditure and $350 million per year on operating expenditure. More than half of the proposed capital expenditure relates to the replacement of ageing network equipment. New capital expenditure increases the value of Energex's asset base, on which it receives a regulated rate of return. For 2015-20, Energex proposes a rate of return of 7.75 per cent, which is over 2 per cent lower than the regulated rate of return for the previous regulatory period.[66]

The trend in network prices in 2015-20 is also influenced by the expected under-recovery of $459 million of revenue in the current regulatory period (2009-14) due to lower than forecast energy consumption and capital contributions for network expansion.

Queensland Solar Bonus Scheme costs after 2014/15 are influenced by Energex's proposal to smooth its revenue allowance, including jurisdictional scheme payments, across the five years of the upcoming regulatory period.[67] This smoothing has the effect of lowering the scheme costs in 2015/16 and 2016/17 relative to 2014/15.

The Queensland Government has proposed an alternative arrangement whereby Queensland Solar Bonus Scheme costs would be offset as part of its Strong Choices plan to lease some government-owned assets.[68] Under this proposal, commencing in 2015/16, part of the funds from the asset leasing plan will be used to make feed-in tariff payments rather than the scheme being paid for by consumers through retail bills. If this proposal is implemented, residential prices from 1 July 2015 would be lower.

Competitive market sector costs are also expected to increase during the reporting period. This sector of the supply chain consists of wholesale energy purchase costs and the costs associated with retailing electricity to residential consumers. The expected average annual increase in these costs is 3.7 per cent per year.

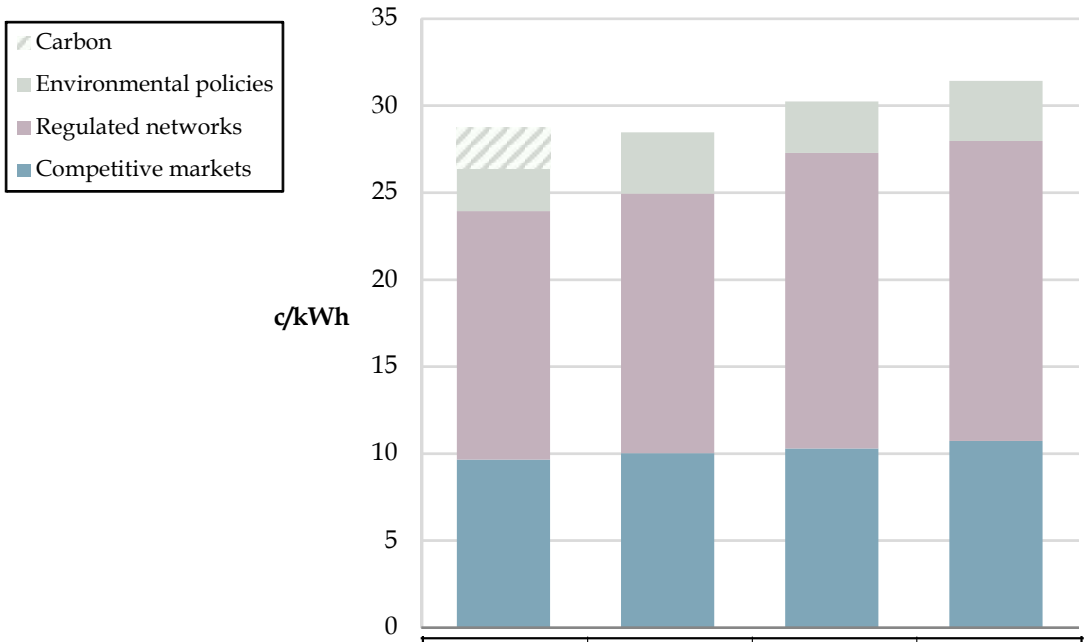
Figure 3.2 shows expected movements in the supply chain cost components in Queensland.

66 Energex, *2015-20 Regulatory Proposal Overview*, October 2014.

67 Energex, *2015-20 Regulatory Proposal*, October 2014, p7.

68 C Newman (Premier), *Queenslanders to get electricity price relief*, media statement, 12 October 2014.

Figure 3.2 Trend in South East Queensland supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.79**	**3.53**	**2.96**	**3.46**
Carbon	c/kWh	2.35	0.00	0.00	0.00
LRET	c/kWh	0.58	0.63	0.75	0.94
SRES	c/kWh	0.62	0.43	0.42	0.43
Queensland Solar Bonus Scheme	c/kWh	1.21	2.48	1.79	2.09
Queensland Gas Scheme	c/kWh	0.03	0.00	0.00	0.00
Regulated networks	**c/kWh**	**14.28**	**14.92**	**16.99**	**17.25**
Transmission	c/kWh	2.35	2.43	2.60	2.79
Distribution	c/kWh	11.94	12.49	14.39	14.46
Competitive market	**c/kWh**	**9.64**	**10.01**	**10.28**	**10.71**
Wholesale and retail					
Total	**c/kWh**	**28.71**	**28.46**	**30.24**	**31.42**

3.1.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- In our base scenario we assume that Queensland wholesale gas prices increase from around $4 per gigajoule (GJ) to $6/GJ between 2013/14 and 2016/17, largely due to the establishment of a liquefied natural gas (LNG) export industry. This is expected to put upward pressure on gas prices, increasing costs for gas-fired generators that may be reflected in higher wholesale electricity prices.

- In September 2014, the Queensland Parliament passed legislation to remove retail price regulation for small consumers in South East Queensland. It is expected that the new arrangements will commence on 1 July 2015.[69]

- The Queensland Competition Authority is undertaking a three year process of adjusting the fixed and variable components of the regulated *standing offer* price, Tariff 11, so each component is cost-reflective by 1 July 2015. The impact of this on individual consumers will vary depending on their consumption level.[70]

- As part of its Strong Choices plan, the Queensland Government proposes to fund the Queensland Solar Bonus Scheme using the proceeds from the lease of some government-owned assets, rather than the scheme being paid for by electricity consumers.[71]

3.1.3 Methodology

Our analysis of *standing offer* and *market offer* prices and cost components applies to a representative residential consumer in South East Queensland using 4,533 kWh per year.[72] As the Queensland Government has a uniform tariff policy, residential consumers outside of this region are eligible for the same *standing offer* price.

Our methodology for estimating electricity supply chain costs in Queensland is summarised as follows:

- **Competitive market sector:** Wholesale energy cost estimates are based on modelling that was undertaken for this report by Frontier Economics. The retail component is the residual when all non-retail cost components are subtracted from the representative *market offer* price in 2013/14, and is assumed to increase at an annual inflation rate of 2.5 per cent.

- **Regulated network sector:** For 2013/14 and 2014/15, network cost estimates are based on prices published by Energex, the distribution network company for South East Queensland. For the remaining years (2015/16 and 2016/17), we base our estimates of network prices on the current transmission network determination from the AER and Energex's 2015-20 regulatory proposal. The actual trend in distribution network prices will depend on the AER's final determination, which is due by the end of October 2015.

- **Environmental policies:** Analysis of the costs associated with the carbon price and Renewable Energy Target was undertaken by Frontier Economics and is

69 M McArdle (Minister for Energy and Water Supply), *Families to benefit from electricity reforms*, media statement, 10 September 2014.

70 QCA, *Regulated retail electricity prices 2014-15*, May 2014, pp46-50.

71 C Newman (Premier), *Queenslanders to get electricity price relief*, media statement, 12 October 2014.

72 The representative consumption level was provided to us by Queensland government department officials.

based on the current legislation for both of these policies. Accordingly, costs associated with the carbon price are only incurred in 2013/14.

Queensland Government officials provided us with Queensland Solar Bonus Scheme costs for 2013/14 and 2014/15 and the costs relating to the Queensland Gas Scheme, which only apply in 2013/14.[73] The Queensland Solar Bonus Scheme costs in 2015/16 and 2016/17 are based on prices published in Energex's 2015-20 regulatory proposal.[74]

3.2 New South Wales

Residential electricity prices in New South Wales are expected to decrease by 9.7 per cent in 2014/15 and 11 per cent in 2015/16, followed by an increase of 2.2 per cent in 2016/17. This is equivalent to an average annual decrease of 5.8 per cent for the representative consumer over the reporting period.

The two main factors contributing to declining electricity prices in New South Wales are the removal of the carbon price in 2014/15 and the AER's draft decisions for the distribution network businesses for the 2014-19 regulatory period. The draft decisions were made under the new rules for network regulation, which provide the AER with a greater ability to achieve efficient outcomes in setting revenues and prices for consumers, as discussed in Chapter 2.

For the 2014-19 period, under the AER's draft determinations for the New South Wales transmission and distribution businesses, the expected trend in network prices for the representative consumer is a decrease of 25 per cent in 2015/16, followed by an increase of 2.1 per cent in 2016/17. The trend in network prices is subject to the Australian Energy Regulator's final decision in April 2015.

Prior to 1 July 2014, New South Wales consumers had a choice of three different offers: a regulated offer determined by the Independent Pricing and Regulatory Tribunal (IPART), or a *standing offer* or *market offer* with prices set by retailers in the competitive market. With the removal of retail price regulation on 1 July 2014, regulated offers are no longer available.

Consumers that were on the regulated offer immediately prior to 1 July 2014 were placed onto a transitional offer, unless they elected to move to a *market offer* or *standing offer*.[75] All New South Wales consumers now have the choice of a *standing offer* or a *market offer*, with prices for both determined by retailers in the competitive market.

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73 Under the Queensland Gas Scheme, Queensland electricity retailers and other liable parties were required to source a prescribed percentage of their electricity from gas-fired generation. The scheme closed on 31 December 2013.

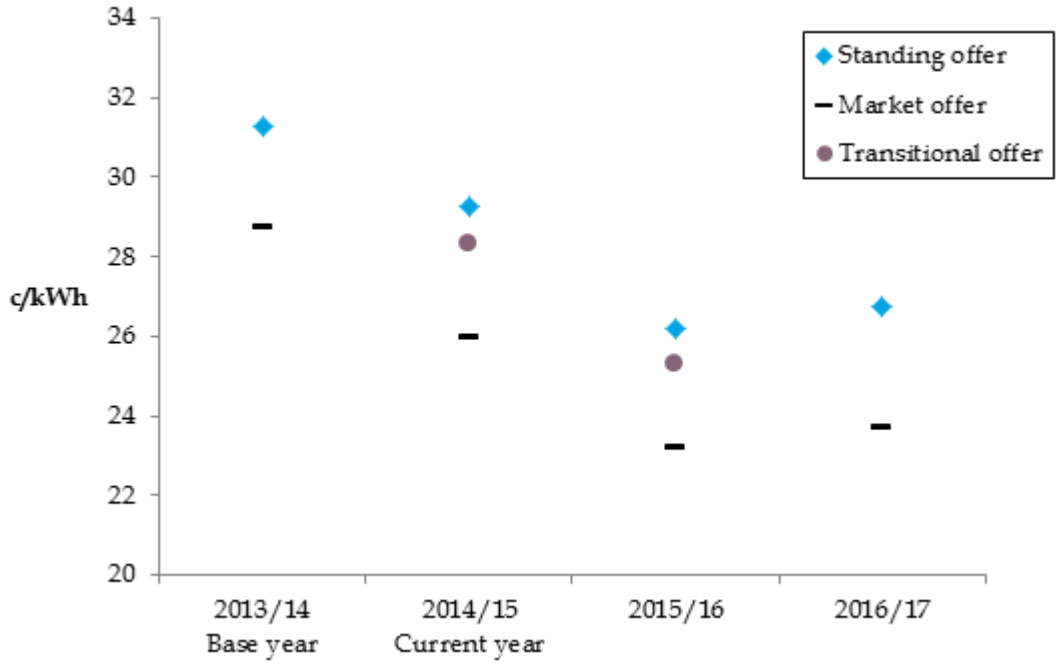
74 Energex, *2015-20 Regulatory Proposal Overview*, October 2014, pp23-24.

75 The transitional offer features a 1.5 per cent price reduction off the regulated offer. Consumers can choose to move from the transitional offer to a *market offer* at any time. In 2015/16, the transitional offer price increase will be capped at the rate of inflation.

In 2013/14, the representative consumer may have saved around 8 per cent by switching from the regulated offer to the representative *market offer*. This equates to a saving of $165 off the total annual bill.[76]

Figure 3.3 shows expected movements in *market offer* and *standing offer* prices, including the transitional offer.

Figure 3.3 Trend in New South Wales *market offer* and *standing offer* prices



Note: The New South Wales Government has announced that the increase in the transitional offer in 2015/16 is to be equal to or less than the rate of inflation. We have assumed that in 2015/16 the transitional offer will fall in line with the market offer prices, which reflect movements in the underlying supply chain cost components. The standing offer in 2014/15 is based on offers available in October 2014.

3.2.1 Drivers of cost trends

The key drivers of cost decreases in New South Wales during the reporting period are the repeal of the carbon price and decreases in regulated network prices. These factors contribute to an expected average annual decrease of 5.8 per cent in total prices. There are also small increases in competitive market and Renewable Energy Target costs.

Regulated network prices are expected to decrease by 7.1 per cent per year on average over the reporting period. The fall in 2014/15 is due to the application of a lower regulated rate of return in the AER's transitional decisions for that year. The expected price movements of a 25 per cent decrease in 2015/16 and 2.1 per cent increase in 2016/17 are based on the AER's draft decisions for the 2014-19 regulatory period.

76 This indicative saving is based on a representative consumer switching to the representative *market offer*, as defined in this report. Actual savings will depend on individual circumstances.

The draft decisions, which were released on 27 November 2014, have been made under the new network regulation rules. The AER has indicated that network prices should decrease due to:[77]

- the network businesses becoming more efficient;
- changes to risk management practises, which would reduce the amount of capital expenditure required;
- expected falls in peak demand; and
- changed financial market conditions, leading to lower financing costs for the network businesses.

The AER is proposing allowing the New South Wales distribution network businesses a regulated rate of return of 7.15 per cent and the transmission network business 7.24 per cent. This compares to 10.02 per cent and 10.05 per cent respectively for the previous 2009-14 regulatory period. The regulated rate of return will be updated annually and is driven by changes in financial market conditions.

A lower rate of return leads to a lower return on capital allowance for the network businesses. The return on capital allowance is also lower in the new regulatory period because the network businesses did not spend all the capital expenditure expected in the previous regulatory period. This leads to a lower regulated asset base on which the return on capital allowance is based and therefore lower network revenue as the savings are passed through to consumers.

Proposed capital and operational expenditures for the distribution and transmission network businesses are lower in 2014-19 compared to the previous regulatory period. The AER considers that, in aggregate, 58 per cent less capital expenditure is required due to decreases in forecast peak demand and changes to risk management practises. A 34 per cent decrease in operational spending is proposed as the AER considers that the network businesses should be able to provide network services more efficiently than they currently are.[78]

Actual network prices will depend on the AER's final determinations to be made by 30 April 2015.

Competitive market and Renewable Energy Target costs are based on modelling undertaken for this report by Frontier Economics. Competitive market costs comprise 29 per cent of the representative *market offer* in 2013/14 and Renewable Energy Target costs comprise 4.3 per cent. Average annual increases of 3.1 per cent for competitive

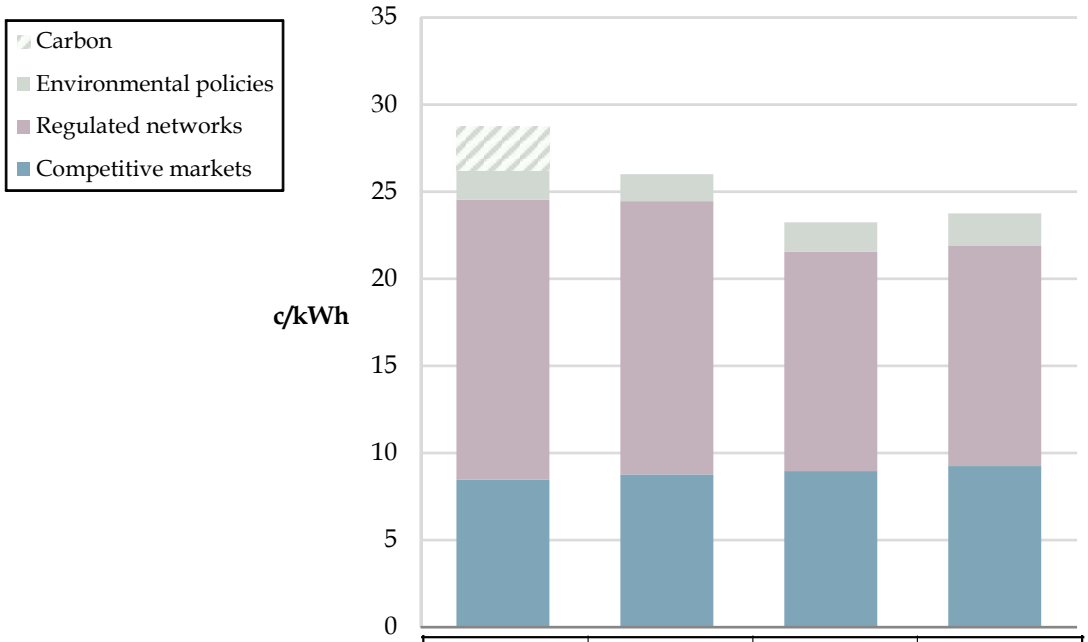
77 AER, Draft decisions for Ausgrid, Endeavour Energy and Essential Energy for the 2015-16 to 2018-19 regulatory period, published 27 November 2014.

78 The AER has examined the relative efficiency of the network businesses in its annual benchmarking reports, which can be accessed at http://www.aer.gov.au/node/25078. In 2014, the AER found that the distribution businesses in ACT, New South Wales and Tasmania appear to be the least productive distribution businesses in the National Electricity Market.

market costs and 4.6 per cent for Renewable Energy target costs are expected over the reporting period.

Figure 3.4 shows the expected movements in the supply chain cost components.

Figure 3.4 Trend in New South Wales supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.24**	**1.55**	**1.67**	**1.88**
Carbon	c/kWh	2.54	0.00	0.00	0.00
LRET	c/kWh	0.60	0.65	0.77	0.97
SRES	c/kWh	0.64	0.44	0.44	0.44
Climate Change fund	c/kWh	0.41	0.41	0.41	0.41
Energy Saving Scheme	c/kWh	0.05	0.06	0.06	0.06
Regulated networks	**c/kWh**	**16.07**	**15.68**	**12.61**	**12.63**
Transmission	c/kWh	3.44	3.60	3.55	3.38
Distribution	c/kWh	12.63	12.09	9.06	9.25
Competitive market	**c/kWh**	**8.44**	**8.75**	**8.94**	**9.23**
Wholesale and retail					
Total	**c/kWh**	**28.76**	**25.98**	**23.23**	**23.74**

3.2.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- The New South Wales Government deregulated retail electricity prices from 1 July 2014. Consumers on the regulated offer immediately prior to 1 July 2014 were placed on a transitional offer that will expire on 30 June 2016. Consumers may switch from this transitional offer to take up a *market offer* or *standing offer*.

For those consumers that remain on the transitional offer from 1 July 2015, price rises will be capped at the rate of inflation for the 2015/16 financial year.

- The New South Wales Government is currently undertaking a review of the Energy Savings Scheme. The review is seeking to identify how the scheme could be enhanced to help meet the New South Wales target of the annual energy savings target of 16,000 gigawatt hours (GWh) above business as usual by 2020.[79]

3.2.3 Methodology

Our analysis of *standing offer* and *market offer* prices and cost components applies to a representative residential consumer in New South Wales consuming 6,500 kWh per year.[80]

Our methodology for estimating electricity supply chain costs in New South Wales is summarised as follows:

- **Competitive market sector**: Wholesale energy cost estimates are based on analysis undertaken for this report by Frontier Economics. The retail component is the residual when all non-retail cost components are subtracted from the representative *market offer* price, and is assumed to increase at an annual inflation rate of 2.5 per cent.

- **Regulated network sector**: For 2013/14 and 2014/15, network prices are based on information published by the respective network businesses. In the remaining years, prices are estimated using the AER's draft decisions for the 2014-19 regulatory period. The 2015/16 prices we have calculated include an adjustment for under-recovered revenue from 2013/14.

- **Environmental policies**: Analysis of the costs associated with the carbon price and Renewable Energy Target was undertaken by Frontier Economics and is based on the current legislation for both of these policies. Costs associated with the carbon price are only incurred in the 2013/14. Costs related to the Climate Change Fund were provided by the New South Wales Government and Energy Savings Scheme costs were based on certificate prices.

3.3 Australian Capital Territory

Residential electricity prices in the Australian Capital Territory (ACT) are expected to decrease by 7.2 per cent in 2014/15 and 7 per cent in 2015/16, before increasing by 2.1 per cent in 2016/17. This is equivalent to an average annual decrease of 4 per cent for the representative consumer over the reporting period.

79 NSW Government, *Energy Efficiency Action Plan, Action 1: Review of the Energy Savings Scheme – Issues Paper*, December 2013.

80 This consumption level was provided to us by New South Wales Government officials.

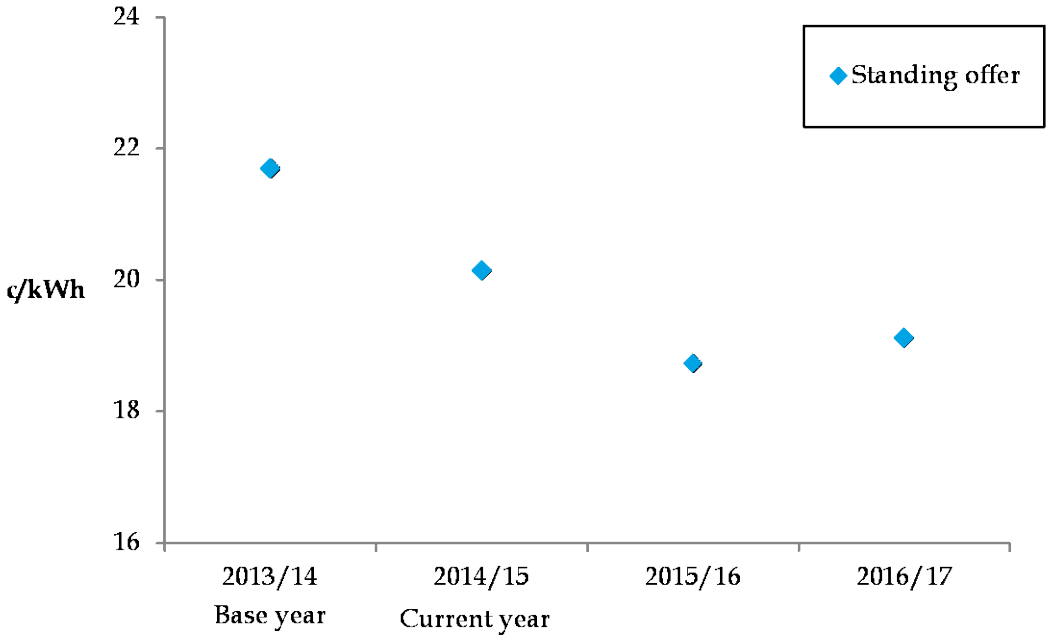
The decrease in 2014/15 is mostly due to the removal of the carbon price and lower regulated network prices. This decrease is partially offset by increases in the allowance for retail costs under the regulated *standing offer*, as determined by the Independent Competition and Regulatory Commission (ICRC).

Prices are expected to continue to fall in 2015/16 due to lower network prices, based on the AER's draft decisions for both TransGrid and ActewAGL for the 2014-19 regulatory period, which were made under the new rules for network regulation. Prices are expected to rise moderately in 2016/17, underpinned by rises in most cost components.

Most consumers in the ACT are on the regulated *standing offer*, although they have the opportunity to shop around for *market offers*. We note that Origin Energy has recently entered the retail market in the ACT and this will expand the range of *market offers* available to consumers.

Figure 3.5 shows expected movements in *standing offer* prices. *Market offers* are not reported on as 81 per cent[81] of consumers in the ACT are on the *standing offer*.

Figure 3.5 Trend in Australian Capital Territory *standing offer* price



3.3.1 Drivers of cost trends

Standing offer prices are expected to decrease at an annual average rate of 4 per cent per year over the reporting period. However, if the carbon price is excluded from the base year (2013/14), then the trend in residential electricity prices over the reporting period is for an average decrease of less than 1 per cent per year, with lower network prices partially offset by wholesale, retail and environmental policy costs.

81 AEMC, *2014 Retail Competition Review* - Final Report, Sydney, p. xiv.

Wholesale and retail market costs are expected to rise at an annual average rate of 6 per cent over the reporting period. The increase in 2014/15 is due to a decision by the ICRC to increase the allowance for retailer operating costs by 19 per cent and the allowed return on investment by 12 per cent.[82]

Wholesale and retail market costs (net of carbon) were estimated to comprise 42 per cent of the representative *standing offer* in 2013/14 and are expected to rise to 56 per cent in 2016/17.

Regulated network prices are expected to decrease by 8.7 per cent per year on average over the reporting period.[83] Network prices are expected to fall in 2014/15, due to the application of a lower rate of return allowance in the transitional decisions for that year. Network prices continue to fall in 2015/16 due to the AER's draft decisions for the 2014-2019 revenue determinations.[84]

In the draft decisions made under the new rules, the AER is proposing:

- a rate of return of 6.88 per cent for ActewAGL and 7.24 per cent for Transgrid, compared to 8.79 per cent and 10.05 per cent, respectively, for the previous regulatory period.
- Substantial reductions in capital expenditure, primarily due to lower expected growth in peak demand. The AER's draft decision proposes to reduce expenditure for Transgrid's asset replacement program.
- Substantial reductions in operating expenditure for both ActewAGL and Transgrid. The AER noted that ActewAGL's operating expenditure, particularly on its workforce, is higher than comparable businesses.

Actual network prices will depend on the AER's final determinations to be made under the new rules by 30 April 2015. At that time, the AER will determine whether a transition to efficient expenditure will be required, instead of an immediate reduction as proposed in its draft decision. If so, this will affect the trend in network prices provided in this report.

82 Independent Competition and Regulatory Commission, *Standing offer prices for the supply of electricity for small customers 1 July 2014 to 30 June 2017* Final Report, ICRC, 13 June 2014, pp54, 57.

83 This figure includes the recovery of $71 million in under-recovered revenue by TransGrid from the previous regulatory period, which is being recovered from NSW and ACT consumers. It also includes metering charges for each year. In 2013/14 and 2014/15, the prices published by the network businesses include metering. From 2015/16 onwards, the AER proposes to classify metering as an alternative control service and the costs are separated in the draft decision.

84 AER, *Draft decision, ActewAGL distribution determination 2015-16 to 2018-19, Overview* Melbourne, November 2014; AER, *Draft decision, Transgrid transmission determination, 2015-15 to 2018-19, Overview*, Melbourne, November 2014.

In 2013/14, regulated network prices are estimated to comprise 38 per cent of the representative *standing offer* and are expected to fall to 32 per cent in 2016/17.[85]

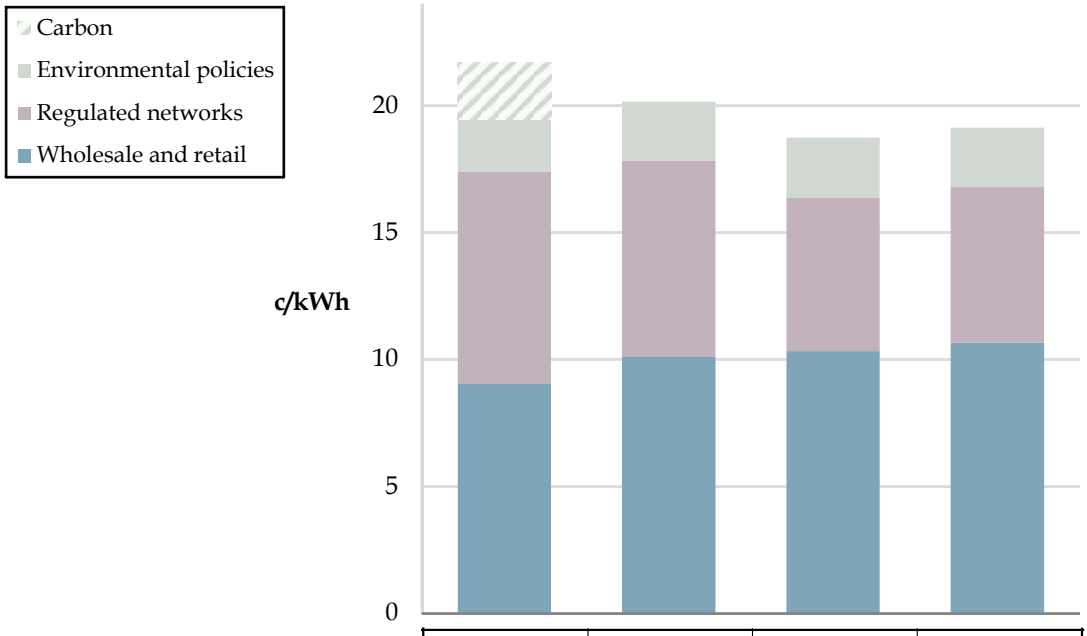
Environmental policy costs are expected to fall by 47 per cent in 2014/15 due to the removal of the carbon price. These costs are then expected to remain flat for the remaining two years of the reporting period, as increases in costs associated with the ACT's renewable energy feed-in tariffs and the Commonwealth's Renewable Energy Target are offset by reductions from the Energy Efficiency Improvements scheme.

The Energy Efficiency Improvements scheme is currently legislated to run until the end of 2015 and the ACT Government is yet to decide whether it will be continued after 2015. As such, we have not attributed any costs to this scheme beyond 2015.

Figure 3.6 shows the expected movements in the supply chain cost components in the ACT.

85 In 2014/15, there is a redistribution of costs between transmission and distribution prices. This is due to the change in the treatment of the costs associated with ActewAGL distribution network assets that support TransGrid's transmission service to Cooma. Under the terms of the AER transitional determination, these costs have been removed from the distribution price and are to be recovered in the transmission price.

Figure 3.6 Trend in Australian Capital Territory supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.32**	**2.31**	**2.36**	**2.31**
Carbon	c/kWh	2.25	0.00	0.00	0.00
LRET	c/kWh	0.59	0.64	0.76	0.96
SRES	c/kWh	0.64	0.43	0.43	0.44
Feed-in tariff	c/kWh	0.47	0.75	0.91	0.91
Energy Efficiency Improvement Scheme	c/kWh	0.38	0.49	0.25	0.00
Regulated networks	**c/kWh**	**8.35**	**7.74**	**6.06**	**6.16**
Transmission	c/kWh	1.42	2.20	2.17	2.06
Distribution	c/kWh	6.93	5.54	3.88	4.09
Wholesale and retail	**c/kWh**	**9.03**	**10.09**	**10.32**	**10.65**
Total	**c/kWh**	**21.70**	**20.14**	**18.73**	**19.12**

3.3.2 Methodology

Our analysis of residential prices and cost components applies to an average residential consumer in the ACT consuming 7,180 kWh per year.[86]

Although *market offers* are available to consumers, in this report we have examined *standing offers* only. The take-up of *market offers* is quite low, with around 80 per cent of consumers remaining on regulated *standing offers*.[87]

86 This consumption level was provided to us by ACT Government officials.

87 AEMC, *2014 Retail Competition Review*, Final Report, 22 August 2014, p124.

Our methodology for estimating electricity supply chain costs in the ACT is summarised as follows:

- **Competitive market sector**: The ICRC's retail price determination was used for wholesale and retail costs for the years 2013/14 and 2014/15. For 2015/16 and 2016/17, the wholesale energy component was escalated by a trend established by Frontier Economics. The retail component for 2013/14 and 2014/15 is based on information in the ICRC's retail price determination for 2014-17 and escalated by assumed inflation of 2.5 per cent for the remaining years.

- **Regulated network sector**: For the base and current years, our network cost estimates are based on ActewAGL's approved pricing proposals for 2013/14 and 2014/15. For the remaining two years in the reporting period, network prices are estimated using AER draft decisions for both TransGrid and ActewAGL for the 2014-19 regulatory period. The AER's final decisions will be published by 30 April 2015.

- **Environmental policies**: Costs associated with the carbon price and Renewable Energy Target were sourced from the ICRC's latest retail determination and are based on the current legislation for both of these policies. Accordingly, costs associated with the carbon price are only incurred in the base year. Costs arising from state-based schemes were provided by the ACT Government.

3.4 Victoria

Residential electricity prices in Victoria are expected to decrease by 5.5 per cent in 2014/15, before increasing by 2.3 per cent in 2015/16 and 1.5 per cent in 2016/17. This is equivalent to an annual average decrease of 0.6 per cent for the representative consumer over the reporting period.

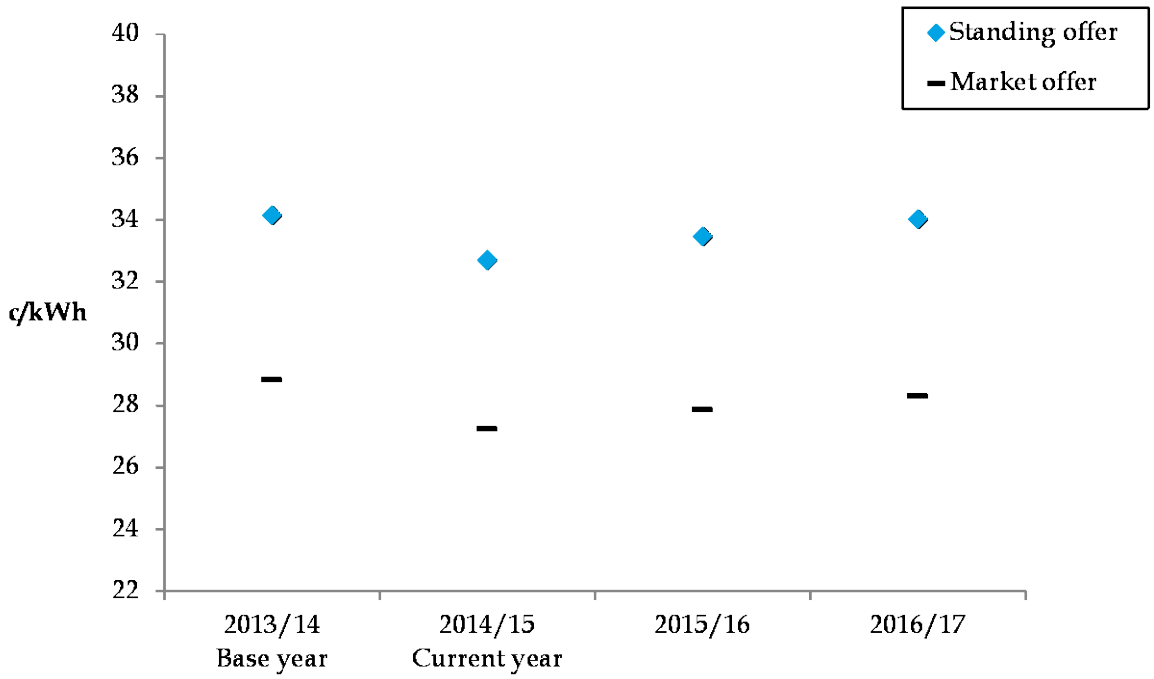
In 2014/15, the savings due to the removal of carbon pricing mechanism are partially offset by increases in distribution prices under the current AER determinations. The expected price movement between 2014/15 and 2016/17 reflect below inflation increases in most supply chain cost components.

In 2013/14, the representative consumer may have saved around 16 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $246 of the total annual bill.[88]

Figure 3.7 shows expected movements in *standing offer* and *market offer* prices.

88 This indicative saving is based on a representative consumer switching to the representative *market offer*, as defined in this report. Actual savings will depend on individual circumstances.

Figure 3.7 Trend in Victorian *market offer* and *standing offer* prices



3.4.1 Drivers of cost trends

Market offer prices are expected to decrease by an annual average of 0.6 per cent over the reporting period. However, if the carbon price cost is excluded from the base year (2013/14), then the trend in residential electricity prices over the reporting period is for an average annual increase of 2.2 per cent, due to below inflation increases in most supply chain cost components.

State based environmental policies (feed-in tariff and energy efficiency schemes) are estimated to contribute 3.7 per cent to total costs in the current year, with the costs of the feed-in tariff scheme estimated to remain relatively constant over the reporting period. As the former Victorian Government announced that the Victorian Energy Efficiency Target scheme will be closed at the end of 2015, the costs associated with the scheme are phased out from 2015/16.[89]

Regulated network prices consist of the costs of the transmission and distribution networks. The trend in these prices depends on the AER's regulatory determinations. In the base year, regulated network prices are estimated to contribute 40 per cent to residential electricity prices. Transmission prices are based on a regulatory

89 Victorian Government, 'Victorian Energy Efficiency Target (VEET) to operate in 2015 then close to save on bills,' viewed at: http://www.premier.vic.gov.au/media-centre/media-releases/11334-veet-to-operate-in-2015-then-close-to-save-on-bills.html

determination made by the AER in 2014 and are lower than the previous regulatory period.[90]

Distribution prices are based on a regulatory determination from January 2011 to December 2015, which included higher levels of capital and operating expenditure compared to the previous regulatory period. This additional expenditure was necessary for asset replacement, meeting anticipated peak demand and to address new safety related obligations. For the reporting period where a determination is not available, we have assumed that network prices remain constant in nominal terms.

Competitive market costs consist of wholesale energy purchase costs and the costs associated with retailing electricity to residential consumers. Competitive market costs are estimated to increase at an annual average rate of 1 per cent over the reporting period.

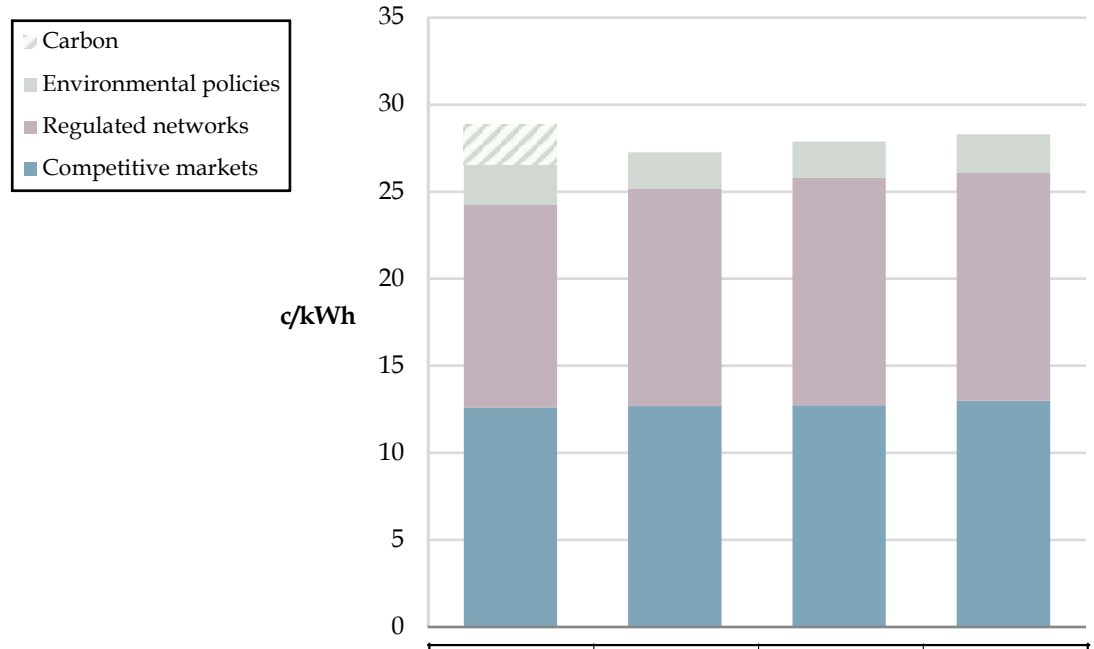
Growth in renewable energy generation under the current Large-scale Renewable Energy Target scheme is expected to put downward pressure on Victorian wholesale energy prices. Modelling by Frontier Economics estimates that wholesale prices will fall by 7 per cent over the reporting period.

The trend in competitive market sector costs is primarily being driven by our assumption that the retail component will increase by an annual inflation rate of 2.5 per cent over the reporting period.

Figure 3.8 shows the expected movements in the supply chain cost components.

90 Estimates of transmission network prices include network augmentation costs determined by AEMO in its planning and procurement role.

Figure 3.8 Trend in Victorian supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.59**	**2.07**	**2.07**	**2.22**
Carbon	c/kWh	2.29	0.00	0.00	0.00
LRET	c/kWh	0.59	0.64	0.77	0.96
SRES	c/kWh	0.64	0.44	0.43	0.44
Feed in Tariff schemes	c/kWh	0.86	0.84	0.83	0.82
Victorian Energy Efficiency Target	c/kWh	0.21	0.15	0.04	0.00
Regulated networks	**c/kWh**	**11.64**	**12.50**	**13.07**	**13.09**
Transmission	c/kWh	1.35	1.36	1.36	1.36
Distribution	c/kWh	10.29	11.15	11.71	11.72
Competitive market	**c/kWh**	**12.59**	**12.67**	**12.72**	**12.98**
Wholesale and retail					
Total	**c/kWh**	**28.82**	**27.24**	**27.86**	**28.29**

3.4.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- Since 1 July 2013, Victorian consumers with a remotely read interval meter ('smart meter') have had the ability to choose between a flat rate of electricity pricing and flexible pricing. Flexible pricing typically includes different prices for consumption at different times of the day.

- As noted above, the former Victorian Government announced that the Victorian Energy Efficiency Target scheme will close at the end of 2015.

3.4.3 Methodology

Our analysis of residential prices and cost components applies to a representative residential consumer in Victoria using 4,645 kWh per year.[91]

Our methodology for estimating electricity supply chain costs in Victoria is summarised as follows:

- **Competitive market sector:** Wholesale energy cost estimates are based on energy market modelling undertaken for this report by Frontier Economics. The retail component is the residual when all non-retail cost components are subtracted from the representative *market offer* price, and is assumed to increase at an annual inflation rate of 2.5 per cent.

- **Regulated network sector:** For the years where there are determinations made by the AER, transmission and distribution prices are estimated using values in the regulatory determinations. The current transmission determination ends on 30 March 2017 and the distribution determination ends on 30 December 2015. Where a network determination is not available, we have assumed that prices remain constant in nominal terms.

- **Environmental policies:** Analysis of the costs associated with the carbon price and Renewable Energy Target was undertaken by Frontier Economics and is based on current legislation for both of these policies. Accordingly, costs associated with the carbon price are only incurred in 2013/14. Costs arising from state-based environmental schemes were provided by the Victorian Government.

3.5 South Australia

Residential electricity prices in South Australia are expected to fall in the first two years of the reporting period, with decreases of 3.9 per cent expected in 2014/15 and 3.5 per cent in 2015/16, followed by an increase of 0.2 per cent in 2016/17. This is equivalent to an average annual decrease of 2.4 per cent for the representative consumer over the reporting period.

In 2014/15, the savings due to the removal of the carbon price are partially offset by expected increases in regulated network prices and South Australia's solar feed-in tariff scheme. In the following two years, the declining price trend reflects expected falls in most supply chain cost components.

In 2013/14, a representative consumer using 5,000 kWh per year may have saved around 10 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $189 of the total annual bill.[92]

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91 The representative consumption level was provided to the AEMC by Victorian government officials.

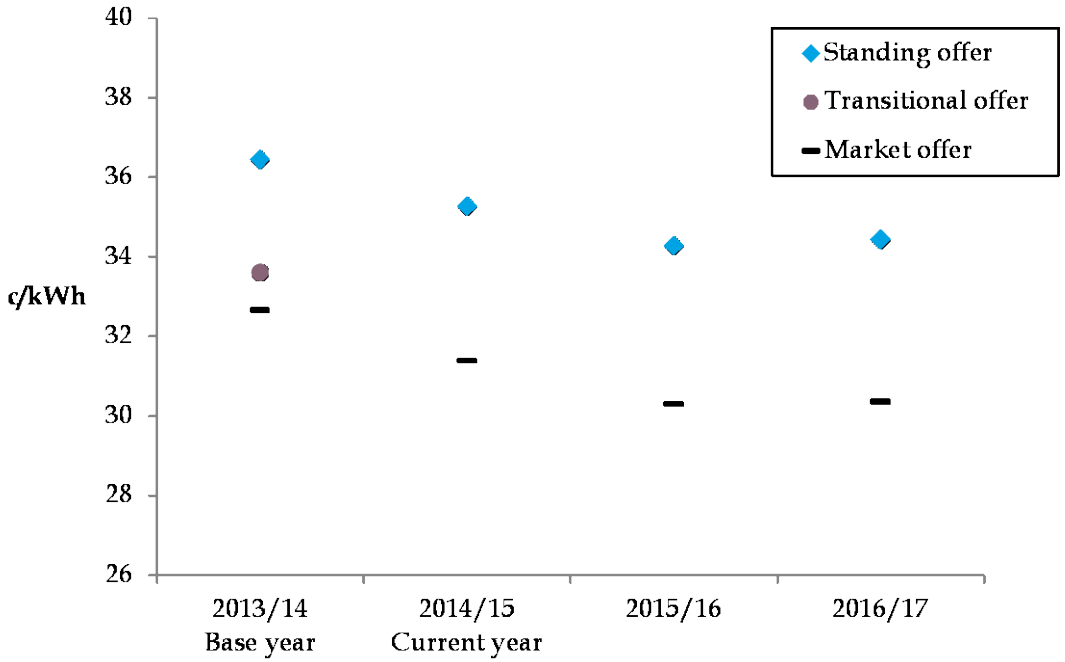
92 This indicative saving is based on a representative consumer switching to the representative *market offer*, as defined in this report. Actual savings will depend on individual circumstances.

Figure 3.9 shows expected movements in *standing offer* and *market offer* prices and the transitional electricity *standing offer*, which will be available until 31 December 2014.

Consumers that were on AGL's *standing offer* contracts prior to 1 February 2013, with prices determined by the South Australian regulator, have been moved to the transitional *standing offer* as part of the process of deregulating residential electricity prices.[93]

Chapter 4 discusses the differences between *standing offer* and *market offer* contracts and the options available to consumers in choosing the best energy deal.

Figure 3.9 Trend in South Australian *market offer* and *standing offer* prices



3.5.1 Drivers of cost trends

Market offer prices are expected to decrease, on average, by 2.4 per cent per year over the reporting period. However, if the carbon price cost is excluded from the base year (2013/14), then the trend in residential electricity prices over the reporting period is for an average annual decrease of 0.4 per cent, due to a moderate fall in most supply chain cost components.

South Australian environmental policies, such as the Solar Feed-in Scheme and Residential Energy Efficiency Scheme are expected to contribute 6.4 per cent to total costs in 2013/14. Following an initial rise in the Solar Feed-in Scheme in 2014/15, the cost of the policy is expected to fall during the reporting period. Costs associated with

93 The transitional offer includes a 9.1 per cent discount and was made available to those consumers that were on the *standing offer* as at 31 January 2013. For 2013/14, we have used AGL's updated transitional *standing offer* as at 1 August 2013.

the Residential Energy Efficiency Scheme are expected to remain constant over the reporting period.

Regulated network prices consist of the costs of the transmission and distribution networks. The trend in these prices depends on regulatory determinations made by the AER. In the base year, regulated network prices are expected to contribute 46 per cent to total costs.

Transmission prices are based on a regulatory determination made by the AER in 2013 under the previous rules and are expected to increase, on average, by 5.6 per cent per year during the reporting period.

Distribution network prices in 2013/14 and 2014/15 are based on a regulatory determination from 2010, which included a temporary increase in 2014/2015 for vegetation management. For 2015/16 and 2016/17, we have used SA Power Network's regulatory proposal for the 2015-20 regulatory period.

SA Power Networks has proposed a decrease in the regulated rate of return compared to the current regulatory period which, all else equal, should put downward pressure on distribution network prices over the 2015-20 regulatory period. Capital expenditure is proposed to increase by 3 per cent in 2015/16 and 10 per cent in 2016/17, largely due to replacement and augmentation of network assets. Energy consumption is forecast to decrease by an annual average of 0.2 per cent in the proposal.[94]

Given that network prices make up around 50 per cent of the representative consumer's bill in South Australia, the trend in residential electricity prices will depend on the outcome of the AER's determination.

Competitive market costs consist of wholesale energy purchase costs and the costs associated with retailing electricity to residential consumers. This component is expected to decrease, on average, by 4.7 per cent per year over the reporting period.

The trend in competitive market costs is being driven by a substantial decrease in wholesale energy purchase costs due to a growing oversupply of generation capacity. The oversupply is a result of falling energy consumption and growth in wind generation under the Renewable Energy Target, most of which has occurred in South Australia.[95]

Low wholesale energy prices offset the cost of the Renewable Energy Target for South Australian consumers in the short term. In the medium term, wholesale prices are likely to rise in response to unprofitable generators exiting the market. If this occurs,

94 SA Power Networks, *Regulatory Proposal 2015-20*, 3 November.

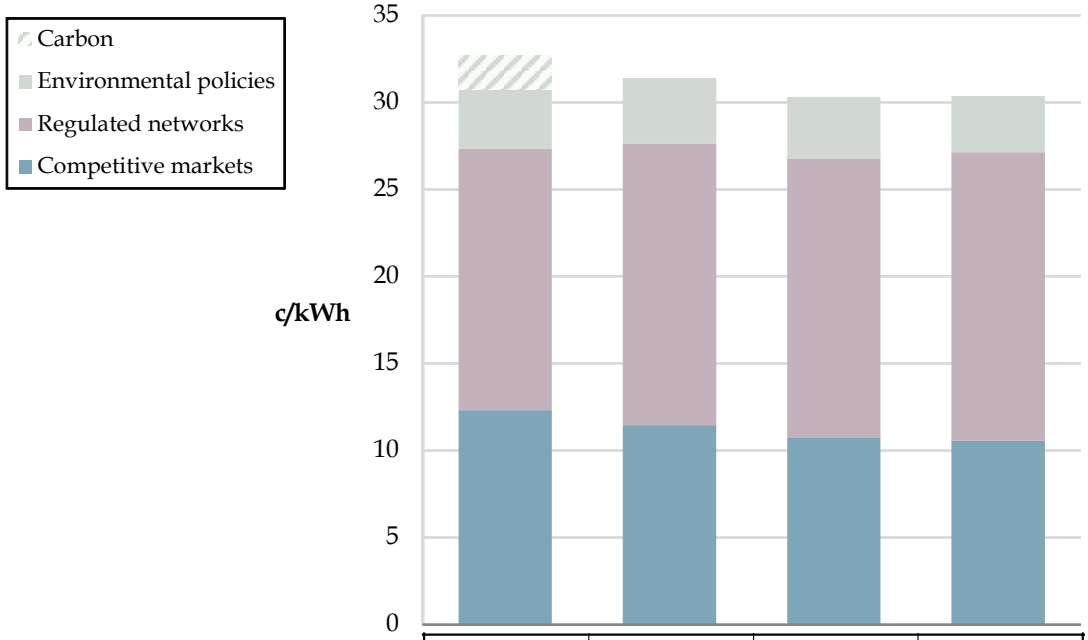
95 We note that if the investment under the Renewable Energy Target modelled by Frontier Economics does not materialise due to the current policy uncertainty, this trend may not occur and wholesale energy purchase costs are likely to be higher.

the cost of meeting the Renewable Energy Target will become more apparent through South Australian consumers' retail bills.[96]

The expected decrease in wholesale energy purchase costs is partially offset by an expected 62 per cent increase in costs associated with meeting the Large-scale Renewable Energy Target over the reporting period.

In 2014/15, the competitive market segment is expected to make up 36 per cent of total costs. Figure 3.10 shows the expected movements in the supply chain cost components.

Figure 3.10 Trend in South Australian supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**5.35**	**3.78**	**3.52**	**3.24**
Carbon	c/kWh	1.96	0.00	0.00	0.00
LRET	c/kWh	0.63	0.68	0.82	1.03
SRES	c/kWh	0.68	0.46	0.46	0.47
Solar Feed-in Scheme	c/kWh	1.78	2.33	1.94	1.44
Residential Energy Efficiency Scheme	c/kWh	0.30	0.30	0.30	0.30
Regulated networks	**c/kWh**	**15.00**	**16.17**	**16.06**	**16.57**
Transmission	c/kWh	2.54	2.73	2.85	2.97
Distribution	c/kWh	12.47	13.44	13.21	13.59
Competitive market	**c/kWh**	**12.30**	**11.44**	**10.71**	**10.55**
Wholesale and retail					
Total	**c/kWh**	**32.65**	**31.38**	**30.29**	**30.35**

96 Frontier Economics, *RET Review Analysis - A report prepared for the Australian Energy Market Commission*, June 2014.

3.5.2 Jurisdictional developments

The following jurisdiction-specific factors may have impacted residential electricity prices during the reporting period:

- The South Australian Government deregulated electricity and gas retail prices on 1 February 2013.
- Consumers on *standing offer* contracts with AGL for electricity prior to 1 February 2013 were transferred to AGL's transitional *standing offer*. The transitional offer will be available until 31 December 2014.

3.5.3 Methodology

Our analysis of residential prices and cost components applies to a representative residential consumer in South Australia using 5,000 kWh per year.[97]

The methodology for estimating electricity supply chain costs in South Australia is summarised as follows:

- **Competitive market sector:** Wholesale energy cost estimates are based on energy market modelling undertaken for this report by Frontier Economics. The retail component is the residual when all non-retail cost components are subtracted from the representative *market offer* price, and is assumed to increase at an annual inflation rate of 2.5 per cent.
- **Regulated network sector:** Transmission and distribution network prices are estimated using revenue determinations made by the AER. The current transmission determination applies for the entire reporting period, while the current distribution determination ends on 30 June 2015. For the years where a determination is not available, we have used SA Power Network's regulatory proposal for the 2015-20 regulatory period. Actual outcomes will depend on the AER's final determination, which will be published in October 2015.
- **Environmental policies:** Analysis of the costs associated with the carbon price and Renewable Energy Target was undertaken by Frontier Economics and is based on the current legislation for both of these policies. Accordingly, costs associated with the carbon price are only incurred in 2013/14. Costs arising from state-based schemes are based on information provided by the South Australian Government.

3.6 Tasmania

Residential electricity prices in Tasmania are expected to decrease by 10.3 per cent in 2014/15 and 0.7 per cent in 2015/16, and then increase by 2.3 per cent in 2016/17. This

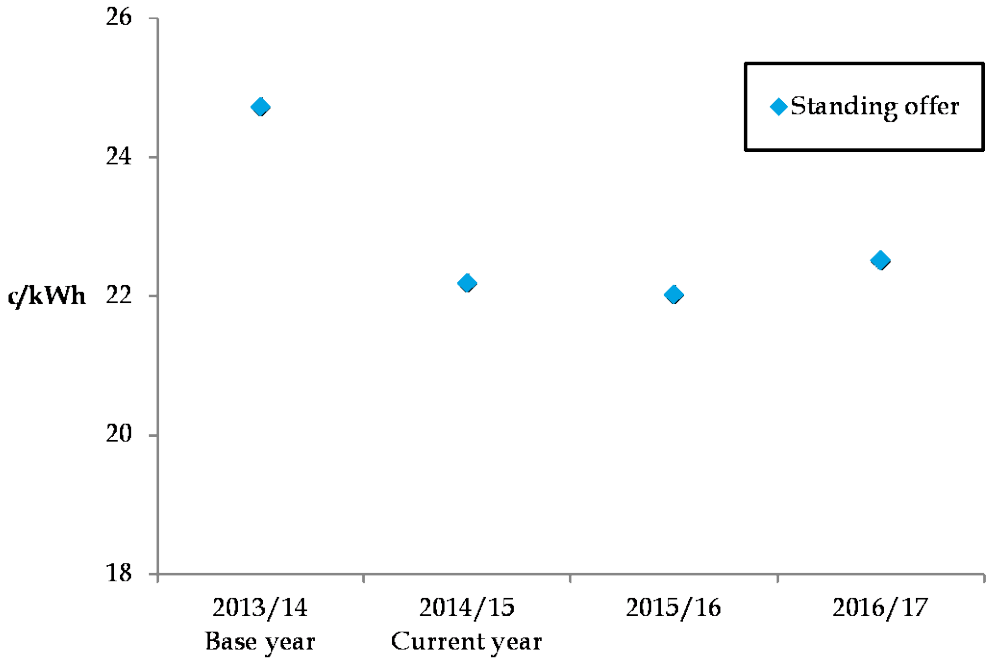
97 The representative consumption level was provided to the AEMC by South Australian government officials.

is equivalent to an average annual decrease of 3 per cent for the representative consumer between 2013/14 and 2016/17.

The main driver of this trend in Tasmania is the removal of the carbon price in 2014/15 and falling wholesale energy purchase costs. Environmental policy costs and regulated network prices are expected to increase moderately over the reporting period.

Figure 3.11 shows expected movements in *standing offer* prices. While full retail contestability was introduced from 1 July 2014 and retailers are able to offer market contracts, there are currently no *market offers* available.

Figure 3.11 Trend in Tasmanian *standing offer* prices



3.6.1 Drivers of cost trends

During the reporting period, *standing offer* prices in Tasmania are expected to decrease at an average annual rate of 3 per cent. However, if the carbon price is excluded from the base year (2013/14), then *standing offer* prices show little change over the reporting period.

The Office of the Tasmanian Economic Regulator (OTTER) regulates the *standing offer* price. In its recent determination, OTTER combined the wholesale and carbon price cost components. We have separated out these components to maintain consistency in our reporting and allow for comparison with other jurisdictions.

Wholesale and retail costs are provided as one cost component in this report and are expected to fall by an average annual rate of 1.9 per cent over the reporting period. The trend in 2015/16 and 2016/17 reflects expected movements in the Victorian wholesale price, as discussed in Section 3.4.1.

Regulated network prices consist of the costs of transmission and distribution network services. The trend in these prices is based on the AER's regulatory determination for TasNetwork's distribution business over the 2012-17 regulatory period and the AER's draft decision for TasNetworks transmission business for the 2014-19 regulatory period.

The AER's draft decision for the transmission business was made under the new rules for network regulation, while the distribution determination was made under the previous rules.

Growth in network prices is expected to be low over the period, at an average annual rate of 1 per cent. This is primarily due to a lower regulated rate of return and moderating capital expenditure for both transmission and distribution. Actual network prices for the transmission business will depend on the AER's final determination for TasNetworks to be made under the new rules by 30 April 2015.

Environmental policy costs consist of the Renewable Energy Target and the carbon price. Based on a statement from Aurora Energy, we have assumed that the carbon price made up 9.4 per cent of the representative standing offer price in 2013/14.[98]

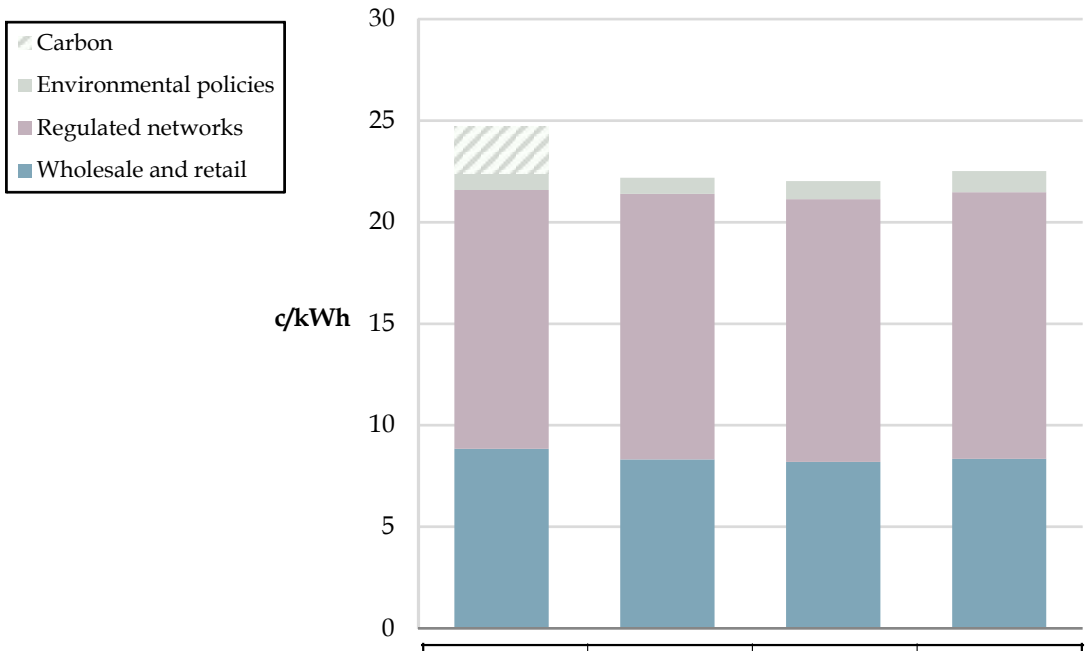
While Tasmanian electricity generation is not emissions-intensive, we note that the carbon price saving is substantial due to the relationship between wholesale prices in Tasmania and Victoria.

The carbon price resulted in higher wholesale prices in Victoria due to the amount of coal- and gas-fired generators in this region. As Victoria and Tasmania are connected via the Basslink interconnector, Tasmanian consumers effectively paid a carbon component that was related to the higher emissions-intensity of the Victorian region.

Figure 3.12 shows expected movements in the supply chain cost components in Tasmania.

98 See: http://www.auroraenergy.com.au/Aurora/media/pdf/Residential_Small_Business_Customer_Notice.pdf

Figure 3.12 Trend in Tasmanian supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**3.13**	**0.79**	**0.88**	**1.03**
Carbon	c/kWh	2.32	0.00	0.00	0.00
Renewable Energy Target	c/kWh	0.81	0.79	0.88	1.03
Regulated networks	**c/kWh**	**12.74**	**13.07**	**12.93**	**13.14**
Wholesale and retail	**c/kWh**	**8.85**	**8.32**	**8.20**	**8.34**
Total	**c/kWh**	**24.72**	**22.18**	**22.02**	**22.51**

3.6.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- As of 1 July 2014, the Tasmanian transmission and distribution network business, which were previously separate entities, merged to create a combined entity named TasNetworks.

- Full retail contestability was introduced in Tasmania from 1 July 2014. Retailers, including Aurora Energy and new entrants, are now able to provide *market offer* contracts to retail consumers. A regulated *standing offer* remains for those consumers not seeking a *market offer*.

3.6.3 Methodology

Our analysis of residential electricity prices applies to a representative residential consumer in Tasmania using 7,627 kWh per year. Based on advice from Tasmanian

government officials, we have defined the representative consumer as the weighted-average of the two most common categories of consumers.[99]

Our methodology for estimating electricity supply chain costs in Tasmania is summarised as follows:

- **Wholesale and retail sector**: Wholesale and retail market costs for 2013/14 and 2014/15 are sourced from Aurora's approved pricing proposals, although we have separated the carbon cost from the wholesale component based on an announcement by Aurora that specified the contribution of this cost.[100] For 2015/16 and 2016/17, we escalated the retail component by the assumed rate of inflation of 2.5 per cent and wholesale costs were escalated by the expected trend in Victorian wholesale energy prices, as modelled by Frontier Economics.

- **Regulated network sector**: For 2013/14 and 2014/15, network prices are based on Aurora Energy's approved retail pricing proposals. For 2015/16 and 2016/17, network prices are based on the weighted average of the trends in both the AER's 2012-17 determination for Aurora Energy and its draft decision for TasNetworks' transmission revenue determination for 2014-19. Network prices are provided as one component in this report as Aurora Energy's pricing proposals do not provide separate components for transmission and distribution.

- **Environmental policies**: The cost of the carbon price was based on an announcement by Aurora Energy and has been provided for 2013/14 only, as the carbon price was repealed with effect from 1 July 2014. The Renewable Energy Target costs were sourced from Aurora Energy's approved pricing proposals for 2013/14 and 2014/15. The following two years were extrapolated based on trends established by Frontier Economics, which assume that the current legislation is maintained.

3.7 Western Australia

Residential electricity prices in Western Australia are set by the Western Australian Government rather than by market competition or an independent regulator.

These prices are expected to decrease by 4.1 per cent in 2014/15, and then increase by 7 per cent per year in 2015/16 and 2016/17. The increases of 7 per cent in 2015/16 and 2016/17 are budget assumptions only and the Western Australian Government will

99 About 55 per cent of consumers are on Tariffs 31 and 42 and about 31 per cent of consumers are on Tariffs 31 and 41. Tariff 42 is for water and space heating, Tariff 41 is just for water heating and Tariff 31 is for all other applications. The energy split between these tariffs is set out in OTTER, Typical Electricity Consumers, information paper, May 2014, pp4-5.

100 See: http://www.auroraenergy.com.au/your-home/carbon-tax/carbon-tax-removal-substantiation-statement

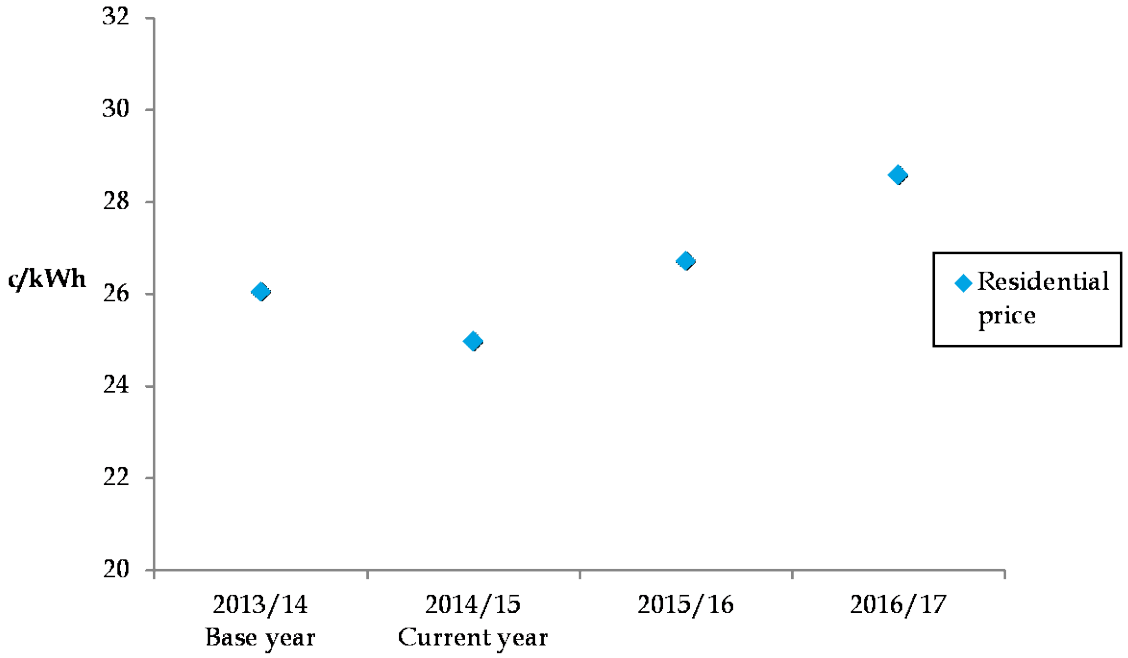
make price decisions closer to when the prices are to apply.[101] As prices are set by the Western Australian Government, the retail prices paid by consumers do not necessarily reflect underlying costs, nor follow cost trends.

Residential electricity prices are currently subsidised by the Western Australian Government, meaning that the price paid by residential consumers is lower than the cost of supplying them with electricity. For 2013/14, we calculate that the residential price would need to increase by 30 per cent to reflect the total estimated cost of supply in the South-West Interconnected System (SWIS).[102]

For Western Australia we have based our estimates of the wholesale energy cost over the reporting period on a Long Run Marginal Cost (LRMC) model rather than on market modelling as in other jurisdictions. We considered that market modelling would underestimate Synergy's actual wholesale energy cost because these costs are determined by contractual arrangements rather than the spot market price.

Figure 3.13 shows expected trend in residential prices.

Figure 3.13 Trend in Western Australia residential price



101 See Budget Paper No. 3 of the Western Australian Government's 2014/15 Budget Papers, page 290 http://www.treasury.wa.gov.au/cms/uploadedFiles/State_Budget/Budget_2014_15/2014-15_bp3.pdf

102 The SWIS is the electricity network that services the south-west region of Western Australia. Its outermost limits are Kalbarri in the north, Albany in the south, and Kalgoorlie in the east.

3.7.1 Drivers of cost trends

During the reporting period the costs of supplying electricity are expected to increase, on average, by 1.7 per cent per year.[103] This is due to:

- an average annual increase of 8 per cent in distribution network prices during the reporting period; and
- an average annual increase of 2.9 per cent in wholesale energy costs during the reporting period.

Although the carbon price made up 8.3 per cent of the total residential price in 2013/14, the saving in 2014/15 from the repeal of this policy is partially offset by a legislated increase of 4.5 per cent in the regulated price. The cost trend across the last two years of the reporting period is for an average increase of 4.4 per cent per year.

Distribution network costs are increasing mostly because of increases in operational expenditure. This is as a result of growth in the size of the network, greater customer numbers and increasing labour costs.[104] Part of the price increase in 2014/15 is due to energy sales being lower than expected. If this trend in sales continues, network prices are likely to be higher than otherwise expected as costs would need to be recovered over a smaller volume of energy sales.[105]

Wholesale energy costs are expected to increase, on average, by 2.9 per cent per year. This is an output of the LRMC modelling by Frontier Economics and not based on how existing market participants may operate in the future. The LRMC modelling assumes average increases in capital costs of between 3.2 and 4.1 per cent per year during the reporting period (depending on the fuel source and technology).[106] In nominal terms, the wholesale price of gas is forecast to remain constant and coal prices are forecast to decrease.[107]

Although coal prices are forecast to decrease, we note that some coal producers have expressed concerns about their rising operational costs compared with the long-term contract prices they are receiving for their coal. The Western Australia Government has

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103 The total cost of supply includes the Tariff Equalisation Contribution (TEC), an amount which is collected from SWIS customers via Western Power's network prices and used to fund the Western Australian Government's uniform tariff policy.

104 Western Power, *Proposed revisions to the Access Arrangement for the Western Power Network*, Appendix A, September 2011. Costs have been smoothed across the 2012-17 regulatory period, as shown in Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, 5 September 2012, p52.

105 This is because Western Power is regulated under a revenue cap. When energy sales are lower than the forecast amount, the amount of revenue that is recovered per unit of energy must increase for the total amount of revenue to be consistent with the revenue cap.

106 Changes in the modelled capital costs are due to assumptions about future exchange rates, changes in the costs of labour and materials, and technology learning curves.

107 In contrast to the Australian east coast, Western Australia is already a gas exporter. The Western Australian gas price is therefore influenced by movements in the Asia-Pacific LNG price. During the reporting period the Asia-Pacific LNG price is forecast to be constant in nominal terms.

recently approved amendments to Synergy's contract with Premier Coal, including a price increase.[108]

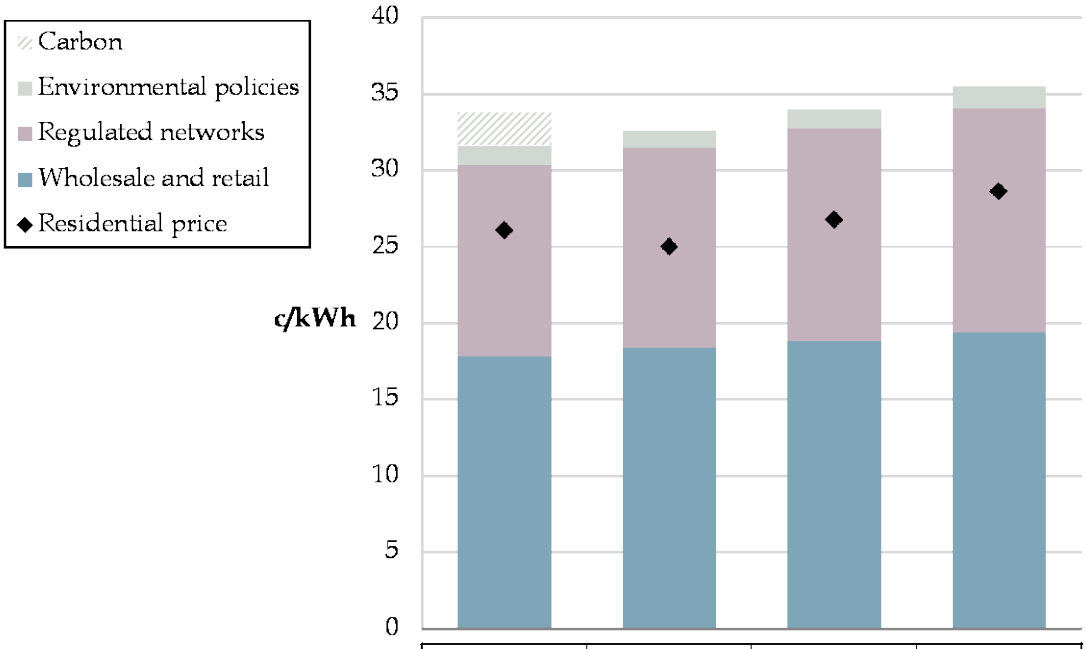
In 2013/14, the costs associated with the Renewable Energy Target are estimated to have accounted for 3.9 per cent of the total cost of supply. These costs are expected to increase, on average, by 4.6 per cent per year and are based on the assumption that the current Renewable Energy Target scheme is maintained.[109]

Figure 3.14 shows the expected movements in the supply chain cost components in Western Australia.

108 M Nahan (Treasurer), *State reaches agreement to secure future energy*, media statement, 14 October 2014.

109 This includes an average increase of 21 per cent per year in the costs of the Large-scale Renewable Energy Target, and an average decrease of 11 per cent per year in the costs of the Small-scale Renewable Energy Scheme.

Figure 3.14 Trend in Western Australia supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**3.46**	**1.14**	**1.28**	**1.49**
Carbon	c/kWh	2.15	0.00	0.00	0.00
LRET	c/kWh	0.63	0.68	0.82	1.03
SRES	c/kWh	0.68	0.46	0.46	0.47
Regulated networks	**c/kWh**	**12.51**	**13.14**	**13.90**	**14.68**
Transmission	c/kWh	2.00	1.98	1.80	1.63
Distribution	c/kWh	10.51	11.16	12.10	13.04
Wholesale and retail	**c/kWh**	**17.79**	**18.35**	**18.81**	**19.36**
Wholesale	c/kWh	14.86	15.40	15.75	16.17
Retail	c/kWh	2.93	2.95	3.06	3.18
Estimated total supply cost	**c/kWh**	**33.76**	**32.63**	**33.99**	**35.53**
Residential price	**c/kWh**	**26.04**	**24.97**	**26.71**	**28.58**

3.7.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- The Western Australian Government is currently undertaking a wide-ranging review of the electricity market.[110] Any changes that occur as a result of this review may impact on future residential retail prices within the period covered by this report.

110 Information on the Western Australian Government's Electricity Market Review is available at http://www.finance.wa.gov.au/cms/TwoColumns_Content.aspx?Pageid=17638&id=17731

3.7.3 Methodology

Our methodology for Western Australia differs from the other states because residential prices are set by the Western Australian Government and there is no formal statement of the supply chain costs.[111]

Due to the Western Australian Government's uniform tariff policy, residential consumers outside the SWIS pay the same price as those consumers in the SWIS. Our analysis of prices and cost components for Western Australia is for consumers in the SWIS; however, the reported price trends will also apply to residential consumers outside of the SWIS.

The sources of information we have used to estimate supply costs in Western Australia are:

- **Wholesale energy sector:** Our wholesale energy cost estimates are based on modelling of the stand-alone LRMC undertaken by Frontier Economics. LRMC modelling was used due to the expectation that market modelling would underestimate Synergy's actual wholesale energy costs. Synergy's costs are determined by contractual arrangements, including those relating to the Reserve Capacity Mechanism (RCM), rather than solely the spot market price.[112]

- **Retail sector:** We have used estimates from the Western Australian Economic Regulation Authority for Synergy's efficient retail operating cost, retail margin, and depreciation allowance.[113] These estimates are considered by the Economic Regulation Authority to be sufficient to cover efficient input costs while also providing a reasonable return to the retailer. Notably, our approach to estimating the retail cost in Western Australia is different to how the retail component is derived for other jurisdictions.[114]

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111 In some other jurisdictions where prices are regulated an independent regulator will set the residential tariff after considering the efficient costs of supply, including efficient retail margins.

112 The objective of the RCM is to secure sufficient capacity (generation and demand side management) to meet the peak load of the SWIS. The capacity requirement is set two years in advance by the Independent Market Operator. Retailers are required to contract, or purchase capacity from the IMO, to meet the capacity requirement. We have not modelled the RCM in our analysis.

113 Economic Regulation Authority, *Inquiry into the Efficiency of Synergy's Costs and Electricity Tariffs*, final report, ERA, 4 July 2012.

114 A 'retail component' is derived for other jurisdictions as the difference between the residential tariff or *market offer* price and the aggregate of the environmental, network and wholesale cost components. Broadly there are two reasons for using a different method for Western Australia. As prices are set by the government rather than an independent regulator, it is unclear what assumptions have been made in regard to the retail component. Also, because the government-set price is less than the cost of supply, calculation of the retail component via the residual method used in the other jurisdictions would not provide any indication of the retail costs and would therefore underestimate the total cost of supply.

- **Regulated network sector:** We have used Western Power's Approved Revised Access Arrangement to estimate network prices. The current determination covers the entire duration of the reporting period.[115]

- **Environmental policies:** The environmental schemes that impact on residential electricity prices in Western Australia are the carbon pricing mechanism (only in 2013/14) and the Renewable Energy Target. The carbon component for 2013/14 is specified by the Western Australian government. Energy market modelling has been used to estimate the Renewable Energy Target scheme costs. The costs of the Residential Feed-in Tariff are not included in our reporting because this scheme is funded by Western Australian Government taxation revenue and the costs do not flow through directly to residential electricity prices.

Our analysis of residential prices and cost components applies to a representative residential consumer in the SWIS using 5,747 kWh per year.[116]

3.7.4 Government subsidy

Residential electricity prices in Western Australia have been lower than the cost of supply for an extended period. Prior to 2009, electricity prices had not increased since 1997/98 (excluding GST).[117] Despite increases of 86 per cent since then, in 2013/14 the price was still less than the estimated total cost.[118]

Over the three years between 2013/14 and 2016/17, the subsidy is expected to become smaller as the Western Australian Government has projected in the State Budget that it will be increasing prices more than our projected increase in supply costs. In 2016/17, we calculate that the price may still need to increase by 24 per cent to reflect the total estimated cost of supply.

3.8 Northern Territory

Residential electricity prices in the Northern Territory are set by the Northern Territory Government, which subsidises electricity prices such that the prices paid by consumers are less than the cost of supply.[119]

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115 The expected trend in distribution and transmission costs is set out in Economic Regulation Authority, *Decision: Variation to Western Power's Access Arrangement for 2012/13 to 2016/17*, 4 June 2013, p13.

116 This representative consumption value was provided to us by the Western Australian Government. It was calculated by dividing the total residential consumption in 2013/14 by the number of residential consumers.

117 Historical data on electricity prices in WA is available at http://www.finance.wa.gov.au/cms/content.aspx?id=15096. Prior to 2009, prices had been kept constant and were not adjusted for inflation.

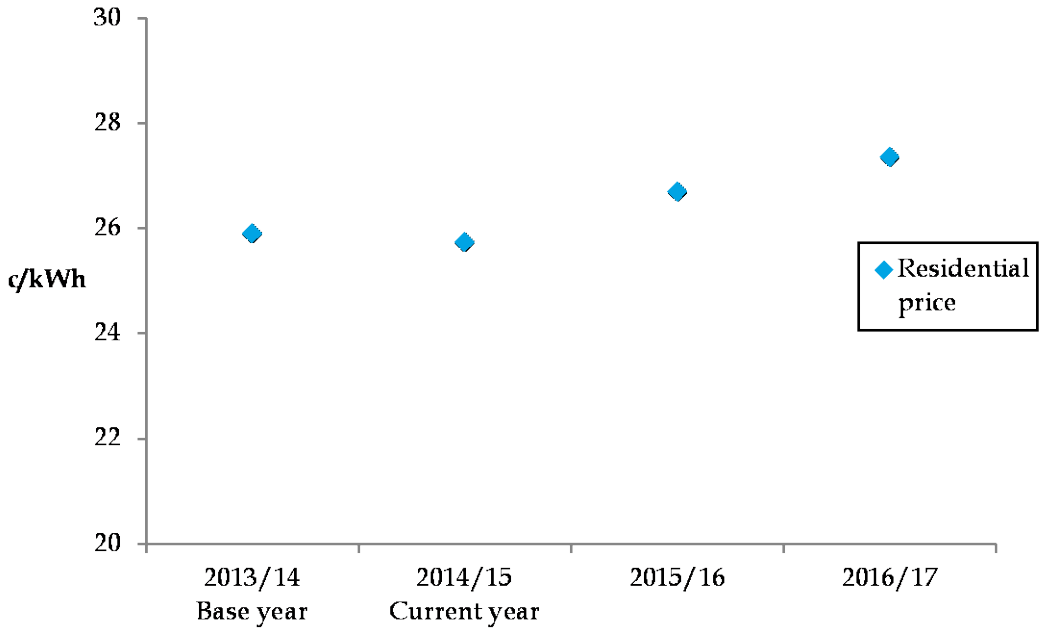
118 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, phase 1 terms of reference, January 2014.

119 These Pricing Orders currently apply on a calender year basis from 1 January to 31 December. However, an amendment to the Pricing Order was signed by the Treasurer on 19 June 2014 to

Residential electricity prices in the Northern Territory are expected to decrease by 0.6 per cent in 2014/15, before increasing by 3.7 per cent in 2015/16 and 2.5 per cent in 2016/17. This is equivalent to an average annual increase of 1.9 per cent for the representative consumer over the reporting period.

Figure 3.15 shows expected movements in residential electricity prices.

Figure 3.15 Trend in Northern Territory residential price



3.8.1 Drivers of cost trends

The key drivers of these price movements are the repeal of the carbon pricing mechanism and increases in regulated network prices.

Although the carbon price made up 5.4 per cent of the residential price in 2013/14, the savings in 2014/15 from the repeal of the policy are mostly offset by higher regulated network prices.

Increases in regulated network prices over the reporting period are due to higher operational expenditure and regulatory depreciation allowance.[120]

Operational expenditure for the 2014-19 regulatory period is 45 per cent higher than for the previous five year regulatory period. This is due to a new asset management regime that has an increased focus on condition monitoring and preventative

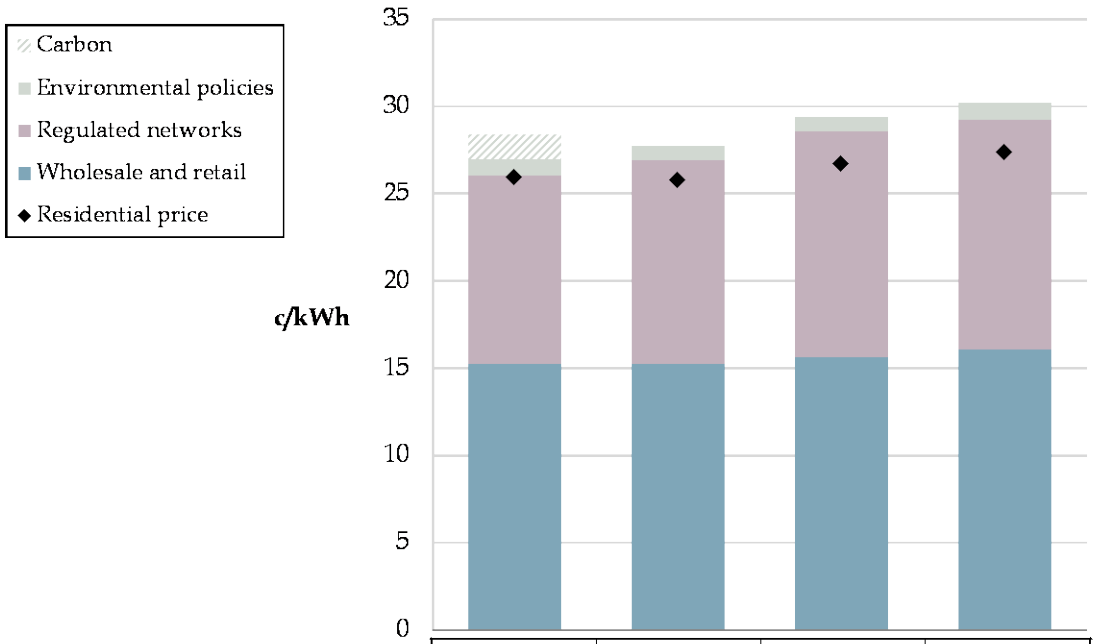
reflect the repeal of the carbon price legislation from 1 July 2014. In contrast, our reporting is on financial year basis from 1 July to 30 June.

120 Utilities Commission, 2014 Network Price Determination, *final determination, Part A - Statement of Reasons*, 24 April 2014, Darwin.

maintenance. The higher regulatory depreciation allowance is a result of a re-evaluation of the asset life of the network infrastructure.[121]

Figure 3.16 shows the expected movements in the supply chain cost components in the Northern Territory.

Figure 3.16 Trend in Northern Territory supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**2.32**	**0.83**	**0.88**	**0.97**
Carbon	c/kWh	1.39	0.00	0.00	0.00
LRET	c/kWh	0.38	0.38	0.44	0.54
SRES	c/kWh	0.54	0.46	0.44	0.44
Regulated networks	**c/kWh**	**10.77**	**11.65**	**12.88**	**13.20**
Network	c/kWh	10.77	11.65	12.88	13.20
Wholesale and retail	**c/kWh**	**15.27**	**15.28**	**15.66**	**16.06**
Residual		-2.46	-2.03	-2.73	-2.86
Residential price	**c/kWh**	**25.90**	**25.74**	**26.69**	**27.36**

Note: The "residual" is the difference between the residential price and the aggregate of the supply chain costs. It represents part, but not all, of the government subsidy. Renewable Energy Target costs were provided by the Northern Territory Government on a calendar year basis for 2013 and 2014. We have adjusted these costs by inflation to report on the 2013/14 and 2014/15 financial years.

121 The depreciation methodology was revised to align it with the approach of the AER. Under the new methodology, the network asset base was considered as having 48 per cent of its life remaining. If the values from the previous regulatory period had been rolled forward then this figure would have been 59 per cent.

3.8.2 Jurisdictional developments

The following jurisdiction-specific factors may impact residential electricity prices during the reporting period:

- Reforms to the regulatory framework governing the Northern Territory's electricity industry, including measures to support retail competition, the development of a wholesale electricity market and changes in the economic regulation of the electricity networks.

- The structural separation of the Power and Water Corporation's monopoly and contestable businesses into stand-alone government-owned corporations.

The outcomes of these reforms could affect the trend in residential retail prices in the future.

3.8.3 Methodology

Our analysis of residential electricity prices and cost components applies to a residential consumer in the Darwin-Katherine Interconnected System using 9,135 kWh per year.[122] As the Northern Territory Government has a uniform tariff policy, these prices apply to all residential consumers of Jacana Energy, including those outside of the Darwin-Katherine system.[123]

The sources of information we have used to estimate electricity supply costs in the Northern Territory are as follows:

- **Wholesale energy sector:** Estimates of the wholesale energy costs in 2013/14 and 2014/15 were provided to us by the Northern Territory Government. For the subsequent years of the reporting period we have escalated this cost component by an assumed inflation rate of 2.5 per cent.

- **Retail sector:** It has not been possible to show the retail costs in the Northern Territory because the residential price is less than the total cost of supply. In other jurisdictions we used have used the residual when all of the non-retail cost components are subtracted from the total representative price as a proxy for the retail costs. However, when we apply this approach to the Northern Territory, the residual is a negative value that reflects part of the government subsidy rather than the retail cost.

  The Northern Territory Government has provided us with a retail margin of 0.3621 c/kWh in 2013/14 (including GST). We have escalated this by an inflation rate of 2.5 per cent per year for the subsequent years. We note that the cost stack

122 The representative consumption value was provided to us by the Northern Territory Government.

123 Jacana Energy is a government-owned electricity retailer than was created as part of the split of the Power and Water Corporation on 1 July 2014.

in Figure 3.16 is most likely smaller than the actual costs because we have not been able to account for the retailer's other costs, such as operating costs.

- **Regulated network sector:** In April 2014 the Utilities Commission published a final determination on network prices for the 2014-19 regulatory period.[124] However, the Treasurer subsequently issued a Ministerial Direction for the network utility to apply an alternative revenue path of 7.7 per cent plus inflation in 2014/15, 8 per cent plus inflation in 2015/16, and inflation from 2016/17 to 2018/19.[125] We have used this revenue path to escalate network prices during the reporting period, however, our explanation of the trend is based on the Utilities Commission final determination.

- **Environmental policies:** Costs associated with the carbon price were specified in the Northern Territory Government's pricing orders for the relevant years.

  Renewable Energy Target costs for 2013/14 and 2014/15 were provided to us by the Northern Territory Government.[126] For 2015/16 and 2016/17 we have escalated the costs provided by the Northern Territory Government by national trends in Large-scale Renewable Energy Target and Small-scale Renewable Energy Scheme costs that were developed by Frontier Economics.

3.9 National summary

On a national average basis, residential electricity prices are expected to decrease by 6.1 per cent in 2014/15 and 1.7 per cent in 2015/16 before increasing by 2.6 per cent in 2016/17. On average, prices are expected to decrease annually by 1.7 per cent over the reporting period.

However, if the carbon price is excluded from the base year (2013/14), then the trend in residential electricity prices over the reporting period is for an average increase of 1.1 per cent per year. Frontier Economics estimated that the carbon price made up around 8 per cent of the total bill in 2013/14.

The national numbers are averages weighted by the number of residential connections in each jurisdiction. Where there are *market offers* available in a jurisdiction, representative *market offers* were used. In other jurisdictions, the regulated *standing offers* or government set prices were used.[127]

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124 Utilities Commission, Network Price Determination, *final determination, Part A - Statement of Reasons*, 24 April 2014, Darwin.

125 The alternative revenue path was provided to us by the Northern Territory Government. The revision includes a downwards adjustment of the regulated rate of return from 7.86 per cent used by the Utilities Commission to the cost of borrowing of the government, which is 4.61 per cent.

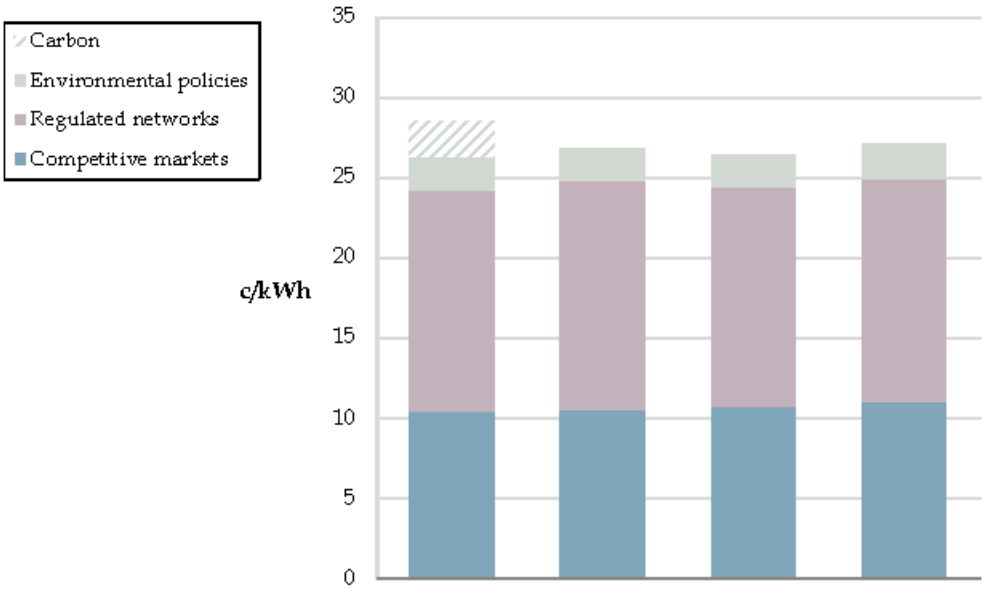
126 These costs were provided on a calender year basis for 2013 and 2014 and were adjusted by inflation to report on the 2013/14 and 2014/15 financial years.

127 The national representative price consists of: representative *market offer* prices in New South Wales, Victoria, South Australia and Queensland; representative *standing offer* prices in the ACT and Tasmania; and the government determined tariffs in Western Australia and Tasmania.

Changes in the cost components differ by jurisdiction as outlined and discussed throughout this chapter.

Figure 3.17 show the expected movements in the supply chain cost components on an average national basis.

Figure 3.17 National average supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.39**	**2.11**	**2.07**	**2.25**
Carbon	c/kWh	2.34	0.00	0.00	0.00
LRET	c/kWh	0.60	0.65	0.78	0.97
SRES	c/kWh	0.63	0.43	0.43	0.43
FIT Schemes	c/kWh	0.71	0.94	0.80	0.80
Other state schemes	c/kWh	0.11	0.09	0.06	0.04
Regulated networks	**c/kWh**	**13.87**	**14.23**	**13.68**	**13.86**
Transmission	c/kWh	2.33	2.43	2.43	2.38
Distribution	c/kWh	11.54	11.81	11.26	11.48
Competitive market Wholesale and retail	**c/kWh**	**10.30**	**10.49**	**10.64**	**10.96**
Total	**c/kWh**	**28.57**	**26.83**	**26.38**	**27.08**

4 Diversity of *market offers*

Chapter 4 outlines the different electricity offers currently available to consumers. It highlights how pricing outcomes will depend on an individual consumer's annual and quarterly consumption level, the pricing structure of the offer and the incentives offered retailers.

In this report we use representative consumption levels provided by the state and territory government departments to analyse price trends. The selection of these consumption levels has a significant impact on the resulting c/kWh values and, to a lesser degree, the expected price movements. As we demonstrate below, the prices calculated to show the expected trends will not reflect the pricing outcomes for all residential consumers.

4.1 Approaches for setting retail prices

For this report, we are required to estimate *standing offer* and *market offer* prices where these are generally available in each state and territory.

The terms and conditions of *standing offer* contracts are regulated by law, which means that retailers cannot change them. For *market offer* contracts, the terms and conditions must contain minimum requirements governed by law, such as consumer protection obligations.

Outside of these minimum requirements, retailers have greater flexibility in how they design their offers in response to consumer preferences and retail market conditions. The terms and conditions of *market offer* contracts generally vary from *standing offer* contracts, and could include incentives, different billing periods, and additional fees and charges.

In jurisdictions where residential electricity prices are regulated, *standing offer* prices are set by either jurisdictional regulators or governments. In Queensland, Western Australia, Tasmania, the Northern Territory and the ACT there is currently a regulated *standing offer* price for residential consumers. In the other jurisdictions, retail prices have been deregulated and *standing offer* prices are set by electricity retailers.

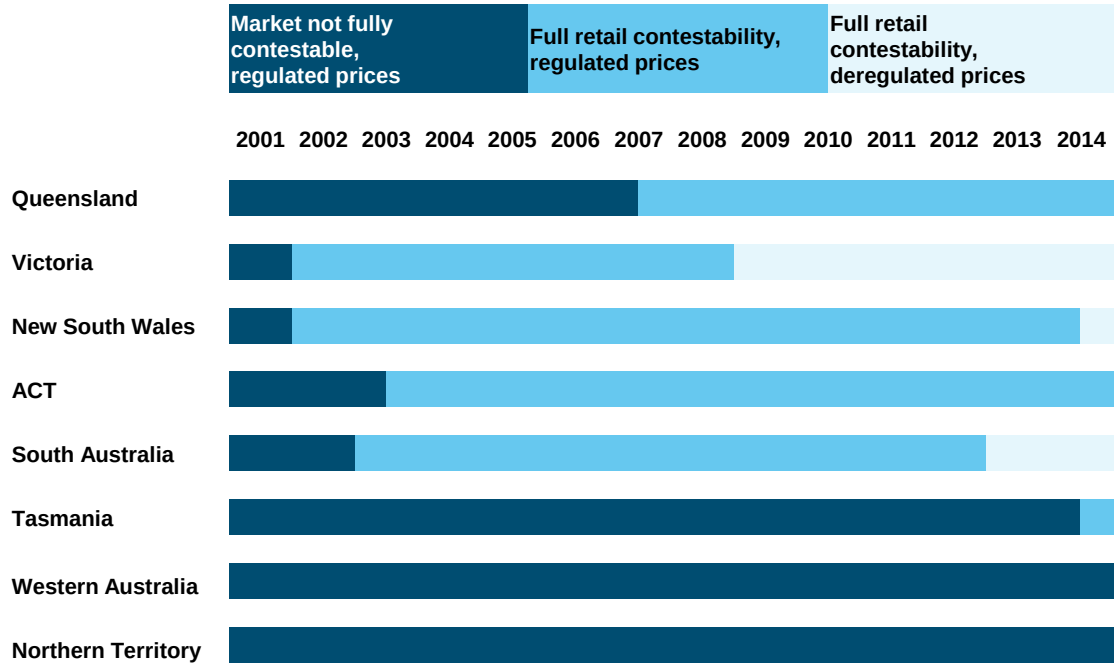
Standing offer prices are generally the benchmark prices against which retailers make discounted *market offers*.[128] Consumers will typically be on a *standing offer* by default if they have not shopped around for their electricity.

Figure 4.1 shows the stages of retail electricity market reform in Australian jurisdictions. Introducing competition in electricity retail markets has led to more choice of retailers and pricing offers in Victoria, South Australia, New South Wales and South East Queensland. While most retailers entered Victoria first and some continue to only operate in that jurisdiction, many retailers have expanded into other markets.

128 AEMC, *2014 Retail Competition Review*, final report, 22 August 2014, Sydney, p182.

Effective competition is yet to emerge for small consumers in electricity markets in the ACT, Tasmania and regional Queensland, where regulatory arrangements may be acting as a barrier to entry for new retailers.[129] However, we note that recently Origin Energy commenced offering retail *market offer*s for residential consumers in the ACT. This now means that there are three retailers competing in the ACT retail market (the other two retailers are ActewAGL and EnergyAustralia).

Figure 4.1 Stages of retail electricity market reform



Note: The Queensland Parliament has passed legislation to remove retail price regulation for small consumer in South East Queensland and this is expected to commence on 1 July 2015.

In the Northern Territory, Western Australia and regional Queensland, electricity is sold to consumers through a government owned retailer. In these locations, prices are determined by government and consumers are supplied electricity on a *standing offer* only.[130]

Table 4.1 provides an overview of the percentage of residential consumers in each jurisdiction on market offers and standing offers.

129 In the ACT, the way in which the regulated price is set makes it difficult for new retailers to profitably enter the market. In Tasmania, full retail competition has only recently been introduced for residential consumers and smaller businesses, so it will take some time for entry to occur. In regional Queensland, the way in which a uniform tariff policy is implemented results in almost all small customers are sold electricity by Ergon Energy. These issues are discussed in the jurisdictional-specific chapters.

130 For regional Queensland, the *standing offer* prices are determined by the Queensland Competition Authority under delegation from the Queensland Government.

Table 4.1 Residential consumers on *market offers* and *standing offers*

Jurisdiction	Able to move to a *market offer*?	Percentage of consumers on a *market offer*	Percentage of consumers on a *standing offer*
South East Queensland	Yes	70	30
Regional Queensland	Generally not, due to how the uniform tariff policy is currently implemented.	<1	>99
New South Wales	Yes	62	38
ACT	Yes	19	81
South Australia	Yes	83	17
Victoria	Yes	77	23
Tasmania	No, competition is yet to develop.	0	86 (the other 14 per cent are on pre-payment meters)
Western Australia	No	n/a	100
Northern Territory	No	n/a	100

Data sources: AER retail statistics 2013-14 Q3 Electricity contract types - by jurisdiction; Wallis Consulting Group, 2013, Victorians' Experience of the Electricity Market, final report, p24; AEMC, 2014 Retail Competition Review, final report, 22 August 2014, Sydney, p213; advice from jurisdictional departments.

4.2 Availability of *market offers*

Section 4.2 demonstrates the range of potential *market offer* price outcomes for representative consumers in South East Queensland, New South Wales, Victoria and South Australia.[131] This analysis is based on 303 *market offers* collected in July 2014 from retailer's websites.

Some of the *market offers* collected were identical except for the size of the discount associated with the offer. As such, in Table 4.2 we show the total number of offers and number of unique offers collected for this analysis.[132]

The AEMC's 2014 Retail Competition Review found that retail price deregulation can lead to greater product differentiation and therefore choice for consumers in a

131 The representative annual consumption levels were provided to us by jurisdictional governments and are different for each jurisdiction. The methodologies used by the jurisdictions in calculating these consumption levels are described in Chapter 1.

132 Unique offers are those that have differences in addition to the size of the discount, including differences in the level of the fixed and variable components and the number of energy blocks.

competitive market.[133] We note that Victoria, which in 2009 became the first jurisdiction to remove price regulation, has the largest number of total offers and unique offers compared to the other jurisdictions.

Table 4.2 Number of retail *market offers*, July 2014

Jurisdiction	Distribution network region	Total offers	Unique offers
New South Wales	Ausgrid	30	14
	Endeavour Energy	29	13
	Essential Energy	29	13
South East Queensland	Energex	18	8
South Australia	SA Power Networks	17	9
Victoria	Citipower	36	19
	Powercor	36	19
	Jemena	36	19
	AusNet Services (formerly SP AusNet)	36	18
	United Energy	36	19
Total		303	151

Note: Excludes flexible pricing offers where different prices are charged for consumption during different times of the day.

Figure 4.2 shows the range of c/kWh values for the representative consumption level, which is based on each unique *market offer* in Table 4.2. As these offers were collected in July 2014, they include changes in network charges for jurisdictions that are regulated on a financial year basis, but do not reflect the reduction due to the repeal of the carbon price, as this legislation had not yet passed.

Variation in the c/kWh value is larger in Victoria (between 9 c/kWh and 12 c/kWh) and South Australia (10 c/kWh) than in New South Wales (between 6 c/kWh and 8 c/kWh) and South East Queensland (around 6 c/kWh). For the representative consumer, the highest offer is around 40 per cent more than the lowest one in Victoria, compared to 34 per cent in South Australia, 26 per cent in New South Wales and 21 per cent in South East Queensland.

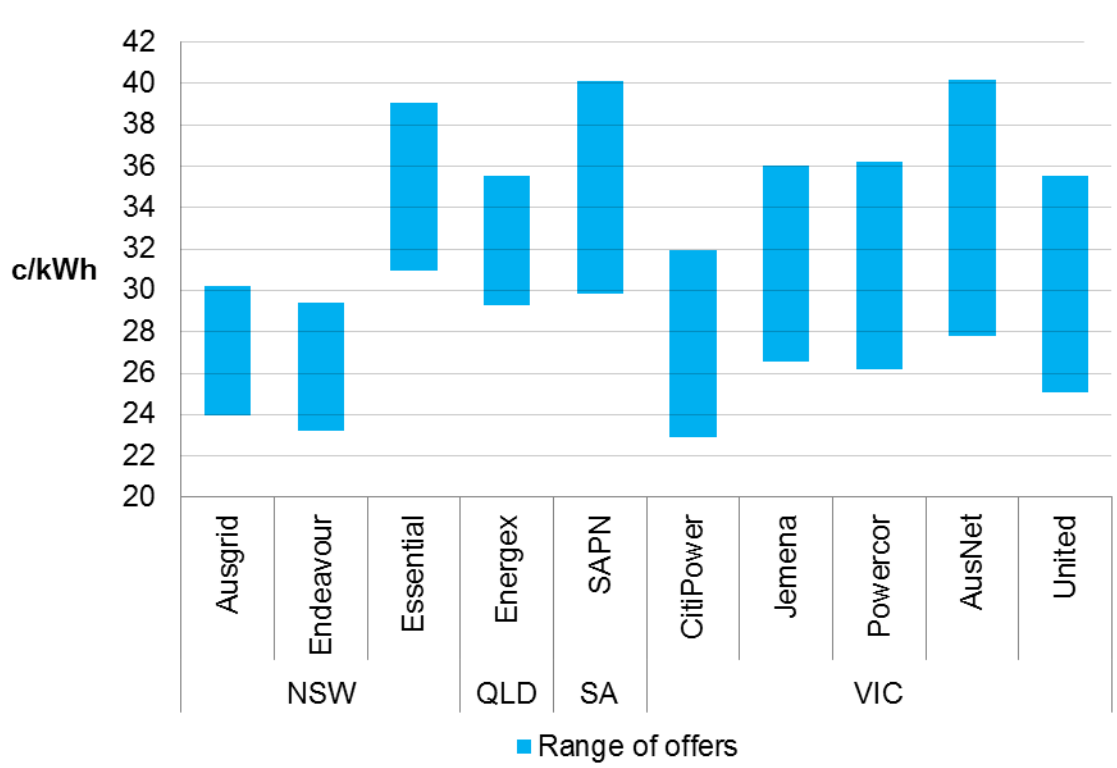
The range of variations reflects different price structures available in each jurisdiction. Depending on a consumer's overall consumption level, when they use electricity and if

133 AEMC, *2014 Retail Competition Review*, Final Report, 22 August 2014, Sydney, p. 35 & p. 63.

they have invested in technologies such as solar PV, some price structures will be more attractive than others and result in lower c/kWh values.

As noted above, the outcomes in Figure 4.2 are not directly comparable as the representative consumption levels for each state and territory are different.

Figure 4.2 Range of post-discount c/kWh values for *market offers* collected in July 2014



Note: This analysis is based on data collected in July 2014, including all *market offers* available at this time. It differs from Figure 1.1 in Chapter 1, which is a summary of the lowest generally available *market offers* in March 2014.

For consumers shopping for the lowest price, it is clear from Figure 4.2 that some offers will be more appealing than others. This indicates that there are two ways in which households can save on their electricity bill by being active in the retail market:

- By switching from a *standing offer* to a *market offer*. The size of this saving for the representative consumer differs between jurisdictions and is covered in Chapter 3 and the jurisdictional appendices.

- By comparing *market offers* and switching to the *market offer* that is most suitable given a consumer's own circumstances and preferences.

Offers that are comparatively more expensive for the representative consumer may in fact be suitable for different types of consumers. For example:

- Consumers with a level of consumption that is different to the representative consumption level (this is discussed in section 4.5 below).

- Consumers who want a fixed price contract and are willing to pay a premium for price certainty.

- Solar PV consumers, who may benefit from paying a higher price for electricity that is consumed in exchange for receiving a larger payment for electricity that is generated by the solar PV system and exported to the grid.

4.3 Retail pricing structures

Residential electricity prices are generally made up of:

- a fixed price that typically applies on a daily basis and is independent of the amount of electricity consumed; and

- a variable price (also referred to a "usage" or "energy" charge) for each unit of electricity consumed. Some retail offers have only one price for all electricity consumed whereas others are structured such that the first block of energy is charged at a different price to subsequent blocks.[134]

The structure of the fixed and variable price influences overall outcomes for residential consumers. This can be observed by calculating a single c/kWh value that combines both the fixed and variable charges.[135]

For a particular *market offer*, the c/kWh value will generally be less for high electricity consumption households as the fixed daily price is spread across a larger volume of variable electricity consumption. Conversely, at low consumption levels the c/kWh value will generally be higher even though the *market offer* has the same structure. This is explained further in section 4.5.

Fixed charges vary depending on retailers and the state or territory in which they are operating. We assessed 151 *market offers* with different structures in early July 2014 (the same *market offers* used in Section 4.2) and found that:

- Fixed prices as a percentage of total costs are the highest in Victoria, comprising on average 26 per cent of the representative consumer's bill, compared to 15 to 20 per cent in other jurisdictions.

- Victoria has the highest dispersion of fixed prices, with a difference of around 40 cents per day between the highest and lowest. By comparison, New South Wales, South Australia and South East Queensland have differences of less than 20 cents per day between the highest and lowest fixed prices.

- Victoria has the largest difference between fixed retail prices and the underlying fixed network prices, with a difference of between 80 and 90 cents per day out of

134 The structure of the fixed and variable charges in a retail offer is influenced by the structure of the underlying network tariff, which also includes fixed and variable charges.

135 This single c/kWh value is the sum of the fixed and variable charges incurred in one year, divided by an annual consumption level in kWh.

total fixed retail charges of around 100 cents per day. This means that a substantial proportion of the fixed price in Victoria is being recovered by retailers, while the network businesses account for a smaller proportion.

By comparison, New South Wales, South Australia and Queensland have differences of between 25 and 40 cents per day out of total fixed retail charges of between 70 and 85 cents per day in most cases. In comparison to the other jurisdictions, fixed retail charges in Victoria are generally higher whereas fixed network charges are generally lower.

Section 4.5 outlines how electricity offers with different price structures allow consumers to choose a plan that may be more suited to their needs and preferences.

Another category of offers involves flexible pricing where different prices are charged for different times of the day, for instance "off -peak", "shoulder" and "peak" times.[136] We have not analysed these offers in this report, however, we note that they are becoming increasingly prevalent. These offers are currently available in Victoria, New South Wales and Queensland to consumers with a meter capable of collecting data at regular intervals.

Flexible pricing attempts to more accurately reflect the costs of generating and delivering electricity during the day. Consumers who can adapt their daily consumption profile to consume less at peak times can reduce their retail bills by moving to these types of offers.

4.4 Conditional and non-conditional discounts

In a competitive market, retailers will offer different products and services when competing for consumers. Product differentiation can be seen in the different billing structures, monetary and non-monetary incentives as well as value-added services being offered to consumers. The level of differentiation is expected to further increase with the removal of retail price regulation.

This section describes the range of possible incentives offered by retailers to attract and retain consumers and covers both monetary and non-monetary discounts. The analysis in this section is based on *market offers* available in July 2014 and also on information provided by retailers.

4.4.1 Monetary discounts

Monetary incentives are the most common type of discounts that retailers use. These can be incentives tied to contract length, timely payments or using specific payment options (for example, direct debit and online payment). Some discounts are

136 The time periods predominantly used by retailers involve a "peak" from 3pm - 9pm Monday to Friday, "shoulder" from 7am - 3pm Monday – Friday, 9pm – 10pm Monday – Friday and 7am – 10pm weekends and "off peak" all other times. Some retailers may offer different flexible pricing structures to this arrangement.

non-conditional, while others are conditional on a consumer meeting a particular requirement, such as paying on time.

Pay-on-time discounts are the most common discount currently available to consumers. The discount can apply to the variable energy price or total bill. From examining a range of *market offers* available in early July 2014, we understand that the majority - approximately 80 per cent - of these discounts relate only to the variable energy price. Other monetary incentives include savings if accounts are settled using direct debit.

Retailers are developing new offers that differ from those traditionally available. This reflects greater competition, a response to increased consumer participation and the use of new technologies such as smart meters and smart appliances. For example, some small retailers offer conditional discounts for consumers who accept e-billing. Other new products and incentives that are being provided to consumers include fixed price contracts for two years, monthly billing options, bill smoothing and pay/purchase in advance.

Discounts can also be associated with the bundled provision of services, such as gas and electricity 'dual fuel' offers, or bundles that include additional utility or telecommunications services.

The prices from which discounts apply, and the discounts themselves, vary substantially, leading to a large range of pre- and post-discounts prices. For example, pay-on-time discounts ranged from 8 to 20 per cent of variable energy charges in Victoria. A high discount may not always reflect the lowest price available, as the pre-discount price could vary. Hence, if consumers shop around, compare offers and call retailers to obtain lower prices than those advertised they may receive an even higher discount than their existing *market offer*.

Table 4.3 shows the maximum amount offered in conditional and non-conditional discounts for the representative consumption level by state for all retailers in July 2014, expressed both in c/kWh and total dollars per annum. The maximum discounts set out in Table 4.3 are not additive; for example, only large retailers tend to offer non-conditional discounts, while new entrant retailers are more likely to offer larger pay-on-time discounts.

Table 4.3 Maximum discount offered in July 2014 for the representative consumer

Jurisdiction	Conditional discounts		Non-conditional discounts	
	Cents per kWh	$ per annum	Cents per kWh	$ per annum
New South Wales	4.01	$261	3.54	$230
South East Queensland	3.13	$142	0.84	$38
Victoria	8.83	$410	5.92	$275
South Australia	6.27	$314	4.00	$200

Table 4.3 shows that maximum conditional discounts are higher than maximum non-conditional discounts. In Victoria, for example, there is a 3 c/kWh difference between the conditional and non-conditional discounts for the representative consumer, which is equivalent to $135 per year.

To determine the price trends for this year's report, we used information provided by retailers on *market offers* that were offered during the base year of 2013/14. For the relevant *market offers*, we have assumed that the consumer is in a position to claim all discounts from the *market offer*.

We recognise that some discounts depend on consumers meeting certain conditions, such as paying on time or by direct debit. If these conditions are not met, late payment fees can apply. The AEMC requested data from retailers on the proportion of consumers meeting the conditional requirements but only a small number of retailers responded. From the limited responses, it seems that approximately 70 to 80 per cent of customers who have signed up for the pay-on-time discount are receiving the full discount.

4.4.2 Non-monetary discounts

In addition to monetary discounts, some retailers are providing consumers with non-monetary incentives to enter and remain in market contracts. Examples include:

- gift vouchers;
- special online services;
- sporting memberships and merchandise;
- frequent flyer points; and
- magazine subscriptions.

4.5 Consumption levels

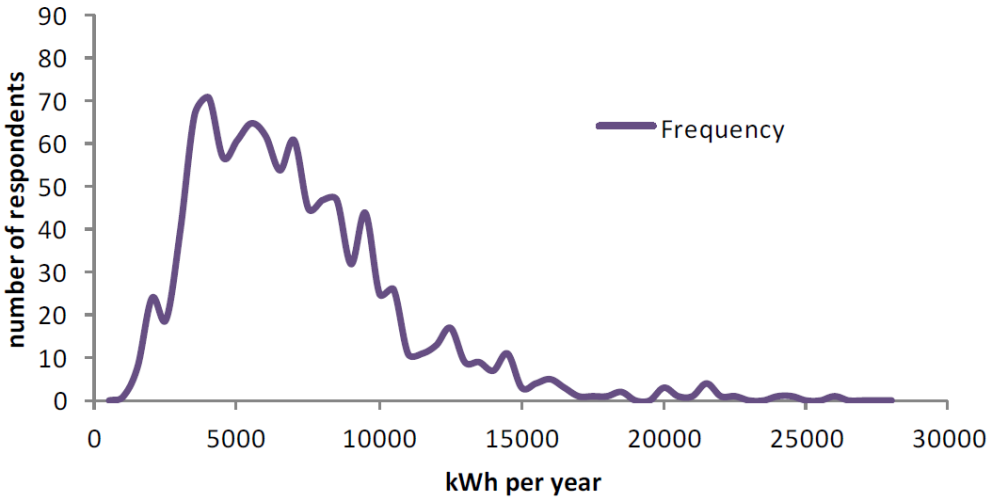
In this section we demonstrate how consumers with different consumption levels will experience different price outcomes to the representative prices presented in this report. Depending on pricing structures and consumer consumption levels, some *market offers* will be more suitable than others.

As noted in Chapter 1, in this report we have estimated the electricity prices that would be paid by a representative set of residential consumers. The representative consumers are defined in terms of the total amount of electricity consumed in one year and how this consumption is split across the quarters of the year. For this report, we have used representative consumption values provided to us by the jurisdictional governments as set out in Table1.1.

In practice, many consumers will have consumption levels that differ from the representative level. Some of the factors that impact on this are differences in the number of people in a household, the size of the residence, whether the consumer also uses natural gas and whether energy-intensive appliances are used (for example, pool pumps and air conditioners).

Figure 4.3 sets out the annual electricity consumption of a sample of residential consumers in Queensland. The shape of this curve shows that the consumption levels of households are dispersed (leading to the long tail stretching out to the right). This means that while the representative consumption level is useful for determining price trends, the prices themselves are specific to one consumption level and pricing structure and are not applicable for every consumer.

Figure 4.3 Sample of consumption levels in Queensland



Source: ACIL Tasman, 2011, Electricity Bill Benchmarks for residential customers, December 2011.

As noted above, there are differences between the jurisdictions in the level of fixed prices in the *market offers*. Table 4.4 shows the effective c/kWh value and total bill amount (in dollars per year) for a range of different consumption levels in 2013/14. The jurisdiction consumption levels are those provided to us by the jurisdictional

governments and the c/kWh values that appear in this column are the same as those in Chapter 3 and the jurisdictional appendices.

At the representative consumption level, the c/kWh values for New South Wales, South East Queensland and Victoria are within two-tenths of a cent of each other. However, in the low consumption and high consumption levels there is a larger discrepancy in the c/kWh values owing to the difference in the fixed and variable components in 2013/14. This table also shows that the c/kWh value is very sensitive to the consumption level.

Table 4.4 Representative *market offer* price and total bill for a range of consumption levels

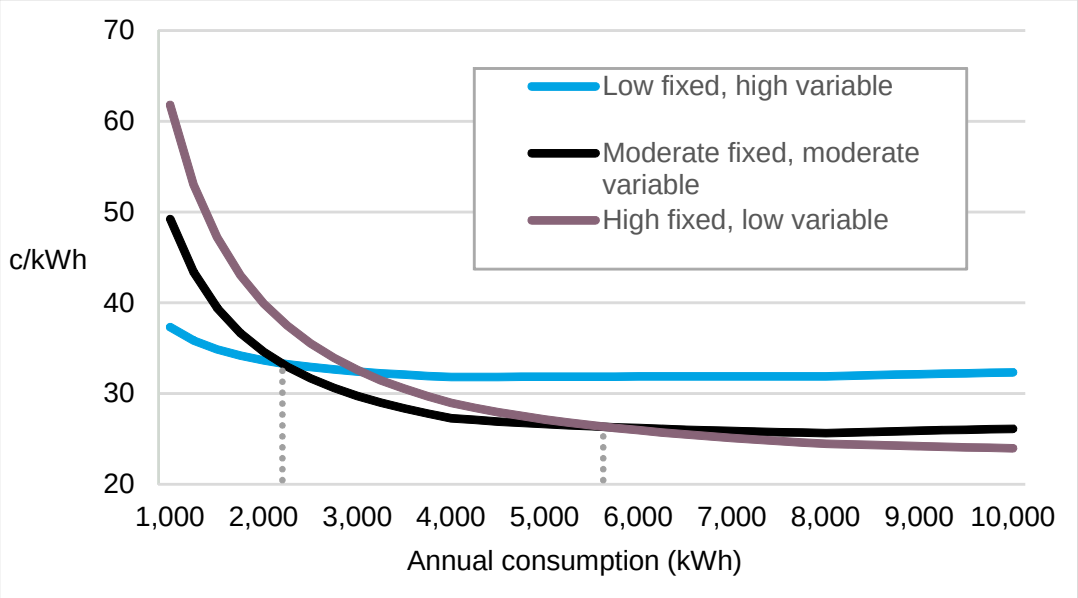
Jurisdiction	Low consumption (2,500 kWh)		Jurisdiction consumption level (indicated below)		High consumption (9,500 kWh)	
	Cents per kWh	$ per annum	Cents per kWh	$ per annum	Cents per kWh	$ per annum
New South Wales	36.12	$903	28.76 (6,500 kWh)	$1,869	27.77	$2,638
South East Queensland	31.98	$800	28.71 (4,533 kWh)	$1,302	26.61	$2,528
Victoria	35.56	$889	28.82 (4,645 kWh)	$1,339	25.15	$2,389
South Australia	36.68	$917	32.65 (5,000 kWh)	$1,633	31.84	$3,025

Note: These figures are calculated by using our methodology for the representative *market offer* price. This is explained in Appendix J.

A way of comparing *market offers* is to calculate the c/kWh value for a range of different consumption levels. Figure 4.4 is an indicative example of three *market offers* that have different levels of fixed and variable charges. It shows that a consumer with a low level of consumption (less than 2,200 kWh per year in this example) would receive the lowest c/kWh price from the offer with the relatively low fixed charge and high variable charge for energy.

Conversely, an offer with a relatively high fixed charge, but low variable charge, is more suitable for high consumption levels. In this particular example, consumers with a moderate consumption level (between 2,200 kWh and 5,700 kWh in this case) will receive the lowest c/kWh price when on an offer with moderate fixed and variable charges.

Figure 4.4 How average price is influenced by structure of fixed and variable charges



Note: Low, moderate and high fixed costs are defined as being 20 c/day, 80 c/day and 120 c/day respectively. The variable charges feature three blocks: the first 1000 kWh per quarter, the second 1000 kWh per quarter, and all subsequent consumption. The blocks are 30, 32 and 34 c/kWh for the high variable charge, 20, 24 and 28 c/kWh for the moderate variable charge, and 16, 18 and 20 c/kWh for the low variable charge. It is assumed that the annual consumption is evenly distributed throughout the year.

Consumers can potentially find savings by comparing *market offers* and choosing the offer that is best suited to their consumption level and seasonal consumption profile.

An easy way for consumers to do this is via online price comparator websites, including the AER's Energy Made Easy website[137] and jurisdictional equivalents such My Power Planner in Victoria.[138] Queensland consumers will have access to Energy Made Easy when Queensland implements the National Energy Customer Framework on 1 July 2015.

Price comparator websites allow consumers to input their actual consumption level, thereby making it easier to choose the best deal for each individual circumstance.

137 Energy Made Easy (http://www.energymadeeasy.gov.au/) is an Australian Government website maintained by the Australian Energy Regulator. It covers jurisdictions that have adopted the National Energy Customer Framework, including, at the current time, New South Wales, ACT, Tasmania and South Australia.

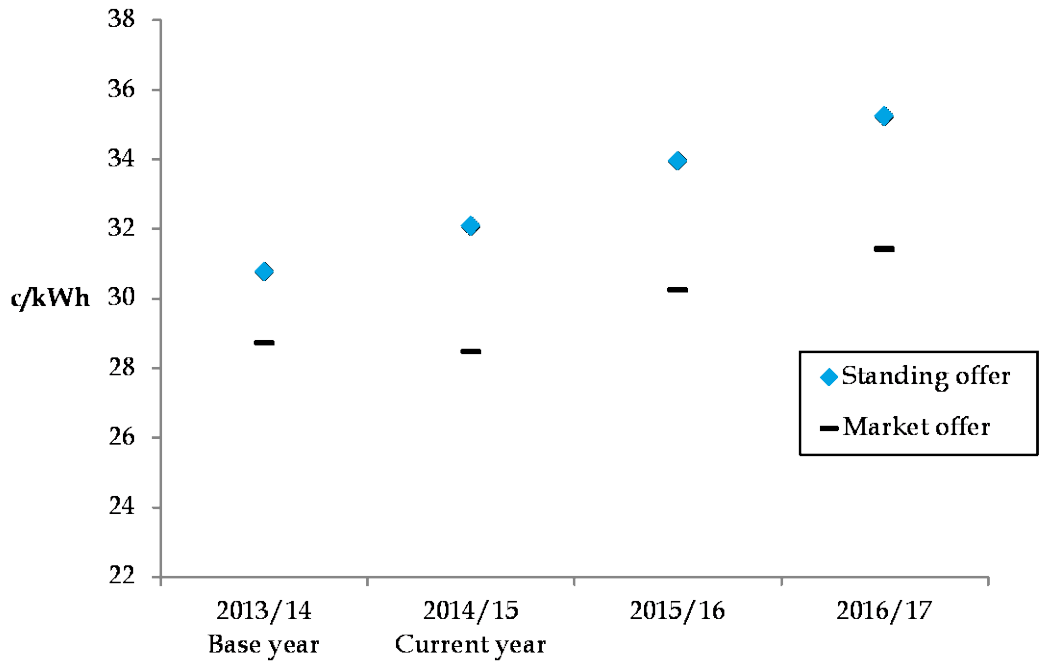
138 My Power Planner is available through the Victorian Government's Switch On website (https://mpp.switchon.vic.gov.au).

A Queensland

Box A.1 Key points

- Residential electricity prices in South East Queensland are expected to decrease by 0.9 per cent in 2014/15, and then increase by 6.2 per cent in 2015/16 and 4 per cent in 2016/17. This is equivalent to an average annual increase of 3.2 per cent.
- In 2014/15, the savings from the removal of the carbon pricing mechanism are offset by increases in the Queensland Solar Bonus Scheme costs. Network prices are also increasing due to lower than forecast electricity consumption. The trend in 2015/16 and 2016/17 will depend on the Australian Energy Regulator's distribution network determination for the 2015-20 regulatory period and Queensland Government policy decisions.
- Electricity consumers in Queensland can choose between the regulated *standing offer* and *market offers* that are set by electricity retailers. However, competition is limited in regional Queensland and almost all consumers are supplied by Ergon Energy under the regulated *standing offer*.
- In 2013/14, the representative consumer may have saved around 7 per cent by switching from the regulated *standing offer* to the representative *market offer*. This equates to a saving of $93 off the total annual bill.

Figure A.1 Trend in South East Queensland *market offer* and *standing offer* prices



A.1 Overview

Full retail competition was implemented in Queensland in July 2007, which means that consumers can choose a *market offer* or remain on the regulated *standing offer*. Around 70 per cent of consumers in South East Queensland were on a *market offer* in 2013/14, with around 30 per cent remaining on the regulated *standing offer*.[139]

Market offer prices in South East Queensland are expected to increase, on average, by 3.2 per cent per year between 2013/14 and 2016/17, including a decrease of 0.9 per cent in 2014/15. In this year, the savings from the removal of the carbon pricing mechanism are mostly offset by increases in the Queensland Solar Bonus Scheme and regulated network prices.[140] The increases in network prices are due to additional investment in network infrastructure approved under the now superseded network regulatory framework and lower than expected electricity consumption.

The regulated *standing offer* price is expected to increase by 4.3 per cent between 2013/14 and 2014/15.[141] In future years, the *standing offer* trend is based on movements in the underlying supply chain cost components that we have estimated.

Figure A.1 shows the expected trends in the *standing offer* and *market offer* prices over the reporting period.

In 2013/14, a representative consumer may have saved around 7 per cent by switching from the regulated *standing offer* to the representative *market offer*. The saving is expected to increase to around 11 per cent in 2014/15. Actual savings will depend on individual circumstances, such as level of consumption and the choice of *market offer*.[142]

We note that the Queensland Parliament has passed legislation to remove retail price regulation for small consumers in South East Queensland and this is expected to commence on 1 July 2015.[143]

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139 Based on data from the Australian Energy Regulator and quoted in Australian Energy Market Commission, *2014 Retail Competition Review*, final report, 22 August 2014.

140 The Queensland Solar Bonus Scheme pays eligible customers for the electricity generated from eligible solar photovoltaic (PV) systems and exported to the Queensland electricity grid.

141 This is based on the most common *standing offer* tariff for residential consumers in South East Queensland, Tariff 11, which is set by the Queensland Competition Authority. The energy component of Tariff 11 is flat, meaning that the c/kWh rate is the same at all times during the day and night.

142 Annual consumption levels, seasonal consumption profile and retail tariff structure can all impact on the total annual bill. Chapter 4 explains how price outcomes may differ due to individual circumstances.

143 M McArdle (Minister for Energy and Water Supply), *Families to benefit from electricity reforms*, media statement, 10 September 2014.

Methodology

Our analysis of market and *standing offer* prices is for a representative consumer with a consumption level of 4,533 kWh per year who is connected to the Energex distribution network in South East Queensland.[144]

Consumers outside South East Queensland are eligible for the same *standing offer* price in accordance with the Queensland Government's uniform tariff policy. The mechanism for this policy is called the Community Service Obligation and is paid by the Queensland Government to Ergon Energy. In 2013/14, the size of this payment was $519 million.[145]

A detailed explanation of our methodology is set out in Appendix J.

A.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table A.1 demonstrates how the average unit cost of electricity and the annual electricity bill in Queensland are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table A.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average *market offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	31.98	$800
Queensland-specific average (4,533 kWh)	28.71	$1,302
High (9,500 kWh)	26.61	$2,528

A.2 Trends in supply chain cost components

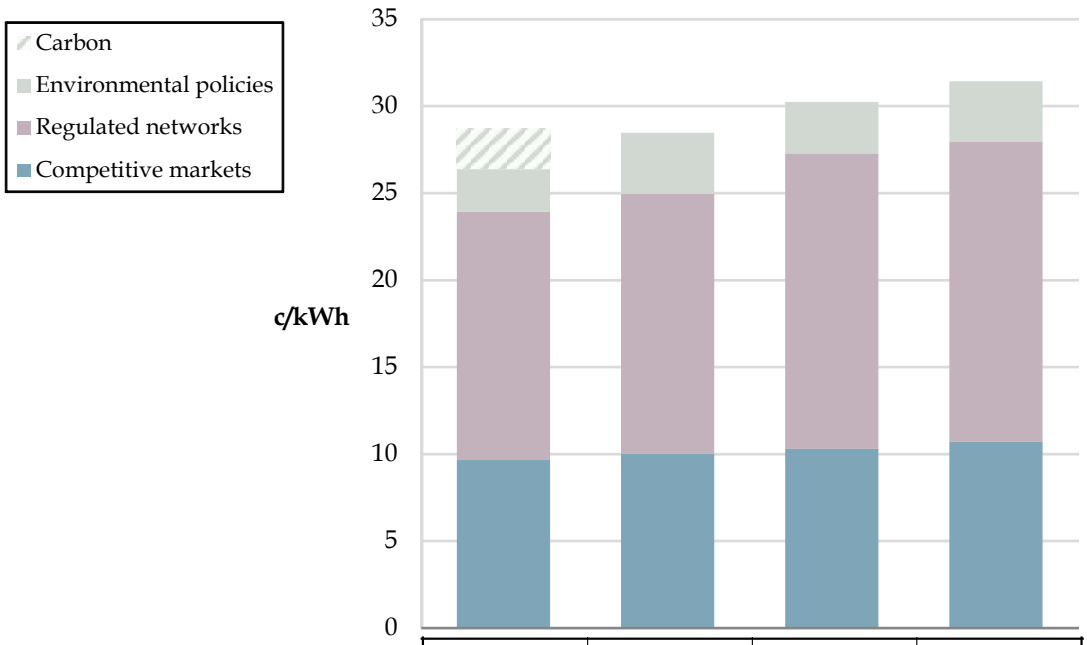
Figure A.2 shows the expected trends in the supply chain cost components for South East Queensland, which are the competitive wholesale and retail markets, regulated networks and government environmental policies. Costs associated with the carbon

144 The average annual consumption level was provided to us by Queensland government officials.

145 Ergon Energy, *Annual Stakeholder Report 2013-14*, 30 September 2014, p6.

pricing mechanism apply only in 2013/14 because the scheme has been repealed with effect from 1 July 2014. A different pattern is used in Figure A.2 for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure A.2 South East Queensland supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.79**	**3.53**	**2.96**	**3.46**
Carbon	c/kWh	2.35	0.00	0.00	0.00
LRET	c/kWh	0.58	0.63	0.75	0.94
SRES	c/kWh	0.62	0.43	0.42	0.43
Queensland Solar Bonus Scheme	c/kWh	1.21	2.48	1.79	2.09
Queensland Gas Scheme	c/kWh	0.03	0.00	0.00	0.00
Regulated networks	**c/kWh**	**14.28**	**14.92**	**16.99**	**17.25**
Transmission	c/kWh	2.35	2.43	2.60	2.79
Distribution	c/kWh	11.94	12.49	14.39	14.46
Competitive market	**c/kWh**	**9.64**	**10.01**	**10.28**	**10.71**
Wholesale and retail					
Total	**c/kWh**	**28.71**	**28.46**	**30.24**	**31.42**

Figure A.3 shows the expected trends in the supply chain cost components in Queensland over the reporting period. In summary, the expected trends are:

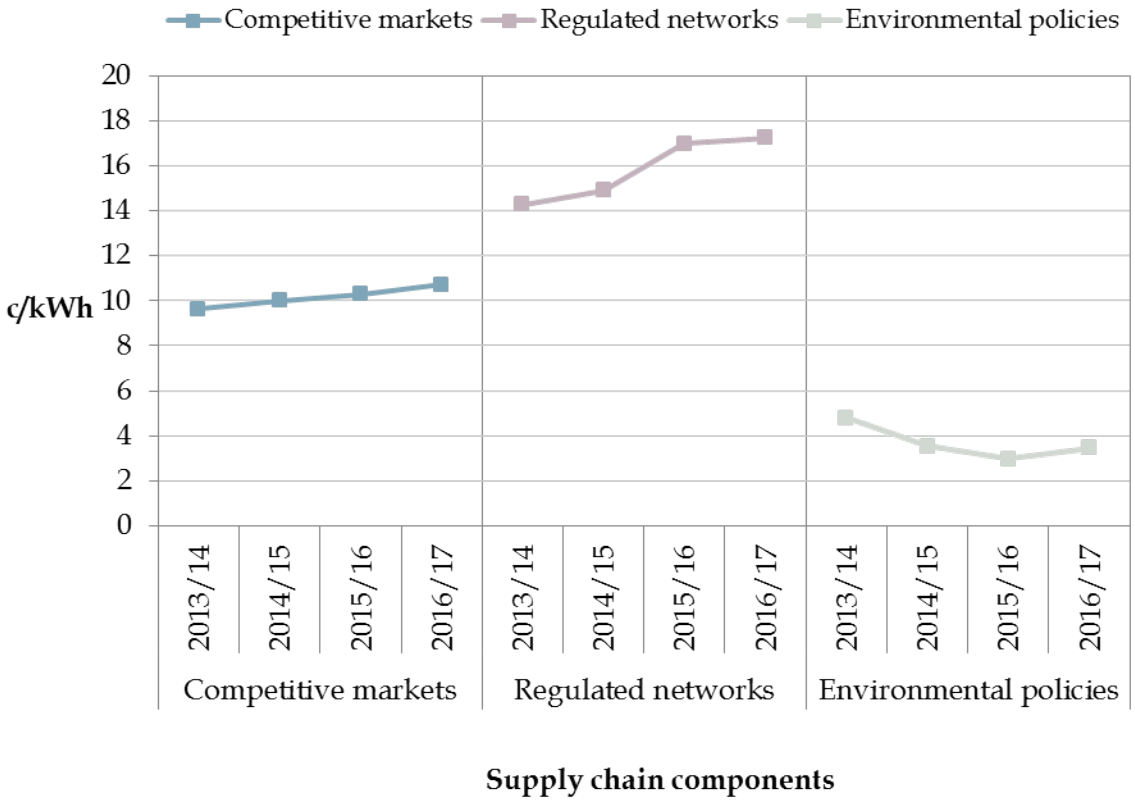
- an average increase of 3.7 per cent per year in the competitive market component;

- an average increase of 6.9 per cent per year in regulated networks, including an increase of 4.5 percent in 2014/15, 14 per cent in 2015/16 and 1.5 per cent in 2016/17;[146] and

- an initial reduction of 26 per cent in the environmental component that is predominately due to the repeal of the carbon price. This is followed by a further decrease of 16 percent in 2015/16 then a 17 per cent increase in 2016/17. The trend in 2015/16 and 2016/17 is mostly due to the proposed smoothing of the Queensland Solar Bonus Scheme costs.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure A.3 Trends in South East Queensland supply chain cost components



A.2.1 Competitive market costs

Competitive market costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. The detailed methodology for estimating these costs is set out in Appendix J. A summary of our approach is as follows:

146 The increases in 2015/16 and 2016/16 are based on Energex's 2015/20 regulatory proposal. The actual trend will depend on the AER's final distribution network determination in October 2015.

- The wholesale energy component was estimated by Frontier Economics and includes energy purchase costs, market fees, and ancillary service costs.

- The retail component is the residual when all of the non-retail supply chain cost components are subtracted from the representative *market offer* price in 2013/14. By using the residual method we do not explicitly calculate the retail component and the component includes any errors, positive or negative, in our estimates of the other supply chain cost components. The 2013/14 retail component is then escalated for the remaining years of the reporting period at the assumed annual rate of inflation of 2.5 per cent.

In Queensland, competitive market costs are expected to increase, on average, by 3.7 per cent per year across the reporting period.

In 2013/14, the competitive market component costs, which exclude the impact of the carbon price, made up 34 per cent of the total annual bill for the representative consumer. We expect the contribution of this component to the total annual bill to be steady across the reporting period.

Wholesale energy component

Frontier Economics expects wholesale energy purchase costs in Queensland to increase moderately above the rate of inflation over the reporting period. The drivers of this trend are:

- increasing wholesale gas prices due to the establishment of a liquefied natural gas (LNG) export industry; and

- the current over-supply of generation capacity in the NEM, which is putting downward pressure on wholesale electricity prices in the spot market.

In the base scenario, Frontier Economics has assumed that Queensland wholesale gas prices increase from around $4 per gigajoule (GJ) to $6/GJ between 2013/14 and 2016/17. Higher gas prices increase costs for gas-fired generators that may subsequently flow through to wholesale energy prices.[147]

The current over-supply of generation capacity in Queensland is the result of decreases in electricity consumption. In some other jurisdictions the Renewable Energy Target is contributing to the over-supply, however this has less of an impact in Queensland because only 682 MW of large-scale capacity has been installed.[148] Between 2009/10 and 2013/14, annual electricity consumption in Queensland declined, on average, by 1.5 per cent per year. The decline was potentially due to sustained electricity price

147 In 2013/14, gas-fired generators in Queensland supplied around 21 per cent of the total electricity generated in the state.

148 Commonwealth of Australia, *Renewable Energy Target Scheme – Report of the Expert Panel*, August 2014, p8.

increases over the past five years, largely due to transmission and distribution network prices, and growth in rooftop solar PV and energy efficiency.[149]

During the reporting period (out to 2016/17), annual electricity consumption in Queensland is expected to increase, on average, by 4.1 per cent per year. This includes an average annual increase of 16.4 per cent in large industrial consumption, primarily due to the commencement of the LNG export projects, and an average annual decrease of 2 per cent in residential and commercial consumption.[150]

In its 2014 Electricity Statement of Opportunities, the Australian Energy Market Operator (AEMO) found that there is currently sufficient generation capacity in Queensland to meet the expected electricity consumption for the next ten years.[151]

Retail component

The costs of retailing electricity in Queensland are not directly observable and we do not specify an individual retail component of the representative *market offer*. However, the Queensland Competition Authority determines a benchmark retail operating cost allowance and return on investment for retailers during the process of setting regulated *standing offer* prices in 2013/14 and 2014/15.[152] We have not used these estimates in our modelling of *market offers*, although we provide the following information for completeness:

- In 2014/15, the retail operating cost allowance of the regulated *standing offer* price was increased from $162.16 per customer in 2013/14 to $166.65 in 2014/15, an increase of 2.8 per cent. The Queensland Competition Authority states that these costs typically comprise customer administration (including call centres), corporate overheads, billing and revenue collection, IT systems, regulatory compliance, and customer acquisition and retention costs.

- In both 2013/14 and 2014/15, the return on investment for the regulated *standing offer* price is 5.7 per cent. The return on investment represents the return to investors for committing capital to a business and for accepting risks associated with providing customer retail services.

A.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers.

149 AEMO, *National Electricity Forecasting Report 2014*, final report , 16 June 2014, p3-4 (chapter 3, page 4).

150 AEMO, *National Electricity Forecasting Report 2014*, Queensland spreadsheet, 16 June 2014.

151 AEMO, *Electricity Statement of Opportunities*, final report, 7 August 2014.

152 QCA, *Regulated retail electricity prices 2014-15*, final determination, May 2014.

In 2013/14, the regulated network sector made up 50 per cent of the representative *market offer* price. Of this, the transmission network component accounted for 8 per cent and the distribution network component 42 per cent.

The contribution of distribution network prices is expected to increase to 45 per cent in 2014/15, 48 per cent in 2015/16 and then reduce slightly to be 46 per cent in 2016/17. The 2014/15 contribution is based on the published tariff schedule for this year whereas the following two years are based on the price trend indicated in Energex's 2015-20 regulatory proposal. The contribution of transmission network prices to total bills is expected to increase slightly during the reporting period and make up 8.9 per cent of the total in 2016/17.

Transmission

In Queensland, transmission services are provided by Powerlink. Transmission prices are based on the most recent AER determination for Powerlink that was made in 2012 and covers the period from 1 July 2012 to 30 June 2017. For 2013/14 and 2014/15, the price structures for the recovery of Powerlink's approved revenue allowance are published by Energex.[153]

Transmission prices are expected to increase by 3.4 per cent between 2013/14 and 2014/15, and then by 7.2 per cent per year between 2015/16 and 2016/17. These increases are due to investment in response to peak demand growth that was anticipated at the time of the last regulatory determination and the replacement of ageing infrastructure. Powerlink's regulated rate of return allowance for the current determination is lower than for the previous regulatory determination, falling from 8.76 per cent to 8.61 per cent.[154]

Distribution

The distribution network businesses in Queensland are Energex and Ergon Energy.[155] Our analysis applies to consumers in South East Queensland that are connected to the Energex network.

The current AER determination for the Queensland distribution networks covers the period of 1 July 2010 to 30 June 2015. Based on tariff schedules published by Energex, distribution network prices will increase by 4.7 per cent between 2013/14 and 2014/15 due to lower than expected electricity consumption.

For 2015/16 and 2016/17, distribution network prices are based on Energex's regulatory proposal for the 2015-20 regulatory period. Our analysis of this proposal indicates that distribution network prices will increase by around 15 per cent in 2015/16 and 0.5 per cent in 2016/17 if the proposal is accepted by the AER. Notably, our prices include metering costs but exclude the Queensland Solar Bonus Scheme

153 For example, Energex, *Tariff Schedule 1 July 2014 to 30 June 2015*, Energex, 16 June 2014.

154 See the AER's regulatory determinations for Powerlink for the 2012-17 and 2007-12 periods.

155 A small region in southern Queensland is serviced by the New South Wales network company, Essential Energy.

costs, which we report on as a separate item.[156] Actual network prices will depend on the outcome of the AER's final determination in October 2015.

Energex has proposed a regulated rate of return of 7.75 per cent, which is lower than the 9.72 per cent rate of return for the previous regulatory period. The rate of return is the income earned by Energex based on the value of its asset base.

A significantly lower regulated rate of return should result in lower distribution network prices. However, in Energex's proposal this effect appears to be offset by a number of factors, including:

- Proposed spending of around $650 million per year on capital expenditure and around $350 million per year on operating expenditure.[157]
- An asset base that is projected to increase by 5.2 per cent or $586m per year due to the new capital expenditure and low regulatory depreciation.[158]
- Residential electricity consumption that is forecast to decrease at an average annual rate of 1.2 per cent during 2015-20, meaning that the total revenue must be recovered from a lower volume of energy sales, as discussed in Chapter 2.
- The expected under-recovery of $459 million of revenue in the current regulatory period (2009-14) due to lower than forecast energy consumption and capital contributions for network expansion.

A.2.3 Environmental policies

A collection of schemes have been introduced by the Commonwealth and state governments to achieve greenhouse gas emission reductions and other objectives.[159] Throughout this report we group these schemes together as environmental policies. The policies that apply in Queensland during our reporting period are the carbon pricing mechanism, the Renewable Energy Target, the Queensland Solar Bonus Scheme and the Queensland Gas Scheme.[160]

Environmental policy costs are recovered from consumers in different ways. The carbon pricing mechanism increases the cost of energy that is supplied by thermal electricity generators, which leads to higher wholesale electricity costs. The costs of the

156 In the 2015-20 regulatory period, metering is classified as an alternative control service. We have calculated the metering costs for a representative consumer using 4,533 kWh per year on a primary tariff. See page 59 of the Overview paper to Energex's 2015-20 regulatory proposal.

157 More than half of the proposed capital expenditure relates to the replacement of ageing network equipment.

158 The net annual change in the asset base is calculated as new capital expenditure minus regulatory depreciation.

159 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

160 Under the scheme, accredited gas generators were able to create tradable certificates that electricity retailers were liable to purchase.

Queensland Solar Bonus Scheme are currently recovered through distribution network prices. The Renewable Energy Target and Queensland Gas Scheme costs are recovered through retail prices. In our reporting, all of these costs have been separated out.

In 2013/14, environmental policies made up 17 per cent of the representative *market offer*. The estimated contribution of the individual components is as follows:

- The carbon price made up around 8.2 per cent of the representative *market offer* in 2013/14. There is no carbon cost in the remaining years as this policy has been repealed with effect from 1 July 2014.
- Renewable Energy Target scheme costs made up around 4.2 per cent of the representative *market offer* in 2013/14. Under the existing legislation, the contribution of this cost is expected to be 3.7 per cent in 2014/15, 3.9 per cent in 2015/16, then 4.4 per cent in 2016/17.
- The Queensland Solar Bonus Scheme made up 4.2 per cent of the representative *market offer* in 2013/14. This is expected to increase to 8.7 per cent in 2014/15, before decreasing to be 5.9 per cent in 2015/16 and then 6.6 per cent in 2016/17;[161] and
- The Queensland Gas Scheme made up less than 0.1 per cent of the representative *market offer* in 2013/14. It makes no contribution after 2013/14 as the scheme was discontinued at the end of 2013.

Carbon pricing mechanism

Costs associated with the carbon pricing mechanism were estimated by Frontier Economics.[162]

The carbon price has been abolished effective from 1 July 2014. Hence 2013/14 is the only year of our reporting period for which this cost is incurred by consumers. As mentioned above, we estimate that the carbon pricing mechanism made up around 8.2 per cent of the representative *market offer* in 2013/14.

Renewable Energy Target

The Renewable Energy Target has two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Under both of these components, eligible renewable energy generators are able to create certificates based on the amount of electricity that they produce. In most circumstances electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

161 The 2015/16 and 2016/17 costs are based on Energex's 2015-20 regulatory proposal.

162 Frontier's methodology to estimate the costs of the carbon pricing mechanism involved running the same model with and without a carbon pricing. The costs of the scheme were then calculated as the difference between these two scenarios.

The costs incurred by electricity retailers in purchasing the certificates are passed on to consumers. In 2013/14 we estimate that SRES costs make up 2.2 percent of the representative *market offer* price and LRET costs make up 2 per cent. Our estimates of the Renewable Energy Target costs in the current and future years are based on the assumption that the current legislation is maintained.

We expect that the costs of the SRES scheme will decrease by 32 per cent in 2014/15 and remain steady in 2015/16 and 2016/17. The SRES scheme is expected to make up around 1.4 per cent of the representative *market offer* in these years. We expect that the LRET scheme costs will increase by 21 per cent per year during the reporting period and make up 3 per cent of the representative *market offer* in 2016/17.

The trends in the LRET are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining certificates. Similarly, SRES costs are based on a renewable energy percentage and estimates of the certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[163] The expected decrease in SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

Queensland Solar Bonus Scheme

The Queensland Solar Bonus Scheme was introduced on 1 July 2008 to provide an incentive for electricity consumers to install solar energy systems. Households who installed small solar PV systems (of up to 5 kW rated capacity) were eligible for a payment for all electricity exported to the grid.

The rate of payment depends on when households applied to connect a solar system, and when the system was installed. There are two levels of payment for Queensland Solar Bonus Scheme customers:

- Those who lodged a connection application with their distribution network company before midnight on 9 July 2012 are eligible for a payment of 44 c/kWh if the application was approved and the system was installed by 30 June 2013. As long as participants continue to meet certain eligibility criteria they will receive this payment until the scheme ends in 2028.[164]

- Those who lodged a connection application with the electricity network company after 9 July 2012 have been eligible for a payment of 8 c/kWh. For consumers in South East Queensland this payment ended on 30 June 2014.

163 Clean Energy Regulator, *The 2014 small-scale technology percentage and renewable power percentage set*, website update, 18 May 2014.

164 Participants are no longer eligible for the 44 cent per kWh payment if they sell or lease their house, or if they upgrade their solar inverter to a larger capacity.

As of July 2014, around 75 per cent of the solar energy systems in South East Queensland were eligible for payments under the Queensland Solar Bonus Scheme.[165]

Since 1 July 2014, consumers in South East Queensland who are not eligible for the 44 c/kWh payment are able to negotiate a feed-in tariff rate with their retailer. Any payments made by retailers through these voluntary arrangements are not part of the Queensland Solar Bonus Scheme.[166]

The Queensland Solar Bonus Scheme is currently funded by the electricity distribution network companies as a requirement of their Distribution Authority under the Queensland Electricity Act 1994. The AER allows the network companies to recoup these costs from consumers through higher distribution network prices. However, for administrative reasons, there is currently a two-year lag between when the costs are incurred by the network companies and when they can be recovered. For example, in 2014/15 Energex is recovering the costs of the scheme that were incurred in 2012/13.

For 2015/16 and 2016/17 we have used scheme costs set out in Energex's 2015-20 regulatory proposal. Energex proposes to smooth its revenue allowance, including jurisdictional scheme payments, across the five years of the upcoming regulatory period.[167] This would result in the costs of the scheme in 2015/16 and 2016/17 being lower than in 2014/15.

The trend in Queensland Solar Bonus Scheme costs is also influenced by the decline in the number of households that are eligible for the scheme. Energex expects that there will be a four per cent per year reduction in systems eligible for the 44 c/kWh feed-in tariff due to existing participants becoming ineligible.

Alternative cost-recovery arrangement

The Queensland Government has proposed an alternative arrangement whereby Queensland Solar Bonus Scheme costs would be offset as part of its Strong Choices plan to lease some government-owned assets.[168] Under this proposal, commencing in 2015/16, part of the funds from the asset leasing plan will be used to make feed-in tariff payments rather than the scheme being paid for by consumers. If this proposal is implemented, residential prices from 1 July 2015 would be lower.

The following chart shows the cost stack for Queensland over the reporting period with the costs of the Queensland Solar Bonus Scheme indicated in a different colour to the other environmental policy costs.

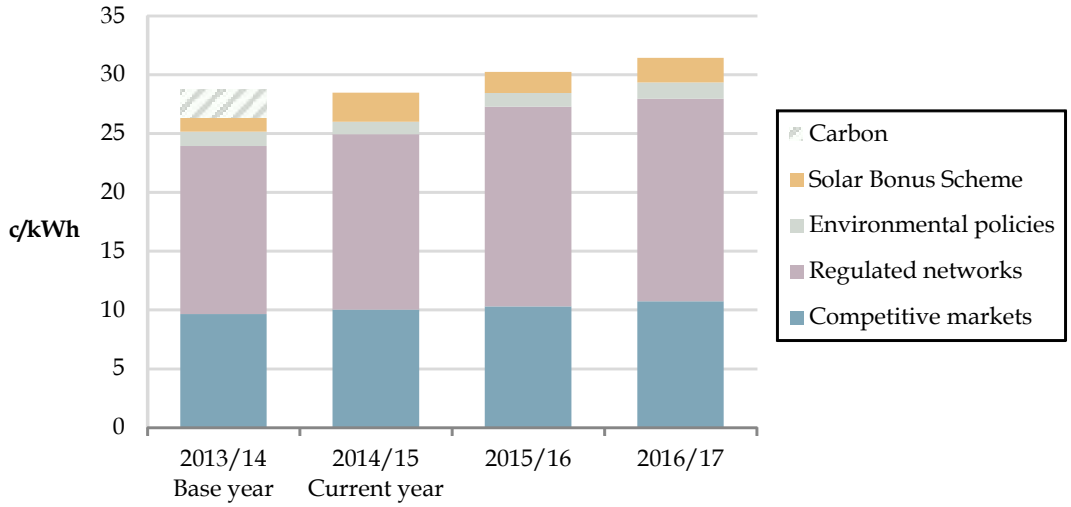
165 Energex data referenced at: http://reneweconomy.com.au/2014/graph-of-the-day-queenslanders-continue-rush-to-rooftop-solar-63907

166 Given the very limited retail competition outside of South East Queensland, Ergon Energy customers will continue to receive a tariff that is set by the QCA and paid by Ergon Retail.

167 Energex, *2015-20 Regulatory Proposal*, October 2014, p7.

168 C Newman (Premier), *Queenslanders to get electricity price relief*, media statement, 12 October 2014.

Figure A.4 South East Queensland supply chain cost components with separate Queensland Solar Bonus Scheme



If the Queensland Solar Bonus Scheme costs are removed from 2015/16 onwards then overall prices would be around 6 per cent lower in these years. For the representative consumer, we expect that this could equate to a total annual saving of around $80 in 2015/16. Under this scenario, the average annual increase in overall prices would be around 0.7 per cent per year over the whole reporting period.

Queensland Gas Scheme

The Queensland Gas Scheme was established in 2005 to encourage the development of the gas industry in the state. Under the scheme, accredited gas generators were able to create certificates based on the amount of electricity that they generated. Electricity retailers and other liable parties were required to purchase and surrender the certificates.

The scheme was closed on 31 December 2013 and liability under the scheme only applied to electricity sales on or before 31 December 2013. All accreditations, exemptions and certificates expired on 30 June 2014.[169]

In 2013/14 the scheme made up less than 0.1 per cent of the representative *market offer* price.

A.3 Further developments

In September 2014, the Queensland Parliament passed legislation to remove retail price regulation for small consumers in South East Queensland.[170] It is expected that the

169 Queensland Government, *Closure of the Queensland Gas Scheme*, website, viewed 20 August 2014, http://www.business.qld.gov.au/industry/energy/gas/queensland-gas-scheme/closure-of-the-queensland-gas-scheme

170 M McArdle (Minister for Energy and Water Supply), *Families to benefit from electricity reforms*, media statement, 10 September 2014.

new arrangements will commence on 1 July 2015, subject to a number of pre-conditions[171] being met, including:

- ensuring there is sufficient competition in South East Queensland;
- implementing appropriate customer support mechanisms, which we understand includes adopting the National Energy Customer Framework;
- that customer engagement in the market is sufficient so that customers are able to understand and engage in the market; and
- that there is a suitable price setting method for regional Queensland in 2015/16.[172]

Findings of the AEMC's 2014 Retail Competition Review

As part of the 2014 Retail Competition Review, the AEMC conducted detailed analysis for South East Queensland as an input to the Queensland Government's decision on the first precondition above.[173] It was found that competition is effective in the South East Queensland electricity market, with the report noting that:

- Consumers are increasingly taking advantage of the choices available to them. In 2013, 70 per cent of electricity customers were on *market offers*, 30 per cent of energy customers shopped around for a better deal and 17 per cent changed retailer. Others found a better deal with their existing retailer.
- Ten retailers are currently competing to acquire and retain electricity customers by offering discounts and other incentives.
- The majority of customers surveyed are generally satisfied with the quality of service they receive.

171 M McArdle (Minister for Energy and Water Supply), speech transcript, 20 May 2014, viewed at http://www.parliament.qld.gov.au/documents/tableOffice/BillMaterial/140520/Electricity.pdf

172 As these prices are currently based on regulated prices in South East Queensland.

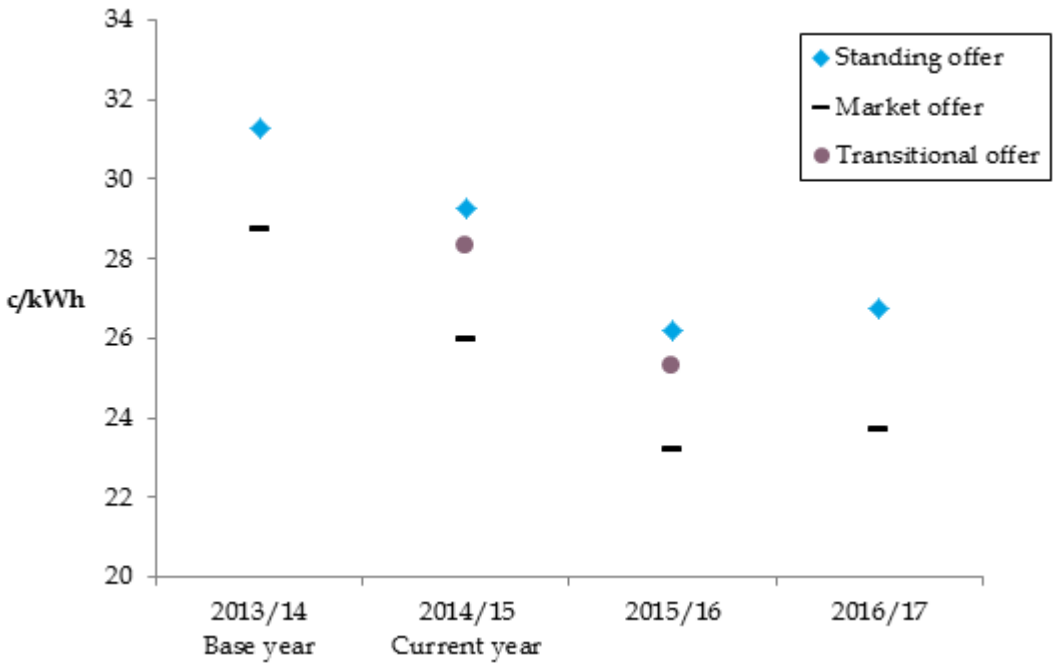
173 AEMC, *2014 Retail Competition Review*, final report, 22 August 2014.

B New South Wales

Box B.1 Key points

- Residential electricity prices in New South Wales are expected to decrease by 9.7 per cent in 2014/15 and 11 per cent in 2015/16, before increasing by 2.2 per cent in 2016/17. This is equivalent to an average annual decrease of 5.8 per cent for the representative consumer over the reporting period.
- The decrease in 2014/15 reflects the removal of the carbon price and small decreases in distribution network prices. The trend in prices between 2014/15 and 2016/17 reflects a decrease in distribution network prices in 2015/16, as set out in the Australian Energy Regulator's draft decisions for the 2014-19 regulatory period. The trend in network prices is subject to the Australian Energy Regulator's final decision in April 2015.
- In 2013/14, the representative consumer may have saved around 8 per cent by switching from the regulated offer to the representative *market offer*. This equates to a saving of $165 off the total annual bill.

Figure B.1 Trend in New South Wales *market offer* and *standing offer* prices



B.1 Overview

The New South Wales retail electricity market has featured full retail contestability since 2002. Retailers are able to compete for consumers and consumers can choose a

retail offer that best suits their needs. As retail competition is considered to be effective in New South Wales[174], regulation of retail prices was removed on 1 July 2014, allowing all retailers to determine prices in the competitive market.

Prior to 1 July 2014, New South Wales consumers had a choice of three different offers:

- a regulated offer determined by the Independent Pricing and Regulatory Tribunal (IPART);[175]
- an unregulated *standing offer* with prices set by retailers in the competitive market; and
- *market offers* with prices also set by retailers in the competitive market.

With the removal of retail price regulation on 1 July 2014, regulated *standing offers*, which were previously determined by IPART, are no longer available.

Consumers that were on the regulated offer immediately prior to 1 July 2014 were placed onto a transitional offer, unless they elected to move to a *market offer* or *standing offer*.[176] All New South Wales consumers now have the choice of a *standing offer* or a *market offer*, with prices for both determined by retailers in the competitive market.

Figure B.1 shows the expected movements in *standing offer* and *market offer* prices, and the transitional offer.

Residential electricity prices in New South Wales are expected to decrease by 9.7 per cent in 2014/15 and 11 per cent in 2015/16, before increasing by 2.2 per cent in 2016/17. This is equivalent to an average annual decrease of 5.8 per cent for the representative consumer over the reporting period

In 2013/14, the representative consumer may have saved around 8 per cent by switching from the regulated offer to the representative *market offer*. This equates to a saving of $165 of the total annual bill. Around 60 per cent of New South Wales consumers are on *market offers*.[177]

174 AEMC, Review of Competition in the Retail Electricity and Natural Gas Markets in New South Wales, final report, 3 October 2013, Sydney.

175 Regulated offers were only offered by incumbent retailers in the respective distribution areas in New South Wales, and were required to provide these offers. The incumbent retailers are Origin Energy and Energy Australia.

176 In 2014/15, the transitional offer features a 1.5 per cent price reduction off the 2013/14 regulated offer. Consumers can choose to move from the transitional offer to a *market offer* at any time. In 2015/16, the transitional offer price increase will be capped at the rate of inflation.

177 Australian Energy Market Commission, *2014 Retail Competition Review*, Final Report, 22 August 2014, p.94.

Methodology

Our analysis of residential prices and cost components applies to a representative residential consumer in New South Wales consuming 6,500 kWh per year.[178]

The representative *market offer* price in 2013/14 was based on prices nominated by retailers in February 2014. The regulated offer in 2013/14 was sourced from IPART's regulatory determination.[179]

For 2014/15, the *standing offer* is based on offers available in October 2014 and the transitional offer is a 1.5 per cent discount on the carbon-exclusive regulated offer from the previous year. The 2014/15 *market offer*, and both the *standing offers* and *market offers* in future years, are based on expected movements in the underlying supply chain cost components. We have assumed that in 2015/16 the transitional offer will fall in line with the *market offer* price.

A detailed explanation of our methodology is set out in Appendix J.

B.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table B.1 demonstrates how the average unit cost of electricity and the annual electricity bill in New South Wales are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table B.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average *market offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	36.12	$903
New South Wales-specific average (6,500 kWh)	28.76	$1,869
High (9,500 kWh)	27.77	$2,638

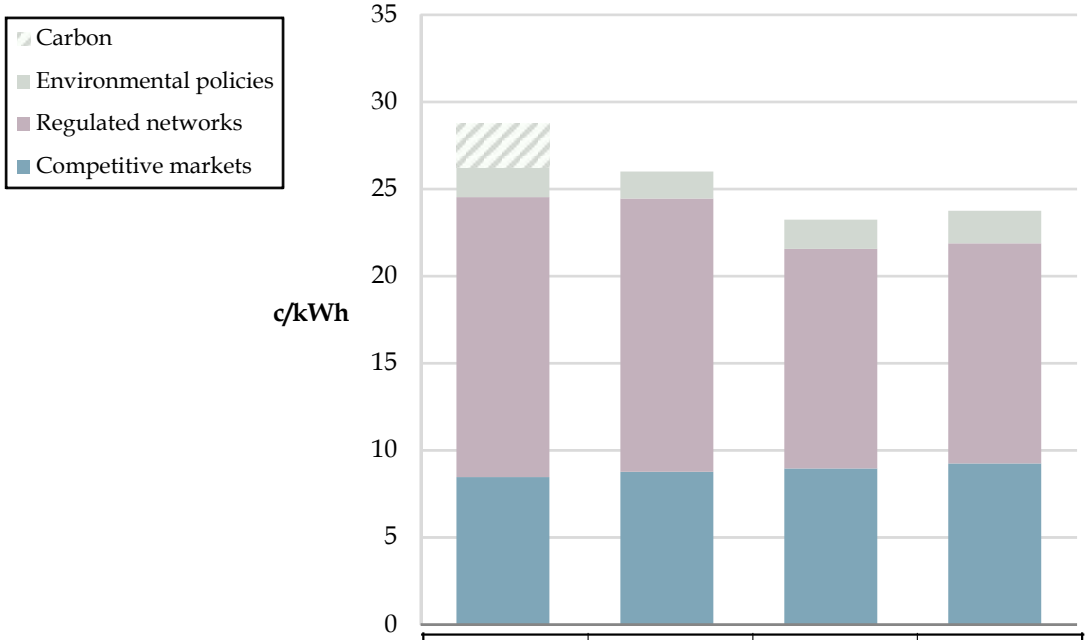
178 This consumption level was provided to us by New South Wales Government officials.

179 Independent Pricing and Regulatory Tribunal, *Determination - NSW Electricity Regulated Retail Tariffs and Charges - 1 July 2013 to 30 June 2016*, June 2013.

B.2 Trends in supply chain components

Figure B.2 shows the expected movements in the supply chain cost components for New South Wales, which are the competitive wholesale and retail markets, regulated networks and government environmental policies. Costs associated with the carbon price apply only in 2013/14 as the scheme has been repealed with effect from 1 July 2014. A different pattern is used in Figure B.2 for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure B.2 New South Wales supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.24**	**1.55**	**1.67**	**1.88**
Carbon	c/kWh	2.54	0.00	0.00	0.00
LRET	c/kWh	0.60	0.65	0.77	0.97
SRES	c/kWh	0.64	0.44	0.44	0.44
Climate Change fund	c/kWh	0.41	0.41	0.41	0.41
Energy Saving Scheme	c/kWh	0.05	0.06	0.06	0.06
Regulated networks	**c/kWh**	**16.07**	**15.68**	**12.61**	**12.63**
Transmission	c/kWh	3.44	3.60	3.55	3.38
Distribution	c/kWh	12.63	12.09	9.06	9.25
Competitive market Wholesale and retail	**c/kWh**	**8.44**	**8.75**	**8.94**	**9.23**
Total	**c/kWh**	**28.76**	**25.98**	**23.23**	**23.74**

Figure B.3 shows the expected trends in the supply chain cost components in New South Wales over the reporting period. In summary, the expected trends are:

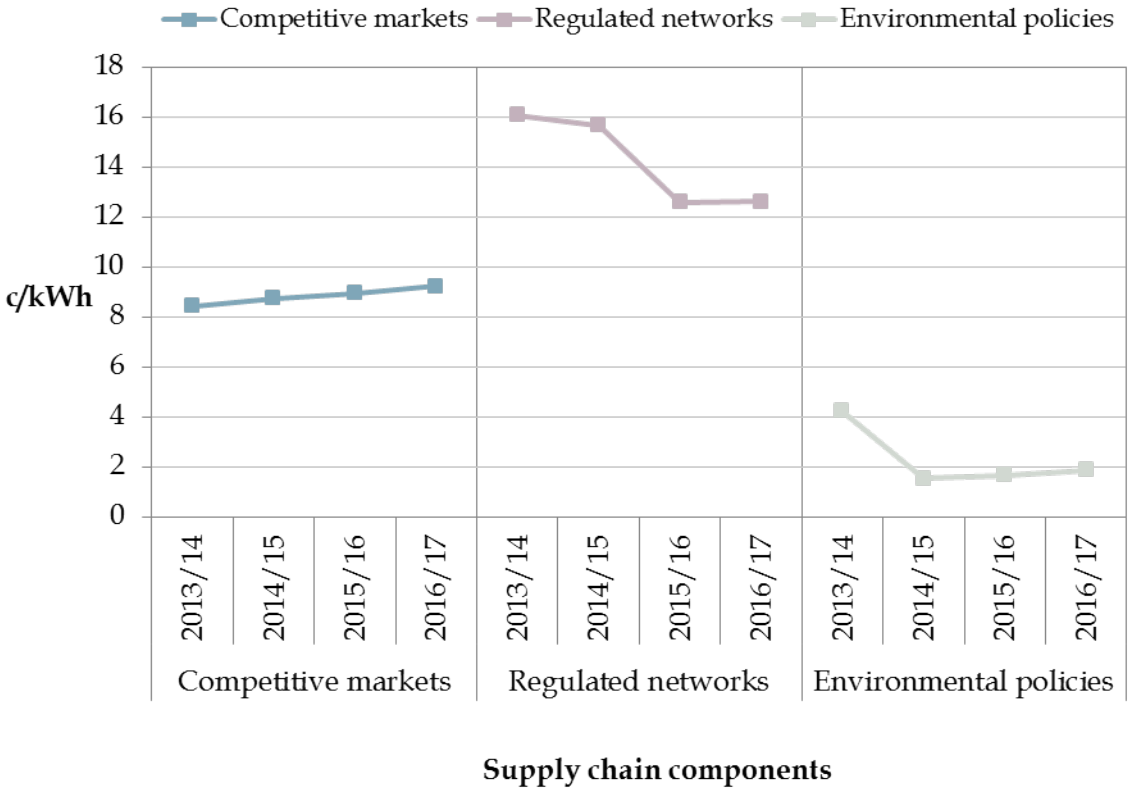
- an average annual increase of 3.1 per cent in the competitive market component;

- an average annual decrease of 7.1 per cent in regulated networks. This is based on the AER's draft transmission and distribution network determinations for 2014-19 and is subject to the AER's final determinations in April 2015; and

- an initial decrease of 64 per cent in the environment component that is predominantly due to the repeal of the carbon pricing mechanism. This is followed by increases of 8.2 per cent in 2015/16 and 12 per cent in 2016/17 due to higher Renewable Energy Target costs.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure B.3 Trends in New South Wales supply chain cost components



B.2.1 Competitive market costs

Competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. The detailed methodology for estimating these costs is explained in Appendix J. A summary of our approach is as follows:

- The wholesale energy component was modelled by Frontier Economics and includes energy purchase costs, market fees and ancillary service costs.

- The retail component was calculated in different ways for *standing offers* and *market offers*:

- For *market offers*, the retail component is the residual when all non-retail supply chain cost components are subtracted from the representative *market offer* price in 2013/14. By using the residual method, we do not explicitly calculate the retail component and the component includes any errors, positive or negative, in our calculations of the other supply chain cost components

- For *standing offers*, we used the retail component from IPART's determination for the 2013/14 regulated offer. In 2013/14, most *standing offers* were equal to the regulated offer.

- For both *market offers* and *standing offers*, the 2013/14 retail component is escalated for the remaining years of the reporting period at the assumed annual rate of inflation of 2.5 per cent.

In 2013/14, competitive market costs, which exclude the impact of the carbon price, account for around 29 per cent of the representative *market offer* price. By 2016/17, this is expected to increase to 39 per cent.

Wholesale energy component

Frontier Economics expects the wholesale energy component for New South Wales to increase at about the rate of inflation over the reporting period. Frontier used the wholesale energy purchase cost component from IPART's determination for 2013/14 and applied the wholesale market modelling trend to extrapolate wholesale costs for New South Wales for the remainder of the reporting period.

Between 2009/10 and 2013/14, total annual electricity consumption in New South Wales declined, on average, by 2.8 per cent per year. The decline is attributed to:[180]

- the uptake of rooftop solar PV systems and energy efficiency measures;

- reduction in residential and commercial consumption due to higher electricity prices; and

- reduction in energy consumed from large industrial consumers due to changes in the economy.

Over the reporting period, average annual electricity consumption in New South Wales is expected to decline by around 0.1 per cent.[181] In the 2014 Electricity Statement of Opportunities, AEMO found that there is currently sufficient generation capacity in New South Wales to meet expected electricity consumption for the next ten years.[182]

180 Australian Energy Market Operator, *National Electricity Forecasting Report*, June 2013.

181 Australian Energy Market Operator, *National Electricity Forecasting Report*, June 2014.

182 Australian Energy Market Operator, *Electricity Statement of Opportunities*, August 2014.

Retail component

The costs of retailing electricity in New South Wales are not directly observable for *market offers* and we do not specify an individual retail component of the representative *market offer*. However, IPART determined the return on investment, operating costs and customer acquisition and retention costs for the regulated offer for 2013/14.[183]

As noted above, we do not calculate the retail component of competitive market costs. Retailers have different business models and costs structures, and estimating the retail component based on a representative *standing offer* or *market offer* is unlikely to be a true reflection of individual retailers' operating costs and return on investment.

B.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers.

We have used a number of different sources to determine the expected trend in network prices over the reporting period:

- The network prices for 2013/14 and 2014/15 are derived from approved pricing proposals from the network businesses. Importantly, the 2013/14 prices were based on the AER's determinations for the 2009-14 regulatory period whereas the 2014/15 prices are based on the AER's transitional determination which set out the "placeholder" revenue allowances for this year. Ultimately, these placeholder revenue allowances will be replaced by the revenue allowances approved in the AER's full determinations for the 2014-19 period.

- The expected trend in New South Wales network prices for 2015/16 and 2016/17 is based on the AER's draft decisions for the distribution and transmission business revenue determinations for the 1 July 2014 to 30 June 2019 period. The AER draft decisions were released on 27 November 2014 and represent the first revenue allowances to be proposed under the new rules for the network regulation.

The new rules for network regulation better equip the AER to develop methods and processes to achieve efficient outcomes in setting revenues and prices for consumers in a number of areas. We note that the AER draft decisions include greater use of benchmarking techniques in developing the efficient operational expenditure allowances.

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183 Independent Pricing and Regulatory Tribunal, *Final Report - Review of Regulated Prices and Charges for Electricity from 1 July 2013 to 30 June 2016*, June 2013. IPART set a retailer return on investment of 5.7 per cent and a retail operating costs allowance of $100 per customer. Customer acquisition and retention costs were specified as a range.

In 2013/14, we estimate that the regulated network component made up 56 per cent of the representative *market offer* price. Of this, the distribution network component made up around 44 per cent and the transmission network component around 12 per cent.

We expect that the contribution of regulated network prices will decrease during the reporting period to 53 per cent of the representative *market offer* price in 2016/17.

The actual trend in regulated network prices over the reporting period will be determined by the AER's final determinations for the New South Wales distribution and transmission businesses, which are due to be released by the 30 April 2015.

Transmission

Transmission infrastructure is provided by TransGrid and Ausgrid.[184]

Transmission prices have increased by 4.5 per cent between 2013/14 and 2014/15 based on prices published by the distribution network businesses' approved pricing proposals. Transmission prices in New South Wales are expected to decrease by 1.3 per cent in 2015/16 and 4.9 per cent in 2016/17.

As noted above, the expected trend in transmission prices is based on the AER's draft decision for TransGrid, which includes:

- A substantially lower regulated rate of return from the previous determination due to changed financial market conditions. The AER is proposing a rate of return of 7.24 per cent, compared to 10.02 per cent allowed during the 2009-14 regulatory period.
- A reduction in capital expenditure of around 57 per cent compared to the previous period due to reduced levels of replacement expenditure and growth-related expenditure. The AER considers that TransGrid is overly conservative in assessing risks associated with its current assets and less replacement expenditure is required than proposed in its regulatory proposal.
- A reduction in operational expenditure so that network spending is consistent with an efficient network business, as determined by the AER. The operational spending for the 2014-19 period is around 13 per cent less than the 2009-14 regulatory period.

Transmission network prices calculated for this report include an adjustment for $71 million of revenue that was under-recovered by TransGrid in 2013/14. We have assumed that this amount will be recovered in 2015/16.

Transmission costs comprised 12 per cent of the *market offer* for the representative consumer in 2013/14 and are expected to increase to 14 per cent in 2016/17.

184 Ausgrid is primarily a Distribution Network Service Provider but is also registered as a Transmission Network Service Provider. Ausgrid's network includes dual function assets with a voltage 66kV and above that are owned by Ausgrid and operate in parallel with and provide material support to the TransGrid transmission network.

Distribution

Distribution network prices for New South Wales have been calculated as the weighted average of prices among the three distribution businesses - Ausgrid, Essential Energy and Endeavour Energy.[185] In July 2012, the New South Wales Government merged all three of these businesses into a corporate structure called Networks NSW, which was designed to reduce costs by removing duplication and creating economies of scale.[186]

Distribution prices have decreased by 4.3 per cent between 2013/14 and 2014/15 based on prices published by the network businesses. This reduction reflects both a lower regulated rate of return than in the previous regulatory period and lower capital expenditure due to declining growth in peak demand.[187]

Over the next two years, distribution prices in New South Wales are expected to decrease by 25 per cent in 2015/16 and then increase by 2.1 per cent in 2016/17. This reflects the AER's draft revenue determinations for the three New South Wales distribution businesses.

The AER is proposing substantial changes to the network revenue allowances for the New South Wales distribution network businesses compared to the previous regulatory period. In the draft decisions, the AER has indicated that network prices should decrease due to:

- the network businesses becoming more efficient;
- changes to risk management practises, which would reduce the amount of capital expenditure required;
- expected falls in peak demand; and
- changed financial market conditions.

Reflecting changed financial market conditions, the AER's draft determinations include a lower rate of return allowance of 7.15 per cent compared to 10.02 per cent in the previous regulatory period. As discussed in Chapter 2, the regulated rate of return makes a significant contribution to network prices and is a key factor in the expected trend over the next couple of years.

A lower rate of return leads to a lower return on capital allowance for the network businesses. The allowances are also lower in the new regulatory period because the

185 All of the distribution network prices for New South Wales include metering costs. In 2013/14 and 2014/15 the prices published by the network businesses included metering. From 2015/16 onwards, the AER proposes to classify metering as an alternative control service and the costs are specified as a separate component in their draft decision. In New South Wales, metering costs are proposed to be between $14 and $34 per year in 2015/16.

186 See: NSW Government, NSW Electricity Network Reforms, available at: http://www.energy.nsw.gov.au/electricity/networks/reforms, page viewed 19 September 2013

187 Australian Energy Regulator, Ausgrid, Endeavour Energy, Essential Energy, ActewAGL Transitional distribution decision 2014-15, April 2014.

network businesses did not spend all the capital expenditure expected in the previous regulatory period. Capital expenditure reported by the New South Wales transmission and distribution network businesses for the 2009-14 regulatory period was 20.5 per cent lower than the allowance approved by the AER.[188]

Proposed capital and operational expenditures for 2014-19 are lower than the previous regulatory period. The AER proposes that in 2014-19 the:

- capital expenditure of the three distribution network businesses should be 58 per cent less when compared to the actual spending in the previous regulatory period; and
- operational expenditure of the three distribution network businesses should be 37 per cent less when compared to the actual spending in the previous regulatory period.

During the 2009-14 regulatory period, there were high levels of capital expenditure due to a change in the planning standard and expected demand growth. Since this time, system peak demand has decreased and is expected to continue to decrease is future years. The New South Wales Government has also made changes to the planning standard.[189] Given this, the AER considers that much less capital expenditure will be required in 2014-19.

Based on benchmarking analysis of the relative efficiency of distribution network businesses in Australia, the AER considers that there are opportunities for distribution network services in New South Wales to be provided more efficiently. By some metrics in the benchmarking performed for the AER, Ausgrid's operational expenditure is around half as efficient as the distribution network businesses considered to be the most efficient in the National Electricity Market.[190]

The AER is currently consulting on whether the proposed reduction in operational spending should be implemented as a step-change in 2015/16 or implemented more gradually over multiple years. The current price trend in this report is based on the assumption that all cost savings are implemented in 2015/16, as proposed by the AER in their draft determinations. Actual network prices will depend on the AER's final determinations to be made by 30 April 2015.

Distribution network prices comprised 44 per cent of the *market offer* in 2013/14. Given the proposed decreases discussed above, the contribution of distribution network prices to the *market offer* in 2016/17 is expected to be lower at 39 per cent.

188 NSW Auditor-General, *Report to Parliament - Volume Five 2014 Electricity*, 11 November 2014, p5.

189 AER, Draft decisions for Ausgrid, Endeavour Energy and Essential Energy for the 2015-16 to 2018-19 regulatory period, published 27 November 2014, p24.

190 AER, *Electricity distribution network service providers – Annual benchmarking report*, November 2014.

B.2.3 Environmental policies

A number of schemes have been introduced by the Commonwealth and state and territory governments to achieve greenhouse gas emission reductions and other objectives. Throughout this report, we group these schemes together as environmental policies. The policies that apply in New South Wales during our reporting period are the carbon pricing mechanism, the Renewable Energy Target, and New South Wales Government policies, these being the New South Wales Climate Change Fund that supports the Solar Bonus Scheme and the Energy Savings Scheme.

Environmental costs are recovered from consumers in different ways. The carbon pricing mechanism was levied on fossil fuel generators, resulting in higher wholesale electricity prices. The costs of the Solar Bonus Scheme are recovered through distribution network prices and passed onto retail consumers. The Energy Savings Scheme involves retailers trading certificates, the cost of which is ultimately borne by consumers through retail bills.

In our reporting, costs associated with these environmental policies have been shown individually. Information regarding the jurisdictional-specific schemes was provided by the respective government departments, while Frontier Economics modelled the impact on prices from the carbon price and Renewable Energy Target.

In 2013/14, environmental policies comprised 15 per cent of the representative consumer's bill. In 2016/17, this is expected to fall to 7.9 per cent, due to the removal of the carbon price on 1 July 2014. Excluding the carbon price, environmental costs are expected to be 6 per cent of the representative consumer's bill in 2014/15.

Based on our assumptions, the contributions of the individual environmental policy components are:

- The carbon price made up 8.8 per cent of the representative *market offer* in 2013/14. There is no carbon cost in the remaining reporting years as the carbon pricing mechanism was repealed with effect from 1 July 2014.

- Renewable Energy Target scheme costs comprised 4.3 per cent of the representative *market offer* in 2013/14. This is expected to increase to 6 per cent in 2016/17.

- Costs of the Climate Change Fund are expected to remain flat across the reporting period, and comprised 1.4 per cent of the representative *market offer* in 2013/14.

- Costs associated with the Energy Savings Scheme are expected to rise at an average annual rate of 4 per cent, but comprise less than 0.5 per cent of the representative *market offer* throughout the reporting period. We note that the New South Wales Government is undertaking a review of this scheme and that the outcome may have an impact on retail prices over the reporting period.

Carbon pricing mechanism

Costs associated with the carbon pricing mechanism were modelled by Frontier Economics for this report.[191]

The carbon price has been repealed, effective from 1 July 2014. Hence, 2013/14 is the only year of our reporting period for which this cost is incurred by consumers. As mentioned above, the carbon price was calculated to have comprised 8.8 per cent of the representative *market offer* in 2013/14.

Renewable Energy Target

Costs associated with the Renewable Energy Target were modelled by Frontier Economics for this report.

The Renewable Energy Target has two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Under both these components, eligible renewable energy generators are able to create certificates based on the amount of electricity they produce. In most circumstances, electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

Costs incurred by electricity retailers in purchasing certificates are passed on to consumers. In 2013/14, the SRES costs comprised 2.2 per cent, and LRET costs comprised 2.1 per cent of the representative *market offer*. Our expectation of Renewable Energy Target costs in the current and future years is based on the assumption that the current legislation is maintained.

We expect that the costs of the SRES scheme will decrease by 32 per cent in 2014/15 and remain steady in 2015/16 and 2016/17. The SRES scheme will make up around 1.9 per cent of the representative *market offer* in 2016/17. We expect the LRET scheme costs will increase by an average of 21 per cent per year over the reporting period and make up 4.1 per cent of the representative *market offer* in 2016/17.

The trends in the LRET are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining large-scale generation certificates. Similarly, SRES costs are also based on a renewable energy percentage and expectations about future certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[192] The expected decrease in the SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

191 Frontier's approach to calculating the costs of the carbon pricing mechanism involved running the same model with and without carbon pricing. The costs of the scheme were then calculated as the difference between these two scenarios.

192 Clean Energy Regulator, 'The 2014 small-scale technology percentage and renewable power percentage set,' *Clean Energy Regulator* website update 18 May 2014, http://ret.cleanenergyregulator.gov.au/Latest-Updates/2014/The-2014-small-scale-technology-percentage-and-renewable-power-percentage-set.

Climate Change Fund

The Climate Change Fund was established by the New South Wales Government to support energy and water savings initiatives.[193] It is mostly funded through electricity distribution businesses, which pass on the costs to consumers through network distribution prices. The Minister with responsibility for the Climate Change Fund determined that costs passed onto residential consumers through retail bills would only constitute 25 per cent of the cost of the scheme.

The legacy Solar Bonus Scheme is the largest obligation of the Climate Change Fund. It provides feed-in tariffs to support residential solar PV systems.

The Solar Bonus Scheme includes two separate tariffs:

- a 60 c/kWh premium tariff, continuing until 31 December 2016. To be eligible for the 60 cent tariff, a consumer must have entered a binding agreement to purchase or lease a complying generator on or before 27 October 2010, lodge an application to connect that generator to the network on or before 18 November 2010, and for the generator to have been connected on or before 30 June 2012; and

- a 20 c/kWh premium tariff, continuing until 31 December 2016. To receive the tariff, the consumer must have connected to the network by meter installation on or before 30 June 2011, or the network must have received an 'application to connect' on or before 28 April 2011 and the consumer must have connected the solar panels to the network by meter installation on or before 30 June 2012.

The cost of the Solar Bonus Scheme is expected to remain constant for the reporting period, as new solar installations are not eligible for the Solar Bonus Scheme.

New South Wales Energy Savings Scheme

The Energy Savings Scheme is a New South Wales Government program to assist households and businesses reduce their energy consumption. This is a certificate trading scheme where retailers are required to fund energy efficiency through the purchase of certificates. A review is being conducted to examine how the scheme could be enhanced and the outcome of this review may have an impact on retail prices.

Scheme costs are based on the forward curve for Energy Saving Certificates where available and escalated by inflation for the remaining years.[194]

193 For more information, see: http://www.environment.nsw.gov.au/grants/ccfund.htm

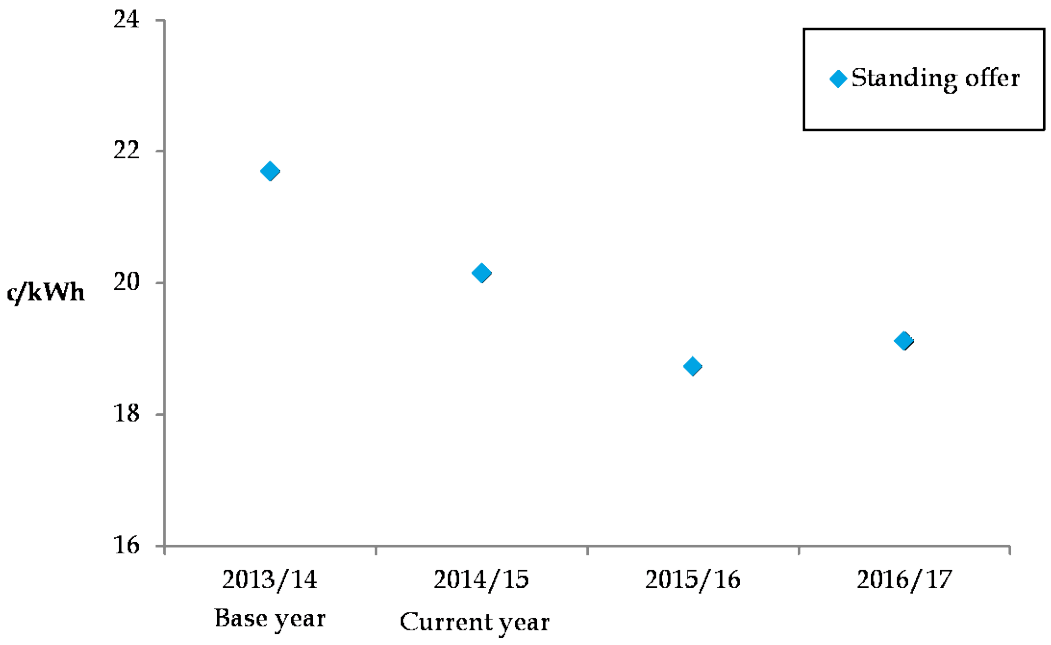
194 In previous years the scheme costs where based on the penalty rate. Now that retail prices have been deregulated, the costs of the scheme are calculated using the market price of certificates.

C Australian Capital Territory

Box C.1 Key points

- Residential electricity prices in the Australian Capital Territory (ACT) are expected to decrease by 7.2 per cent in 2014/15 and 7 per cent in 2015/16 before increasing by 2.1 per cent in 2016/17. This is equivalent to an average annual decrease of 4 per cent for the representative consumer over the reporting period.
- In 2014/15, prices have decreased by 7.2 per cent for the representative consumer, reflecting the removal of the carbon price and lower distribution network prices. In 2015/16, prices are expected to fall following the proposed reductions in network prices set out in the Australian Energy Regulator's (AER's) draft decisions for ActewAGL and Transgrid for the 2014-19 regulatory period. In 2016/17, this trend is reversed with a moderate increase in prices expected.
- Most consumers in the ACT are on the regulated *standing offer*, although residential consumers have the opportunity to shop around for more competitive *market offers*. We note that Origin Energy has recently entered the retail market, which will expand the choice of *market offers* available to consumers.

Figure C.1 Trend in Australian Capital Territory *standing offer* price



C.1 Overview

Standing offer prices are expected to fall across the reporting period by an average of 4 per cent per year. In 2014/15, prices are expected to fall by 7.2 per cent, due to the removal of the carbon price and a reduction in distribution network prices following from the AER's transitional determination.

Figure C.1 shows expected movements in *standing offer* prices in the ACT over the reporting period.

About four in five consumers[195] in the ACT are on the regulated *standing offer*, although they have the opportunity to shop around for *market offers*. For this reason, only *standing offers* are considered for the ACT in this year's report. We note that Origin Energy has recently entered the ACT retail market and this will expand the range of *market offers* available to consumers.

Methodology

Our analysis of residential prices and cost components applies to a representative residential consumer in the ACT consuming 7,180 kWh per year.[196]

For 2013/14 and 2014/15, the *standing offer* price was calculated using ActewAGL's "Home plan" *standing offer* prices, which are consistent with retail price determinations made by the Independent Competition and Regulatory Commission (ICRC).[197] For the remaining two years of the reporting period, the trends in the supply chain cost components have been estimated by the AEMC.

A detailed explanation of our methodology is set out in Appendix J.

C.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table C.1 demonstrates how the average unit cost of electricity and the annual electricity bill in the ACT are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

195 AEMC, *2014 Retail Competition Review* - Final Report, Sydney, p. xiv.

196 This consumption level was provided to us by ACT Government officials.

197 ICRC, *Standing offer prices for the supply of electricity to small customers 1 July 2014 to 30 June 2016* Final Report, June 2014.

Table C.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

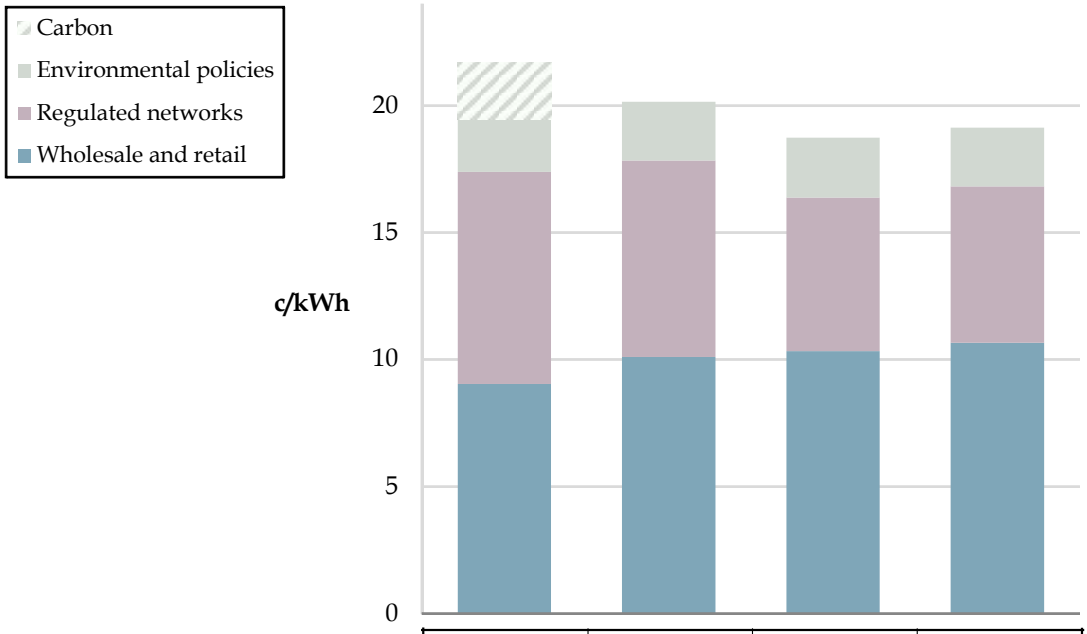
Annual consumption level	2013/14 Average *standing offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	28.05	$701
ACT-specific average (7,180 kWh)	21.70	$1,558
High (9,500 kWh)	20.87	$1,982

C.2 Trends in supply chain components

Figure C.2 shows expected movements in supply chain cost components in the ACT, which are wholesale and retail market, regulated networks and government environmental policies. In our analysis we group the cost of the carbon pricing mechanism in the environmental component. However, Figure C.2 identifies the cost of carbon so that it is possible to observe the trend in the costs of the other environmental schemes.

We note that, as the carbon pricing mechanism has been repealed effective from 1 July 2014, there is no carbon price component in the environment policy costs from 2014/15.

Figure C.2 Australian Capital Territory supply chain cost components



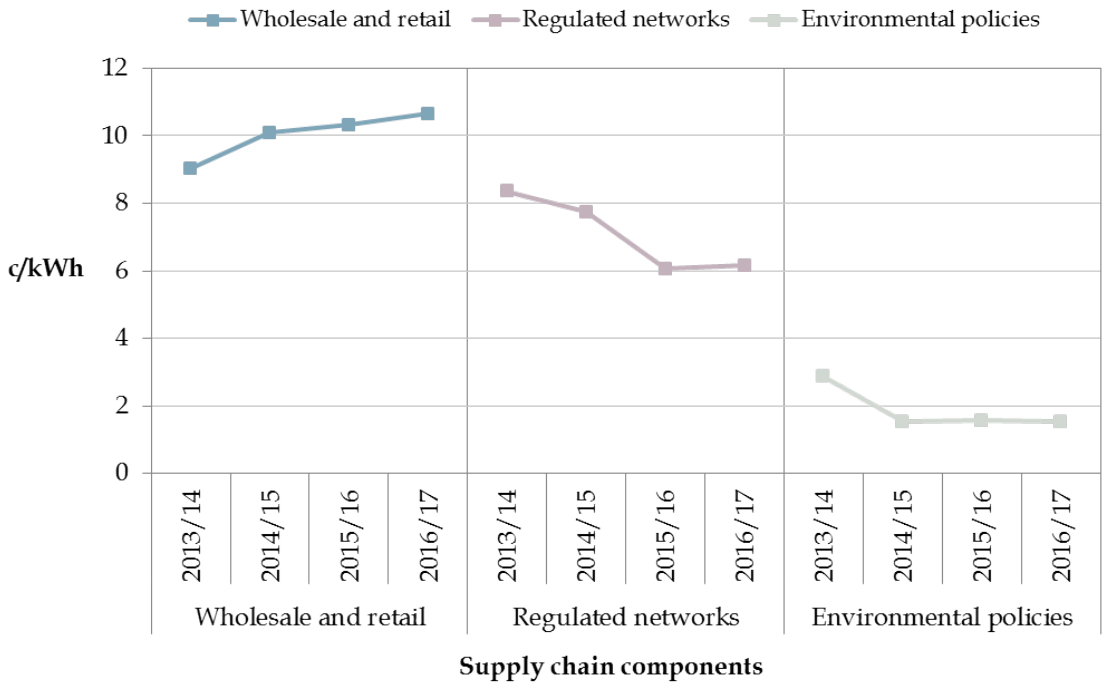
		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.32**	**2.31**	**2.36**	**2.31**
Carbon	c/kWh	2.25	0.00	0.00	0.00
LRET	c/kWh	0.59	0.64	0.76	0.96
SRES	c/kWh	0.64	0.43	0.43	0.44
Feed-in tariff	c/kWh	0.47	0.75	0.91	0.91
Energy Efficiency Improvement Scheme	c/kWh	0.38	0.49	0.25	0.00
Regulated networks	**c/kWh**	**8.35**	**7.74**	**6.06**	**6.16**
Transmission	c/kWh	1.42	2.20	2.17	2.06
Distribution	c/kWh	6.93	5.54	3.88	4.09
Wholesale and retail	**c/kWh**	**9.03**	**10.09**	**10.32**	**10.65**
Total	**c/kWh**	**21.70**	**20.14**	**18.73**	**19.12**

Figure C.3 shows the expected movement in each of the supply chain components over the reporting period. Estimated trends in the supply chain cost components for the ACT over the reporting period are summarised as follows:

- an average annual increase of 6 per cent in the wholesale and retail market component;
- an average annual decrease of 8.7 per cent in the regulated network component; and
- an average decrease of 16 per cent per year in environmental costs, or, excluding the effect of the carbon price, an average increase of 3.9 per cent per year.

Residential electricity price trends, and our assumptions, are explained further below in the supply chain component-specific sections.

Figure C.3 Trends in ACT supply chain cost components



C.2.1 Wholesale and retail costs

Wholesale and retail market costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. The detailed methodology for estimating these costs is set out in Appendix J. A summary of our approach is as follows:

- For 2013/14 and 2014/15, the wholesale energy component was provided in the ICRC's 2014-17 retail determination, which publishes costs for 2013/14 and 2014/15. For 2015/16 and 2016/17, the wholesale energy component was escalated based on a trend established by Frontier Economics.

- The retail component for 2013/14 and 2014/15 is provided by the ICRC's retail price determination for 2014-17,[198] which specifies retailer operating costs including customer acquisition and retention costs and a return on investment of 6.04 per cent. To estimate costs for *standing offers* for 2015/16 and 2016/17, we have escalated costs by an assumed inflation rate of 2.5 per cent, which is consistent with the ICRC's methodology.[199]

In the ACT, wholesale and retail market costs are expected to increase, on average, by 6 per cent per year over the reporting period. This is due to increases in the allowance for retail operating costs and the return on investment for retailers.

198 ICRC, *Final Report, Standing offer prices for the supply of electricity to small customers, 1 July 2014 to 30 June 2017, Report 4 of 2014*, June 2014.

199 Ibid.

In 2013/14, the wholesale and retail market costs (net of carbon) are estimated to have made up 42 per cent of the representative *standing offer*. By 2016/17, this is expected to increase to 56 per cent.

Wholesale energy component

Frontier Economics expects the wholesale energy component for the ACT to increase at an average annual rate of around 2 per cent over the reporting period. The low rate of growth in wholesale costs is due to the current oversupply of generation capacity in the market. As noted above, Frontier used the wholesale energy component determined by the ICRC out to 2014/15 and escalated this by a trend established for the remaining years of the reporting period.

Between 2009/10 and 2013/14, total annual electricity consumption in the New South Wales region of the National Electricity Market, which includes the ACT, declined on average by 2.8 per cent per year. As discussed in Chapter 2, the decline in annual consumption has been attributed to the:

- impact of government supported energy efficiency programs;
- reduction in large industrial loads, such as aluminium smelters;[200]
- consumer response to electricity price rises; and
- increased penetration of rooftop solar photovoltaic (PV) systems.

This trend is expected to continue, with annual electricity consumption in the New South Wales region expected to be stable out to 2016/17.[201]

Retail component

The ICRC determines the retail component for the regulated *standing offer* in the ACT. In the 2014/15 retail price determination, the ICRC increased the allowance for retailer operating costs by 19 per cent and the return on investment allowance for retailers by 12 per cent.

Retailer operating costs have increased following a review by the ICRC of the methodology for calculating these costs. The adjustments align the allowance for these costs with the standard industry benchmark.[202] The ICRC also increased the return on investment for retailers to 6.04 per cent as the regulator incorporated new information

200 This includes the complete/partial closures of Port Kembla steelworks, Kurri Kurri aluminium smelter and Clyde oil refinery.

201 AEMO, *National Electricity Forecasting Report*, AEMO, June 2014.

202 ICRC,*Standing offer prices for the supply of electricity for small customers 1 July 2014 to 30 June 2017,* final report, 13 June 2014, pp.28-32, 54.

sourced from the New South Wales Independent Pricing and Regulatory Tribunal.[203] This is an equivalent return on investment when compared with other jurisdictions.

C.2.2 Regulated network

Regulated network prices consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers.

Over the reporting period, regulated network prices are estimated to decrease on average by 8.7 per cent per year. We have used a number of different sources to determine the expected trend in network prices over the reporting period:

- Network prices for 2014/15 are based on ActewAGL's approved pricing proposals. For 2014/15, the pricing proposal reflects the AER's transitional determinations for Transgrid and ActewAGL, which set out the placeholder revenue allowances for that year.[204]

- The expected trend in ACT network prices for 2015/16 and 2016/17 is based on the AER's draft decisions for the ActewAGL and TransGrid revenue determinations for the 1 July 2014 to 30 June 2019 period. The AER's draft decisions were released on 27 November 2014 and represent the first series of revenue allowances to be proposed under the new rules for the regulation of networks revenues and prices.[205]

The new rules for network regulation better equip the AER to develop methods and processes to achieve efficient outcomes in setting network revenues. We note that the AER draft decisions include greater use of benchmarking techniques in developing the efficient operational expenditure allowances.

In 2013/14, regulated network prices were estimated to have made up 38 per cent of the representative *standing offer*, falling to 32 per cent in 2016/17.

Transmission

Transmission infrastructure in the ACT is provided by TransGrid and network revenues are regulated by the AER.

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203 IPART,*Standing offer prices for the supply of electricity for small customers 1 July 2014 to 30 June 2017,* final report, 13 June 2014, pp 32-35.

204 In its draft decision, AER has reduced its proposed revenue allowance for 2014/15 compared to the placeholder decisions. The savings from this reassessment have been spread over the remaining years of the 2014-18 period, and this is reflected in the trends provided in this report.

205 AER, *Draft decision, ActewAGL distribution determination, 2015-16 to 2018-19, Overview*, Melbourne, November 2014; AER, *Draft decision, Transgrid transmission determination, 2015-16 to 2018-19, Overview*, Melbourne, November 2014.

Our estimates for transmission prices in ACT for 2013/14 and 2014/15 are based on ActewAGL's approved pricing proposals. In 2014/15, ActewAGL's approved pricing proposal features a rise of 55 per cent in transmission network prices. This is due to the change in the treatment of the costs associated with ActewAGL distribution network assets that support TransGrid's transmission service to Cooma. Under the terms of the AER transitional determination, these costs have been removed from the distribution price and are to be recovered in the transmission price.

Transmission prices are expected to decrease by 1.3 per cent in 2015/16 and 5.4 per cent in 2016/17. Transmission network prices in 2015/16 include an adjustment for $71 million of revenue that was under-recovered by TransGrid in 2013/14.

As noted above, the expected trend in transmission prices is based on the AER's draft decision for TransGrid, which includes:

- A substantially lower cost of capital allowance from the previous revenue determination. The AER is proposing a WACC of 7.24 per cent for the 2014-19 period compared to a WACC of 10.05 per cent allowed over the previous period.
- A substantial reduction in capital expenditure compared to the previous period, reflecting moderating peak demand growth. In addition, the AER has proposed to reduce Transgrid's asset replacement expenditure as it considers that Transgrid is overly conservative in assessing risks associated with its current assets.
- Proposed operational expenditure that is less than the 2009-14 regulatory period and accounts for around 20 per cent of the total reduction in network revenues compared to the previous period.

Actual prices for 2015/16 and 2016/17 will depend on the AER's final determination, which is due to be published in April 2015.

Transmission prices comprised 7 per cent of the standing offer in 2013/14 and are expected to rise to 11 per cent in 2016/17. This is mainly due to the reallocation of assets, as explained above.

Distribution

Distribution network prices for the ACT are sourced from ActewAGL's approved pricing proposals and AER's draft decision for ActewAGL for the 2014-19 regulatory period.

Distribution network prices are expected to decrease at an annual average rate of 14 per cent over the reporting period.[206] This is due to a reallocation of costs from

206 The distribution network prices for the ACT include metering costs. In 2013/14 and 2014/15, the prices published by the network businesses include metering costs. From 2015/16 onwards, the AER proposes to classify metering as an alternative control service and the costs are specified as a separate component in their draft decision.

distribution to transmission in 2014/15, as discussed above, and the AER draft decision.

The AER's draft decision for the 2014-19 period features a substantial reduction in revenue compared to the previous regulatory period. There are several key reasons for this. The draft decision proposed:

- a large reduction in operational expenditure compared to the previous regulatory period. The AER considered that ActewAGL's operating expenditure was above that of its peers, due to relatively high labour costs and inefficient vegetation management.

- a lower WACC allowance of 6.88 per cent compared to the previous regulatory determination of 8.79 per cent. As discussed in chapter 2, the WACC makes a significant contribution to network prices and is a key factor in the expected trend over the next couple of years.

- a 28 per cent reduction in capital expenditure compared to ActewAGL's actual capital expenditure between 2009 to 2014. This represents a proposed reduction in augmentation expenditure due to low demand growth and lower expenditure in non-network assets, such as information and communications technology.

The AER is currently consulting on whether the proposed reduction in operational spending should be implemented as a step-change in 2015/16 or implemented more gradually over multiple years. The current price trend in this report is based on the assumption that all cost savings are implemented in 2015/16. Actual network prices will depend on the AER's final determinations to be made by 30 April 2015.

Distribution network prices comprised 32 per cent of the *standing offer* in 2013/14 and are expected to fall to 21 per cent in 2016/17.

C.2.3 Environmental policies

A collection of schemes have been introduced by the Commonwealth and state and territory governments to achieve greenhouse gas emission reductions and other objectives.[207] Throughout this report we group these schemes under environmental policies. The policies that apply in the ACT during our reporting period are the carbon pricing mechanism and the Renewable Energy Target, which are both Commonwealth schemes, and the ACT Government's solar PV feed-in tariff schemes and the Energy Efficiency Improvements Scheme.

Environmental policy costs are recovered from consumers in different ways. The carbon pricing mechanism increased the cost of energy that is supplied by fossil-fuel electricity generators, which led to higher wholesale electricity costs. The Energy Efficiency Improvements Scheme is paid for by retailers who are allowed to pass

207 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

approved costs onto consumers. The feed-in tariff costs are paid by ActewAGL's distribution business and passed onto consumers. All of these costs have been shown individually.

Over the reporting period, environmental policies fall by an average 16 per cent per year. However, excluding the effect of the carbon price in 2013/14, environmental costs rise by an average of 3.9 per cent per year.

In 2013/14, environmental policies comprise 20 per cent of the representative *standing offer*. In 2016/17, this is expected to fall to 12 per cent, primarily due to the removal of the carbon price on 1 July 2014. Excluding the carbon price, environmental costs are estimated to account for 9.6 per cent of the representative *standing offer* in 2013/14.

The estimated contributions of the individual environmental policy components are:

- The carbon price made up around 10 per cent of the representative *standing offer* in 2013/14. There is no carbon cost in the remaining reporting years as the carbon price was repealed with effect from 1 July 2014.
- The Renewable Energy Target scheme costs made up about 5.7 per cent of the representative *standing offer* in 2013/14. This is expected to increase to 7.3 per cent in 2016/17.
- The feed-in tariff schemes costs are expected to make up 2.2 per cent of the representative *standing offer* in 2013/14, rising to 4.8 per cent in 2016/17.
- Costs associated with the Energy Efficiency Improvements Scheme rise in 2014/15, before falling the following year. The scheme comprises 1.8 per cent of the representative *standing offer* in 2013/14, and 1.3 per cent in 2015/16. We have not attributed costs to the scheme for 2016/17, as at the time of publication of this report the scheme has not been legislated to continue past 2015.[208]

Carbon pricing mechanism

Costs associated with the carbon pricing mechanism were calculated for this report by Frontier Economics.[209]

The carbon price has been repealed, effective from 1 July 2014. Hence 2013/14 is the only year of our reporting period for which this cost is incurred by consumers. As mentioned above, we estimate that the carbon price comprised about 10 per cent of the representative *standing offer* in 2013/14.

208 The ACT Government is currently doing further work to determine the future of the program post 2015.

209 Frontier's methodology to estimate the costs of the carbon pricing mechanism involved running the same model with and without carbon pricing. The costs of the scheme were then calculated as the difference between these two scenarios.

Renewable Energy Target

Costs associated with the Renewable Energy Target were calculated by Frontier Economics for this report. The Renewable Energy Target has two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Under both of these components, eligible renewable energy generators are able to create certificates based on the amount of electricity they produce. In most circumstances, electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

Costs incurred by retailers in purchasing certificates are passed on to consumers. In 2013/14, we estimate that SRES costs comprised 2.9 per cent, and LRET costs 2.7 per cent, of the representative *standing offer* for the ACT. Our estimates of the LRET costs in current and future years are based on the assumption that the current legislated target of 41,000 GWh is maintained.

We expect that the costs of the SRES scheme will decrease by 32 per cent in 2014/15, and remain steady in the final two years of the reporting period. The SRES scheme will make up around 2.3 per cent of the representative *standing offer* in 2016/17. We expect the LRET scheme costs will increase by an average of 21 per cent per year over the reporting period and make up 5 per cent of the representative *standing offer* in 2016/17.

The LRET trend is based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining large-scale generation certificates. Similarly, SRES costs are based on a renewable energy percentage and estimates of the certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[210] The expected decrease in the SRES costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

Feed-in tariff schemes

There are a number of feed-in tariff (FiT) schemes introduced in the ACT to encourage the installation of renewable energy systems. These schemes, which are now closed to new entrants, include:[211]

- *The micro (household) FiT scheme* was designed to subsidise renewable generation from small-scale solar generators of 30 kW or less. From 1 March 2009 to 30 June 2010, registered systems of up to 10 kW received a 50.05 c/kWh rate, while systems between 10 kW and 30 kW received a 40.04c/kWh FiT rate, both rates apply to all electricity generated over a period of 20 years.

- From 1 July 2010 to 31 May 2011, the FiT was 45.7c/kWh for all systems up to 30 kW. There is no longer a regulated feed-in tariff available new residential

210 Clean Energy Regulator, 'The 2014 small-scale technology percentage and renewable power percentage set,' *Clean Energy Regulator*, accessed 18 May 2014, http://ret.cleanenergyregulator.gov.au/Latest-Updates/2014/The-2014-small-scale-technology-percentage-and-renewable-power-percentage-set.

211 This information was provided by the ACT government.

consumers, although consumers receiving the 20 year feed-in tariff will continue to do so for a period of 20 years after the system was connected to the distribution network.

- *The Medium Feed-in Tariff scheme* was designed for generators between 30 kW and 200 kW. The scheme opened for applications on 7 March 2011 and originally offered a 34.27c/kWh rate. In July 2011 the scheme was modified so that it would be open to generators that would have qualified for the micro FiT scheme. After re-opening, the rate was reduced to 30.16c/kWh for all systems up to 200 kW. The feed-in tariffs provided here are gross rates.

- *Large-scale solar Feed-in Tariff scheme* involved reverse auctions for the right to receive a large-scale FiT for generators that have installed capacity of greater than 200 kW. The winning proposals receive a payment from the distribution network business equal to the difference between spot price income from the National Electricity Market and the auction FiT price. The costs of the scheme are passed on to consumers through retail bills.

ACT Energy Efficiency Improvements Scheme

The Energy Efficiency Improvements Scheme requires retailers in the ACT to meet energy savings targets by undertaking energy savings measures in ACT households or small to medium businesses. Retailers pass on a portion of their compliance costs to ACT electricity consumers. The ICRC determines the allowable costs that retailers can pass through to consumers.

The scheme commenced on 1 January 2013 and will run initially until 31 December 2015. At the time of publication, a decision has not been made on extending the scheme, and no costs have been attributed to the scheme beyond its initial end date.[212]

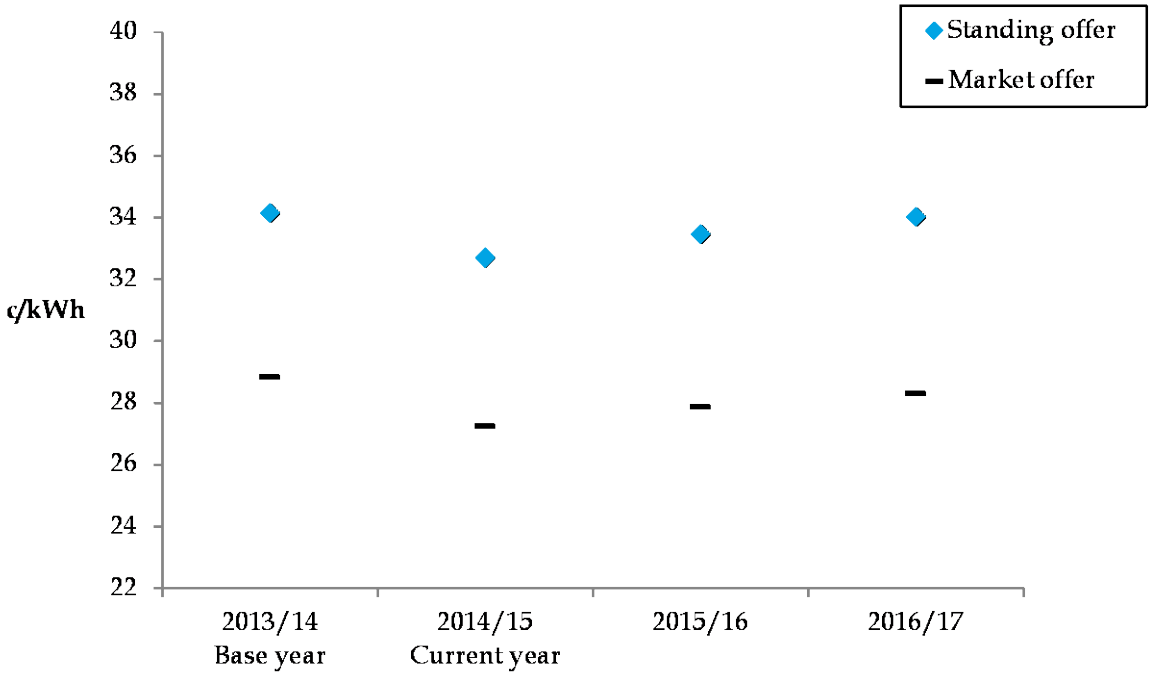
212 The ACT Government is currently doing further work to determine the future of the program post 2015. Further information is available here: http://www.environment.act.gov.au/energy/energy_efficiency_improvement_scheme_eeis

D Victoria

Box D.1 Key points

- Residential electricity prices in Victoria are expected to decrease by 5.5 per cent in 2014/15, before increasing by 2.3 per cent in 2015/16 and 1.5 per cent in 2016/17. This is equivalent to an average annual decrease of 0.6 per cent for the representative consumer over the reporting period.
- In 2014/15, the savings due to the removal of carbon price are partially offset by increases in distribution prices set under the current regulatory determinations. The expected price movement between 2014/15 and 2016/17 is due to moderate increases in competitive sector costs, distribution network prices and Large-scale Renewable Energy Target costs.
- In 2013/14, the representative consumer may have saved around 16 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $246 of the total annual bill for the representative consumer.

Figure D.1 Trend in Victorian *market offer* and *standing offer* prices



D.1 Overview

Residential electricity prices in Victoria are expected to decrease by 5.5 per cent in 2014/15, before increasing by 2.3 per cent in 2015/16 and 1.5 per cent in 2016/17. This is equivalent to an average annual decrease of 0.6 per cent for the representative consumer over the reporting period. Figure D.1 shows expected movements in *market offer* prices between 2013/14 and 2016/17.

Full retail competition was introduced for Victorian residential electricity consumers in January 2002 and in January 2009 the Victorian Government removed retail price regulation.

Retailers are required to offer a *standing offer* contract for electricity and gas with regulated terms and conditions (except price).[213] In addition, Victorian retailers are also able to offer *market offer* contracts where some terms and conditions can be determined by the retailer. The prices for *standing offer* contracts and *market offer* contracts are determined by the retailer and monitored by the Essential Services Commission of Victoria.

Residential consumers in Victoria are actively participating in the retail electricity market, with around 75 per cent of electricity consumers having chosen a *market offer*, while 28 per cent of small consumers changed their retailer in 2013 - the highest in the National Electricity Market (NEM).[214]

Methodology

Our analysis of residential prices and cost components applies to a representative consumer in Victoria using 4,645 kWh per year.[215]

The trend in representative *market offer* and *standing offer* prices is based on prices nominated by retailers in the base year (2013/14). For future years, the trend is based on movements in the underlying supply chain cost components that have been estimated by the Australian Energy Market Commission (AEMC).

A detailed explanation of our methodology is set out in Appendix J.

D.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions, particularly the specific average annual consumption level provided to us by

213 Essential Services Commission, *Progress of electricity retail competition in Victoria*, Research Paper, May 2013, p3.

214 AEMO, *2014 Retail Competition Review*, Final Report, 22 August 2014, xv.

215 This consumption level was provided to us by Victorian Government officials and is calculated by weighting the average customer usage in each distribution network by the number of residential customers in each distribution network.

individual jurisdictions, and may not reflect actual prices paid by individual consumers.

Table D.1 demonstrates how the average unit cost of electricity and the annual electricity bill in Victoria are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills but a higher per unit average price, as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table D.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

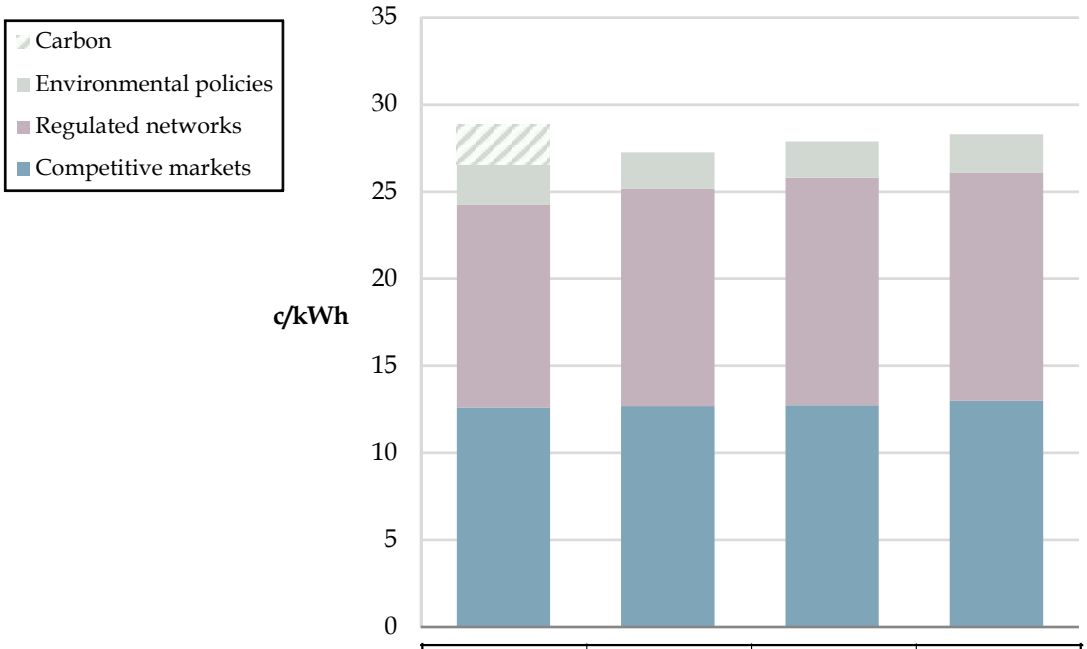
Annual consumption level	2013/14 Average *market offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	35.56	$889
Victorian-specific average (4,645 kWh)	28.82	$1,339
High (9,500 kWh)	25.15	$2,389

D.2 Trends in supply chain cost components

Figure D.2 shows expected movements in the supply chain cost components for Victoria, which are the competitive wholesale and retail markets, regulated networks and government environmental policies.

Costs associated with the carbon pricing mechanism apply only in 2013/14 as the scheme has been repealed with effect from 1 July 2014. A different pattern is used in Figure D.2 for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure D.2 Victorian supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.59**	**2.07**	**2.07**	**2.22**
Carbon	c/kWh	2.29	0.00	0.00	0.00
LRET	c/kWh	0.59	0.64	0.77	0.96
SRES	c/kWh	0.64	0.44	0.43	0.44
Feed in Tariff schemes	c/kWh	0.86	0.84	0.83	0.82
Victorian Energy Efficiency Target	c/kWh	0.21	0.15	0.04	0.00
Regulated networks	**c/kWh**	**11.64**	**12.50**	**13.07**	**13.09**
Transmission	c/kWh	1.35	1.36	1.36	1.36
Distribution	c/kWh	10.29	11.15	11.71	11.72
Competitive market	**c/kWh**	**12.59**	**12.67**	**12.72**	**12.98**
Wholesale and retail					
Total	**c/kWh**	**28.82**	**27.24**	**27.86**	**28.29**

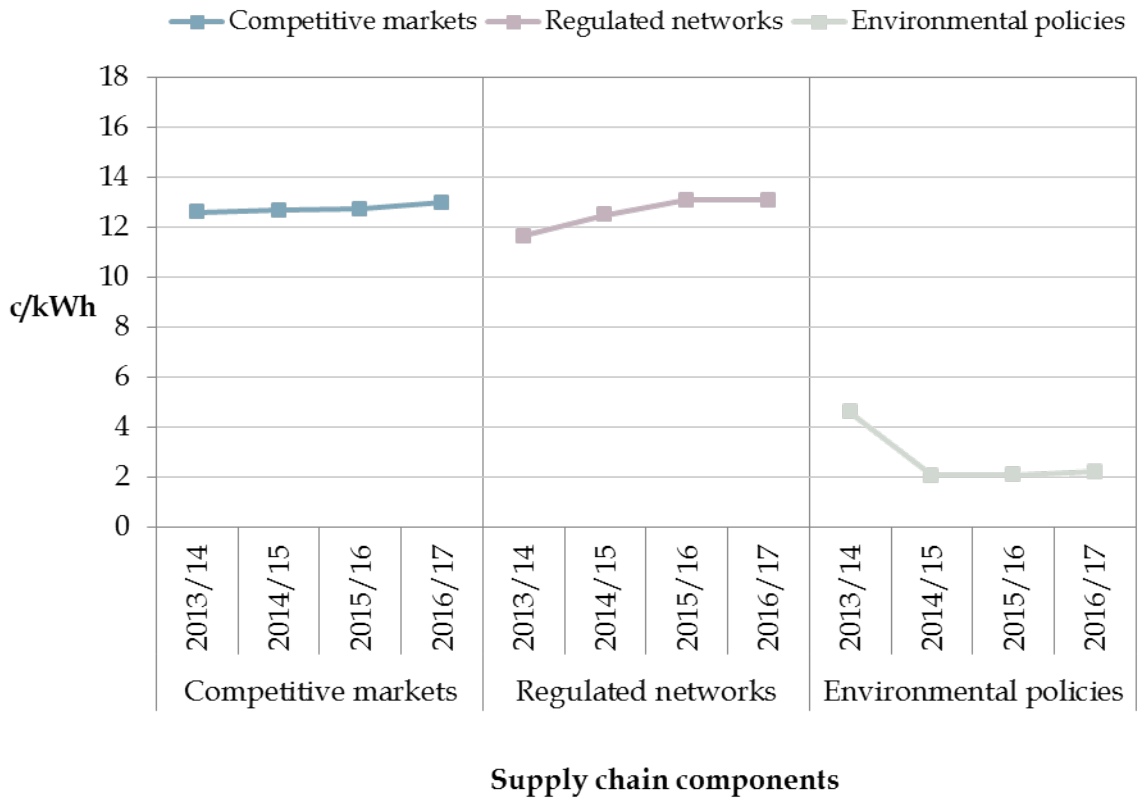
Figure D.3 shows the expected movement in each of the supply chain components over the reporting period. In summary, the expected trends are:

- an average increase of 1 per cent per year in the competitive market component, which is driven by our assumption that the retail component will increase annually by assumed inflation of 2.5 per cent;
- an average increase of 4.2 per cent per year in regulated network prices, although actual trends will depend on the 2016-20 revenue determinations by the Australian Energy Regulator (AER) for the Victorian distribution network businesses; and
- a reduction of 55 per cent in environmental policy costs in 2014/15 primarily due to the repeal of the carbon pricing mechanism, with an average annual increase

of 3.6 per cent per year in the remaining years of the reporting period due to an increases in Large-scale Renewable Energy Target (LRET) costs.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure D.3 Trends in Victorian supply chain cost components



D.2.1 Competitive market costs

Competitive market costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. The detailed methodology for estimating these costs is set out in Appendix J. A summary of our approach is as follows:

- The wholesale energy component was estimated by Frontier Economics and includes energy purchase costs, market fees and ancillary service costs.
- The retail component was calculated as the residual when all of the non-retail supply chain cost components are subtracted from the representative *market offer* price in 2013/14. The retail component also includes any errors, positive or negative, in the trends of the other supply chain cost components. The 2013/14 retail component is then escalated into future years at the assumed annual inflation rate of 2.5 per cent.

In Victoria, competitive market costs are expected to increase, on average, by 1 per cent per year over the reporting period. This increase is primary driven by the assumption that the retail component will increase by assumed inflation of 2.5 per cent per year, which offsets the decrease in energy purchase costs.

In 2013/14, competitive market costs, which exclude the impact of the carbon price, made up 44 per cent of the representative market offer. We expect the contribution of this component to be relatively unchanged over the reporting period.

Wholesale energy component

From 2014/15, Victorian wholesale energy purchase costs are expected to decrease by around 7 per cent on average over the reporting period. The fall in the wholesale energy component is due to a growing oversupply of generation capacity in the NEM, which is the result of falling energy consumption and growth in renewable energy generation driven by the currently legislated 41,000 GWh LRET scheme. These factors are discussed further in Chapter 2.

Between 2009/10 and 2013/14, total annual electricity consumption in Victoria declined, on average, by 1 per cent per year. During the reporting period, the Australian Energy Market Operator (AEMO) expects electricity consumption to decrease on average by 2.1 per cent per year.[216]

AEMO considers the key drivers behind the expected decline in Victorian electricity consumption to be high solar PV uptake, savings from energy efficiency measures and a reduction in large industrial demand.[217]

In the 2014 Electricity Statement of Opportunities, AEMO found that there is currently sufficient generation capacity in Victoria to meet expected electricity consumption for the next ten years.[218]

Retail component

For a representative residential consumer, switching from a *standing offer* to a *market offer* could have saved around 16 per cent in 2013/14. Actual savings may be higher if consumers shop around and choose the best *market offer* suitable to their own circumstances.

As discussed in Chapter 1, we do not explicitly estimate the retail component of competitive market costs. This is because retailers have different business models and cost structures and estimating the retail component based on a representative *standing offer*, or a representative *market offer*, is unlikely to be a true reflection of individual retailers' operating costs and return on investment.

216 AEMO, *National Electricity Forecasting Report*, June 2014.

217 Ibid.

218 AEMO, *Electricity Statement of Opportunities*, August 2014.

D.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers.

In the base year (2013/14), regulated network costs made up 40 per cent of the representative *market offer* price. Of this, transmission network costs accounted for around 5 per cent and distribution network costs around 35 per cent.

By 2016/17, the contribution of regulated network costs is expected to increase to 46 per cent of the total bill. However, we note that network costs for some of the reporting years are subject to a final determination by the AER.

Transmission

Transmission network arrangements in Victoria are different to those in other jurisdictions. The privately owned AusNet Services[219] owns and operates the Victorian transmission system, while planning and procurement of network augmentation is the responsibility of AEMO.

Transmission network prices are based on the current AER determination for SP AusNet that was made in 2014, which includes network augmentation costs determined by AEMO in its planning and procurement role.

Transmission network prices are expected to be stable over the reporting period, primarily due to a reduction in the regulated rate of return from 9.76 per cent to 7.87 per cent, which is offset to a degree by forecast capital expenditure of $513 million (nominal) to replace and upgrade network assets.[220]

The AER's determination ends on 31 March 2017 and covers most of the reporting period. For the remaining three months of the reporting period not covered by the existing determination, we have assumed that transmission costs remain constant in nominal terms. However, this will depend on the outcome of the AER's final determination for the next regulatory period.

The AER is required to make a transmission determination for AEMO in its role as a provider of transmission services in Victoria. The transmission determination consists of a pricing methodology, negotiating framework and negotiated transmission service criteria.[221]

Unlike other Transmission Network Service Providers (TNSPs), the AER is not required to make a building block revenue determination for AEMO. AEMO must have a revenue methodology setting out the method for calculating its maximum

219 AusNet Services was formerly known as SP AusNet.

220 AER, *Final Decision - SP AusNet transmission 2014-17*, Fact Sheet, January 2014.

221 AER, *Final decision - AEMO transmission determination*, April 2014.

revenue for the provision of prescribed transmission services for each regulatory year. This revenue methodology is not subject to regulatory approval, but AEMO is required to consult with stakeholders when developing it.[222]

Distribution

Distribution network prices are based on the Victorian distribution networks' regulatory determinations from January 2011 to December 2015, which included higher levels of capital and operating expenditure compared to the previous regulatory period. It was considered at the time of the determination that additional expenditure was necessary for asset replacement, meeting expected peak demand growth and to address new safety related obligations.

For the remainder of the reporting period we have assumed that distribution network prices remain constant in nominal terms. However, actual outcomes will depend on the AER's final determinations for the five Victorian distribution network businesses that will apply from 1 January 2016. The AER's draft determination is due on 30 October 2015.

The Victorian Government mandated the rollout of smart meter infrastructure and two-way communication systems, which commenced in 2009. The rollout is now effectively complete, with over 2.8 million meters installed across the state.[223]

The cost of the metering rollout is recovered through distribution network prices. Accordingly, we have included these costs in the distribution network component in this report, reflecting information provided by the AER.

D.2.3 Environmental policies

Environmental policies are the schemes that have been introduced by the Commonwealth and state governments to achieve greenhouse gas emission reductions and other objectives.[224] Throughout this report we group these schemes under environmental policies. The policies that apply in Victoria during our reporting period are the Commonwealth Government carbon pricing mechanism and Renewable Energy Target, and the Victorian Government feed-in tariff and energy efficiency schemes.

Environmental policy costs are recovered from consumers in different ways. For instance, the carbon pricing mechanism increases the cost of energy that is supplied by fossil-fuel electricity generators, which leads to higher wholesale electricity prices. Feed-in tariff scheme costs are recovered through increases in distribution network or

222 Ibid.

223 Victorian Government, 'Smart meter: End of rollout,' *vic.gov.au* viewed at http://www.smartmeters.vic.gov.au/about-smart-meters/end-of-rollout

224 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

retail prices, while the Renewable Energy Target and jurisdictional energy efficiency scheme costs are recovered through retail prices.

In 2013/14, environmental policy costs made up 16 per cent of the representative *market offer* price:

- Costs associated with the carbon price were estimated to make up 8 per cent of the representative *market offer* in 2013/14. There are no carbon price costs in subsequent years due to the repeal of the carbon pricing mechanism, effective from 1 July 2014.
- Renewable Energy Target costs are estimated to make up 4.3 per cent of the representative *market offer* in 2013/14. The contribution of this cost is expected to increase to 5 per cent of the representative *market offer* in 2016/17.
- Victorian energy efficiency scheme costs are estimated to make up less than 1 per cent of the representative *market offer* price in 2013/14. The former Victorian Government announced that the energy efficiency scheme will be closed at the end of 2015, which has been taken into account.
- Victorian feed-in tariff scheme costs are estimated to make up 3 per cent of the representative *market offer* in 2013/14 and remain relatively stable through the remainder of the reporting period.

Carbon pricing mechanism

Costs associated with the carbon pricing mechanism were estimated by Frontier Economics for this report.[225] The repeal of the carbon pricing mechanism is the main driver of the decrease in environmental policy costs in 2014/15.

The carbon price was repealed effective from 1 July 2014. Hence 2013/14 is the only year of our reporting period for which this cost is incurred by consumers. As mentioned above, we estimate that the carbon pricing mechanism made up around 8 per cent of the representative *market offer* in 2013/14.

Renewable Energy Target

The Renewable Energy Target has two components: the LRET and the Small-scale Renewable Energy Scheme (SRES). Under both of these components, eligible renewable energy generators are able to create certificates based on the amount of electricity that they produce. In most circumstances electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

The costs incurred by electricity retailers in purchasing the certificates are passed on to consumers. In 2013/14, SRES costs were estimated to comprise 2.2 per cent of the

225 Frontier's methodology to estimate the costs of the carbon pricing mechanism involved modelling with and without a carbon pricing mechanism in place. The costs of the scheme were then calculated as the difference between these two scenarios.

representative *market offer* price, while LRET costs made up 2 per cent. Subsequently in the reporting period, we expect LRET costs will increase to 3.4 per cent of the representative *market offer* price in 2016/17, while the costs of SRES will decrease slightly.

Frontier's estimates of the Renewable Energy Target costs in the current and future years are based on the assumption that the current legislation is maintained.

The trends in the LRET are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining large-scale generation certificates (LGCs). Similarly, SRES costs are based on a renewable energy percentage and estimates of the certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes. The expected decrease in the SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

Feed-in tariff schemes

A number of feed-in tariff schemes have been introduced in Victoria in recent years. These include the now closed premium schemes and an ongoing retailer funded scheme. Although the premium schemes are closed to new entrants, consumers who took part remain eligible to claim the relevant tariff until the schemes conclude. The now closed schemes included three separate tariffs:[226]

- a 60 c/kWh premium tariff, continuing until November 2014;
- a 25 c/kWh transitional tariff, continuing until December 2016; and
- a standard tariff, paying a "fair and reasonable tariff", being equivalent to the price of electricity as bought by residential consumers from their retailers, continuing until December 2016.

Currently, Victorian residential consumers can access a retailer funded feed-in tariff scheme that provides a tariff that is no less than 8 c/kWh. Individual retailers may offer a premium on this rate.[227]

A key difference between the premium/transitional schemes and the retailer funded schemes is the way in which the costs of the schemes are recovered from consumers. The costs of the premium and transitional schemes are recovered from residential consumers through distribution network prices.

Retailers face the cost of the retailer funded schemes and individual retailers will determine whether and/or how the costs of these schemes are to be recovered from consumers. This means that the cost of both the standard tariff and the current 8 c/kWh tariff are effectively part of the retail component.

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226 Victorian Government, 'Victorian Feed-in Tariff Schemes,' *vic.gov.au,* viewed at http://www.energyandresources.vic.gov.au/energy/environment-and-community/victorian-feed-in-tariff-schemes

227 Ibid.

The costs of the premium, transitional and standard feed-in tariffs will continue to flow through into representative *market offer* prices until the schemes end.

Victorian Energy Efficiency Target (VEET)

The VEET is a Victorian Government scheme that is designed to reduce greenhouse gas emissions, encourage the efficient use of electricity and gas, and to encourage development of energy efficiency businesses. In July 2013, the Victorian Government initiated a review of the VEET (also known as the "Energy Saver Incentive Scheme") to determine whether the scheme should be continued.

The review found that, if continued, the scheme would deliver a net cost to Victoria. For this reason, the former government decided to close the VEET scheme at the end of 2015.[228]

D.3 Further developments

This section identifies future developments that have been announced and which could affect the future trend in residential electricity prices in Victoria.

Victoria's Energy Statement

In October 2014, the Victorian Government released its vision for the energy sector in a report entitled *Victoria's Energy Statement*.[229] The paper outlines the following strategic objectives for the Victorian energy sector, which are to:

- drive efficient, well-functioning, productive and competitive markets that serve the long term interests of the Victorian community;
- promote robust, stable and transparent regulatory frameworks and market institutions to create an environment that supports timely and efficient decision making; and
- ensure that Victorian energy consumers have the information and tools necessary to make informed decisions about their energy consumption.

In order to achieve these objectives, the then Victorian Government set out a number of energy priorities, such as retail competition and empowering consumers, to driving a more integrated gas market. These priorities contain actions that are to be progressed over the next few years and which may affect the price trends in this report.

228 Napthine, D., 'VEET to operate in 2015 then close to save on bills,' *vic.gov.au* viewed at: http://www.premier.vic.gov.au/media-centre/media-releases/11334-veet-to-operate-in-2015-then-close-to-save-on-bills.html

Heywood Interconnector Upgrade

Victoria's transmission network is connected to South Australia through the Murraylink and Heywood interconnectors, which allow electricity to flow between South Australia and Victoria. Electricity typically flows from South Australia to Victoria during periods of high generation in South Australia, and vice versa.

The Heywood Interconnector connects South Australia to south-west Victoria. Its transformers currently limit the interconnector to 460 MW, but other factors, such as temperature, can limit interconnector flow to less than this. The capacity of the Heywood interconnector is expected to be upgraded from 460 MW to 650 MW by July 2016.

One of reported benefits of the interconnector upgrade is that it could alleviate electricity transmission congestion and reduce high price events in the NEM.[230]

Interval meters and flexible pricing

As of 1 July 2013, Victorian consumers with a remotely read interval meter (smart meter) had the option of choosing between flat rate electricity pricing and flexible pricing. Flexible pricing typically includes different rates for consumption at different times of the day. Moving to flexible pricing is voluntary for Victorian residential consumers.[231]

229 Victorian Government, 'Victoria's Energy Statement,' *vic.gov.au* viewed at: http://www.energyandresources.vic.gov.au/about-us/publications/victorias-energy-statement

230 See AEMO's website for more information: http://www.aemo.com.au/Electricity/Planning/Regulatory-Investment-Tests-for-Transmission/Heywood-Interconnector-RIT-T

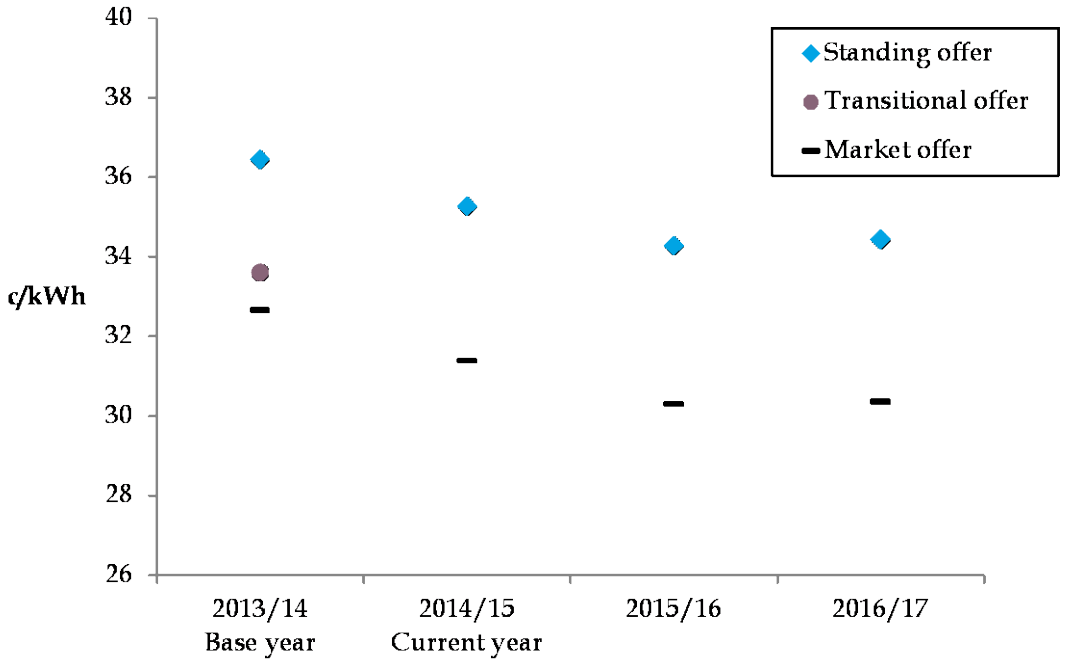
231 Until March 2015, residential consumers can also trial a flexible pricing plan and change back to a flat rate tariff without incurring an administration fee.

E South Australia

Box E.1 Key points

- Residential electricity prices in South Australia are expected to fall in the first two years of the reporting period, with decreases of 3.9 per cent expected in 2014/15 and 3.5 per cent in 2015/16, followed by an increase of 0.2 per cent in 2016/17. This is equivalent to an average annual decrease of 2.4 per cent for the representative consumer over the reporting period.
- In 2014/15, the savings due to the removal of the carbon pricing mechanism are partially offset by expected increases in regulated network costs and South Australia's solar feed-in tariff scheme. The downward trend in prices in the following two years reflects expected falls in most supply chain cost components, particularly wholesale energy.
- Wholesale energy purchase costs are expected to fall by around 20 per cent in the South Australian region across the reporting period due to a growing oversupply of generation capacity. The oversupply is a result of falling energy consumption and growth in renewable generation subsidised under the Renewable Energy Target, most of which has occurred in South Australia.
- In 2013/14, the representative consumer may have saved around 10 per cent by switching from the *standing offer* to the representative *market offer*. This equates to a saving of $189 off the total annual bill.

Figure E.1 Trend in South Australian *market offer* and *standing offer* prices



E.1 Overview

Market offer prices in South Australia are expected to fall in the first two years of the reporting period, with decreases of 3.9 per cent expected in 2014/15 and 3.5 per cent in 2015/16, followed by an increase of 0.2 per cent in 2016/17. On average over the three years of the reporting period, *market offer* prices are expected to decrease by 2.4 per cent per year.

Figure E.1 shows expected movements in the *standing offer*, the transitional offer in the base year (2013/14) and *market offer* prices over the reporting period.

Retail prices for residential electricity consumers have been deregulated since 1 February 2013. Following price deregulation, *standing offer* prices are now set by energy retailers in the competitive market and monitored by the Essential Services Commission of South Australia.

Consumers that were on AGL's *standing offer* contracts prior to 1 February 2013 were moved to a transitional *standing offer*. The transitional offer will be in place until 31 December 2014.

South Australia has the highest proportion of consumers on *market offers* for electricity and gas of all the jurisdictions in the National Electricity Market (NEM). Around 83 per cent of electricity consumers have chosen a *market offer* and 28 per cent of residential consumers changed their retailer in 2013.[232]

232 AEMC, *2014 Retail Competition Review*, Final Report, 22 August 2014, Sydney, xvi.

Chapter 4 discusses the differences between *standing offer* and *market offer* contracts and the options available to consumers in choosing the best energy deal.

Methodology

Our analysis of residential electricity prices and cost components applies to a representative consumer in South Australia using 5,000 kWh per year.[233]

Representative *market offer* and *standing offer* prices are based on retail prices nominated by retailers in the base year (2013/14). For future years, the price trend is based on movements in the underlying supply chain cost components estimated by the Australian Energy Market Commission (AEMC).

For 2013/14, we have included two representative *standing offer* prices based on offers from AGL: the normal *standing offer* (which we refer to as the "*standing offer*") and the transitional *standing offer*. Consumers that were on AGL's *standing offer* contracts prior to 1 February 2013, with prices determined by the South Australian regulator, have been moved to the transitional *standing offer* as part of the process of deregulating residential electricity prices.[234]

A detailed explanation of our methodology is set out in Appendix J.

E.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table E.1 demonstrates how the average unit cost of electricity and the annual electricity bill in South Australia are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills but a higher per unit average price, as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

233 This consumption level was provided to us by South Australian Government officials.

234 The transitional offer includes a 9.1 per cent discount and was made available to those consumers that were on the *standing offer* as at 31 January 2013. For 2013/14, we have used AGL's updated transitional *standing offer* as at 1 August 2013.

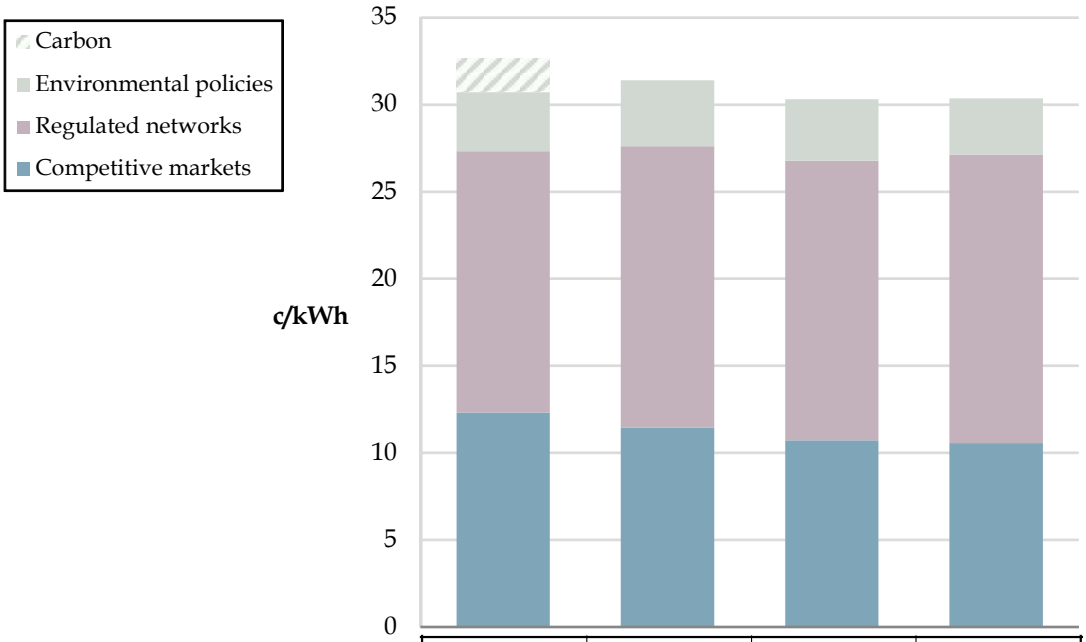
Table E.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average *market offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	36.68	$917
South Australian-specific average (5,000 kWh)	32.65	$1,633
High (9,500 kWh)	31.84	$3,025

E.2 Trends in supply chain cost components

Figure E.2 shows expected movements in the supply chain cost components for South Australia, which are the competitive wholesale and retail markets, regulated networks and government environmental policies. Costs associated with the carbon pricing mechanism apply only in 2013/14 as the scheme has been repealed with effect from 1 July 2014. A different pattern is used in Figure E.2 for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure E.2 South Australian supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**5.35**	**3.78**	**3.52**	**3.24**
Carbon	c/kWh	1.96	0.00	0.00	0.00
LRET	c/kWh	0.63	0.68	0.82	1.03
SRES	c/kWh	0.68	0.46	0.46	0.47
Solar Feed-in Scheme	c/kWh	1.78	2.33	1.94	1.44
Residential Energy Efficiency Scheme	c/kWh	0.30	0.30	0.30	0.30
Regulated networks	**c/kWh**	**15.00**	**16.17**	**16.06**	**16.57**
Transmission	c/kWh	2.54	2.73	2.85	2.97
Distribution	c/kWh	12.47	13.44	13.21	13.59
Competitive market	**c/kWh**	**12.30**	**11.44**	**10.71**	**10.55**
Wholesale and retail					
Total	**c/kWh**	**32.65**	**31.38**	**30.29**	**30.35**

Figure E.3 shows the expected movement in each of the supply chain components for South Australia over the reporting period. In summary, the expected trends are:

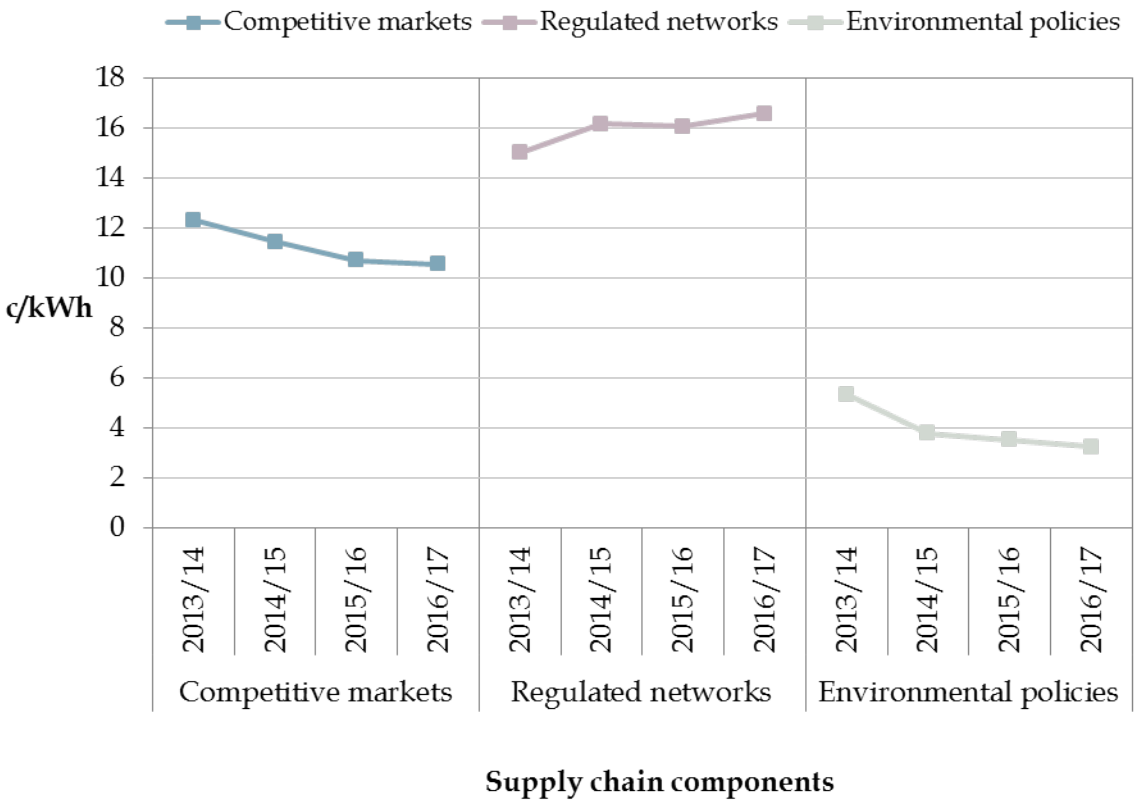
- an average annual decrease of 4.7 per cent in the competitive market component;
- an average annual increase of 3.5 per cent in the regulated network component, although actual trends will depend on the Australian Energy Regulator's (AER) 2015-20 regulatory determination for SA Power Networks;[235] and
- an expected reduction of 29.3 per cent in the environmental policy component in the first year due to the removal of the carbon price, before declining at an

235 Distribution network prices in 2015/16 and 2016/17 are based on SA Power Network's regulatory proposal for the 2015-20 regulatory period .

average annual rate of 7.1 per cent for the remaining two years. Expected increases in the Large-scale Renewable Energy Target costs are offset by reductions in the Small-scale Renewable Energy Scheme and Solar Feed-in Tariff Scheme costs.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure E.3 Trends in South Australian supply chain cost components



E.2.1 Competitive market costs

Competitive market costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. The detailed methodology for estimating these costs is set out in Appendix J. A summary of our approach is as follows:

- The wholesale energy component was estimated by Frontier Economics and includes energy purchase costs, market fees and ancillary service costs.
- The retail component is the residual when all of the non-retail supply chain cost components are subtracted from the representative *market offer* price in 2013/14. By using the residual method we do not explicitly calculate the retail component and it therefore includes any errors, positive or negative, in the trends of the other supply chain cost components. The 2013/14 retail component is escalated

for the remaining years of the reporting period at the assumed annual inflation rate of 2.5 per cent.

In South Australia, competitive market costs are expected to decrease, on average, by 4.7 per cent per year across the reporting period. This is primarily driven by a 20 per cent fall in wholesale energy costs due to a growing oversupply of generation capacity.

Wholesale energy component

The growing oversupply of generation capacity is a result of falling energy consumption and growth in wind generation subsidised under the currently legislated Renewable Energy Target, most of which is occurring in South Australia.[236] Frontier Economics estimates that over 450 MW of additional wind capacity will be built in South Australia over the reporting period.[237]

The estimated decrease in wholesale energy purchase costs is partially offset by an expected 62 per cent increase in costs associated with the Large-scale Renewable Energy Target (LRET) over the reporting period. The interaction between the LRET and wholesale energy prices is discussed further in Chapter 2.

Low wholesale energy prices offset the costs of the Renewable Energy Target for South Australian consumers in the short term. In the medium term, wholesale prices are likely to rise in response to unprofitable generators exiting the market. If this occurs, the cost of meeting the Renewable Energy Target will become more apparent through South Australian consumers' retail bills.[238]

In 2013/14, competitive market costs, which exclude the impact of the carbon price, were estimated to have made up 38 per cent of the representative *market offer*. By 2016/17, this is expected to decrease to 35 per cent.

South Australia has the highest penetration of wind generation in Australia, with around 30 per cent of electricity generated by wind in 2012/13.[239] As discussed above, Frontier Economics has estimated that increased wind generation under the continuation of the currently legislated, 41,000 GWh Large-scale Renewable Energy Target will contribute to declining wholesale energy costs over the next three years.

Annual energy consumption in South Australia has decreased between 2009/10 and 2013/14 by around 1.3 per cent annually. Under the Australian Energy Market Operator's (AEMO) medium growth planning scenario, this trend is expected to

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236 Frontier Economics, *2014 Residential Electricity Price Trends*, Final Report, Frontier Economics, August 2014, p. 103-105.

237 We note that if the investment under the Renewable Energy Target modelled by Frontier Economics does not materialise due to the current policy uncertainty, this trend may not occur and wholesale energy purchase costs are likely to be higher.

238 Frontier Economics, *RET Review Analysis - A report prepared for the Australian Energy Market Commission*, Frontier Economics June 2014.

239 The Energy Supply Association of Australia (ESAA), *Electricity Gas Australia 2014*, p. 24.

continue, with energy consumption decreasing annually by around 0.2 per cent to 2023/24.[240]

Similarly, AEMO forecasts that peak demand in South Australia will decrease at an annual average rate of around 1 per cent over the next three years.[241]

AEMO considers that the reduction in annual energy consumption and peak demand in South Australia is primarily associated with:

- declines in large industrial forecasts due to reduced electricity consumption by SA Water's desalination plant; and
- declines in residential and commercial forecasts due to the installation of rooftop solar photovoltaic (PV) systems and increased energy efficiency. South Australia has the highest existing levels of installed rooftop PV per capita in the NEM, with rooftop solar PV accounting for 6 per cent of total electricity generation in 2013/14.[242]

In the 2014 Electricity Statement of Opportunities, AEMO found that there is currently sufficient generation capacity in South Australia to meet expected electricity consumption for the next ten years.[243]

Retail component

The AEMC's 2014 Retail Competition Review found that competition is effective in the South Australian retail electricity market. Electricity consumers are active in the market with 83 per cent of consumers on *market offers*, 30 per cent investigating their options last year and around 30 per cent switching retailer in 2013.[244]

For the representative consumer, switching from a *standing offer* to a *market offer* could have saved around 10 per cent in 2013/14. Actual savings may be higher if consumers shop around and choose the best *market offer* suitable to their own circumstances.

As noted above, we do not explicitly estimate the retail component of competitive market costs. This is because retailers have different business models and costs structures, and estimating the retail component based on a representative *standing offer* or a representative *market offer* is unlikely to be a true reflection of individual retailers' operating costs and return on investment.

240 AEMO, *National Electricity Forecasting Report 2014*, Chapter 5.

241 Ibid.

242 Ibid.

243 AEMO, *2014 Electricity Statement of Opportunities*, August 2014.

244 AEMC *2014 Retail Competition Review*, August 2014.

E.2.2 Regulated networks

Regulated network prices consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers.

Our analysis of regulated network prices is based on information provided by the AER from existing regulatory determinations. The existing transmission network regulatory determination covers the reporting period, while the current distribution network determination ends in June 2015.

For the 2015/16 and 2016/17 years, distribution network prices are based on SA Power Network's regulatory proposal for the 2015-20 regulatory period. Actual network prices will depend on the outcome of the AER's final determination.

In the base year, regulated network prices are expected to make up 46 per cent of the representative *market offer* price. Of this, the transmission network component accounts for 8 per cent and the distribution network component 38 per cent of the total bill. By 2016/17, the contribution of the regulated network sector to *market offer* prices is expected to increase to 55 per cent.

Transmission

The transmission network in South Australia is operated by ElectraNet. Based on the current regulatory determination for ElectraNet, which was made under the previous regulatory framework, transmission prices are expected to increase at an annual average rate of 5.6 per cent over the reporting period.

For the 2013-18 regulatory period, the AER approved total revenue that was 15.2 per cent higher (in nominal terms) than total network revenue in the previous regulatory period.[245]

The AER's determination included a regulated rate of return of 7.5 per cent, which was less than the 10.65 per cent determined for the previous regulatory period. However, this decrease is offset by higher expenditure allowed under the regulatory determination to replace and upgrade network assets.

Transmission network prices are expected to increase at an annual average rate of 5.6 per cent over the reporting period.

Distribution

The distribution network in South Australia is owned and operated by SA Power Networks. The AER's current determination for SA Power Networks (known as ETSA Utilities at the time the determination was made) applies until June 2015.

245 AER, *Final Decision ElectraNet Transmission Determination 2013-14 to 2017-18*, April 2013.

SA Power Network's current determination allowed for distribution prices to increase, on average, by 9.5 per cent annually. Under the terms of the current determination, there is a one-off increase in distribution network prices in 2014/15 to account for vegetation management.

The AER identified that increases in network expenditure were partly due to forecast increases in peak demand, which was occurring at the same time as a forecast decrease in annual energy consumption. This meant that the increased revenue required by SA Power Networks to maintain the integrity of the network was applied to a smaller volume of energy sold, resulting in an increase in distribution network prices.

The relationship between network prices and annual energy consumption is discussed further in Chapter 2.

For 2015/16 and 2016/17, as there is no current regulatory determination we have used SA Power Network's regulatory proposal for the 2015-20 regulatory period. Actual outcomes will depend on the Australia Energy Regulator's final determination, which will be published in October 2015.

SA Power Network's has proposed a decrease in the regulated rate of return from 9.76 per cent in the current regulatory period to 7.62 per cent which, all else equal, should put downward pressure on distribution network prices over the 2015-20 regulatory period. The business is proposing capital expenditure of $486 million in the 2015-20 period, which is largely due to the need to replace ageing assets and upgrade the network to ensure adequate capacity to meet peak demand.[246]

Distribution network prices are expected to increase at an annual average rate of 3 per cent over the reporting period.

E.2.3 Environmental policies

A collection of schemes have been introduced by the Commonwealth and state governments to achieve greenhouse gas emission reductions and other objectives.[247] Throughout this report we group these schemes under environmental policies. The policies that apply in South Australia during our reporting period are the carbon pricing mechanism and the Renewable Energy Target, which are both Commonwealth schemes, and the South Australian feed-in tariff and energy efficiency schemes.

The costs of the environmental policies are recovered from consumers in different ways. The carbon pricing mechanism increases the cost of energy that is supplied by fossil-fuel electricity generators, which leads to higher wholesale electricity costs. The costs of feed-in tariff schemes are recovered through increases in distribution network or retail prices, while costs associated with the Renewable Energy Target and

246 SA Power Networks, *Regulatory Proposal 2015-20*, 3 November.

247 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

jurisdictional energy efficiency schemes are recovered through increases in retail prices.

In 2013/14, environmental policy costs made up 16 per cent of the representative *market offer* price:

- The costs associated with the carbon price were estimated to make up 6 per cent of the representative *market offer* in 2013/14. There are no carbon price costs in subsequent years due to the repeal of the carbon pricing mechanism, effective from 1 July 2014.
- Renewable Energy Target costs are estimated to have made up 4 per cent of the representative *market offer* in 2013/14. The contribution of this cost is estimated to increase to 5 per cent of the representative *market offer* in 2016/17.
- South Australian energy efficiency scheme costs are estimated to make up approximately 1 per cent of the representative offer price in 2013/14. These costs are expected to remain constant through our reporting period.
- South Australian feed-in tariff scheme costs are estimated to have made up 5.5 per cent of the representative *market offer* in 2013/14. This is expected to increase in 2014/15 before falling for the remainder of the reporting period.

Carbon pricing mechanism

Costs associated with the carbon pricing mechanism were estimated by Frontier Economics for this report.[248]

The carbon price was repealed effective from 1 July 2014. Hence 2013/14 is the only year of our reporting period for which this cost is incurred by consumers. As mentioned above, we estimate that the carbon pricing mechanism made up around 6 per cent of the representative *market offer* in 2013/14.

Renewable Energy Target

The Renewable Energy Target has two components: the LRET and Small-scale Renewable Energy Scheme (SRES). Under both of these components, eligible renewable energy generators are able to create certificates based on the amount of electricity that they produce. In most circumstances electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

The costs incurred by electricity retailers in purchasing the certificates are passed on to consumers. In 2013/14, SRES costs were expected to have made up 2.1 per cent of the representative *market offer* price and LRET costs 1.9 per cent. Subsequently in the reporting period, LRET costs are expected to increase to 3.4 per cent of the

248 Frontier's methodology to estimate the costs of the carbon pricing mechanism involved modelling with and without a carbon pricing mechanism in place. The costs of the scheme were then calculated as the difference between these two scenarios.

representative *market offer* price in 2016/17, while SRES costs are expected to decrease to 1.5 per cent.

The trend in environmental policies is based on the assumption that the current Renewable Energy Target legislation is maintained over the reporting period.

The trends in the LRET are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining LGCs. Similarly, SRES costs are also based on a renewable energy percentage and estimates of the certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes. The expected decrease in the SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

Feed-in-tariff schemes

Two feed-in tariff schemes have been introduced in South Australia in recent years. These include the now closed premium scheme and the ongoing retailer funded Minimum Retailer Payment scheme.[249] All electricity retailers who contract with eligible solar customers are required to provide at least this minimum retailer payment to solar customers but retailers may choose to credit a higher amount.

Although the two premium schemes are closed to new entrants, consumers who took part in these schemes remain eligible to claim the premium tariff until the schemes conclude. The schemes and closure dates are:[250]

- a 44 c/kWh tariff, continuing until 30 June 2028; and
- a 16 c/kWh tariff, continuing until 30 September 2016.

The Minimum Retailer Payments that apply or have applied are:[251]

- 7.1 c/kWh from 27 January 2012 to 30 June 2012;
- 9.8 c/kWh from 1 July 2012 to 31 December 2013;
- 7.6 c/kWh from 1 January 2014 to 30 June 2014; and
- 6 c/kWh from 1 July 2014 to 31 December 2014.

A key difference between the premium schemes and the retailer funded schemes is the way the costs are recovered from consumers. The costs of the premium schemes are recovered through distribution network prices. Retailers face the cost of retailer funded schemes and each retailer will determine whether and/or how the costs of the schemes are to be recovered.

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249 South Australian Government, 'Solar feed-in scheme,' *sa.gov.au*, accessed 25 September 2014, http://www.sa.gov.au/topics/water-energy-and-environment/energy/energy-supply-and-sources/renewable-energy-sources/solar-energy/solar-photovoltaic-systems/solar-feed-in-scheme#title1

250 Ibid.

251 Ibid.

Although the premium schemes are now closed, their costs will continue to be recovered via distribution costs and hence flow through into average *market offer* prices until the schemes end.

South Australian Residential Energy Efficiency Scheme

The Residential Energy Efficiency Scheme (REES) is a South Australian Government scheme that requires large energy providers to assist households to save energy.[252] This includes offering energy audits and undertaking energy efficiency activities. Unlike other energy efficiency schemes, the REES is not a "white certificate" scheme. Instead, retailers are required to meet specific targets in terms of the number of energy savings activities they undertake.

REES costs are expected to account for less than 1 per cent of the representative *market offer* in 2013/14 and are not expected to change over our reporting period.

E.2.4 Future developments

This section identifies future developments that have been announced and which could affect the future trend in residential retail prices in South Australia.

Heywood Interconnector Upgrade

South Australia's transmission network is connected to Victoria through the Murraylink and Heywood interconnectors, which allow electricity to flow between South Australia and Victoria. Electricity typically flows from South Australia to Victoria during periods of high generation in South Australia, and vice versa.

The Heywood Interconnector connects South Australia to south-west Victoria. Its transformers currently limit the interconnector to 460 MW, but many other factors, including temperature, can limit interconnector flow to less than this. The capacity of the Heywood interconnector is expected to be upgraded from 460 MW to 650 MW by July 2016. One of reported benefits of the interconnector upgrade is that it could alleviate electricity transmission congestion and reduce high market price events.[253]

252 Government of South Australia, 'Residential energy efficiency scheme,' *sa.gov.au*, viewed 25 September 2014, https://www.sa.gov.au/topics/water-energy-and-environment/energy/rebates-concessions-and-incentives/residential-energy-efficiency-scheme-rees

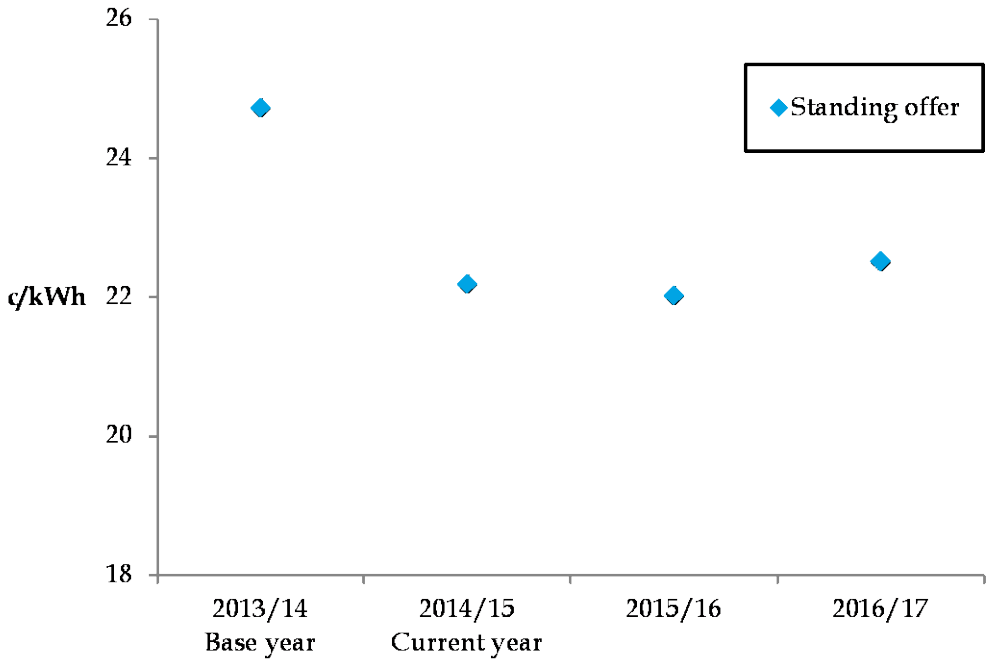
253 See AEMO's website for more information: http://www.aemo.com.au/Electricity/Planning/Regulatory-Investment-Tests-for-Transmission/Heywood-Interconnector-RIT-T

F Tasmania

Box F.1 Key points

- Residential electricity prices in Tasmania are expected to decrease by 10.3 per cent in 2014/15 and 0.7 per cent in 2015/16, and then increase by 2.3 per cent in 2016/17. This is equivalent to an average annual decrease of 3 per cent for the representative consumer over the reporting period.
- The main driver of the price trend in Tasmania is the removal of the carbon price in 2014/15 and falling wholesale energy purchase costs. Environmental policies and regulated network costs are expected to increase moderately over the reporting period.
- The Tasmanian retail electricity market is undergoing a period of change with the introduction of full retail competition from 1 July 2014. As this has only recently occurred, competition is yet to become effective for residential electricity consumers.

Figure F.1 Trend in Tasmanian *standing offer* price



F.1 Overview

The Tasmanian retail electricity market is undergoing a period of change with the introduction of full retail competition for all small consumers from 1 July 2014. This means that retailers are now able to provide *market offer* contracts to retail consumers.

As effective competition is yet to emerge, and most consumers remain on *standing offers*, this year's report does not cover *market offers*.[254]

In 2014/15, *standing offer* prices have fallen by 10.3 per cent for the representative consumer due to the removal of the carbon price and lower wholesale energy purchase costs. *Standing offer* prices in Tasmania are expected to fall across the reporting period by an annual average rate of 3 per cent.

Excluding the impact of the carbon price, residential electricity prices are expected to be stable over the reporting period.

Figure F.1 shows the expected movement in the *standing offer* price over the reporting period.

Methodology

Our analysis of residential electricity prices applies to a representative residential consumer in Tasmania using 7,627 kWh per year. Based on advice from Tasmanian government officials, we have defined the representative consumer as the weighted-average of the two most common categories of consumers.[255]

In Tasmania, the Office of the Tasmanian Economic Regulator (OTTER) regulates *standing offer* retail prices. For 2013/14 and 2014/15, *standing offer* prices were sourced from Aurora Energy's published tariffs that have been approved by OTTER.

For 2015/16 and 2016/17, wholesale energy costs follow the Victorian wholesale market trend modelled by Frontier Economics. Network costs are based on information from the Australian Energy Regulator's (AER's) 2012-17 distribution network determination and the draft transmission network determination for the 2014-19 regulatory period.

F.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table F.1 demonstrates how the average unit cost of electricity and the annual electricity bill in Tasmania are sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit

254 Aurora Energy has been permitted to provide *market offers* to residential consumers, although it does not appear to have done so at this stage, with the exception of its prepaid metering offers.

255 About 55 per cent of consumers are on Tariffs 31 and 42 and about 31 per cent of consumers are on Tariffs 31 and 41. Tariff 42 is for water and space heating, Tariff 41 is just for water heating and Tariff 31 is for all other applications. The energy split between these tariffs is set out in OTTER, *Typical Electricity Consumers*, information paper, May 2014, pp4-5.

average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table F.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average *standing offer* (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	38.01	$950
Tasmanian-specific average (7,627 kWh)	24.72	$1,885
High (9,500 kWh)	28.45	$2,703

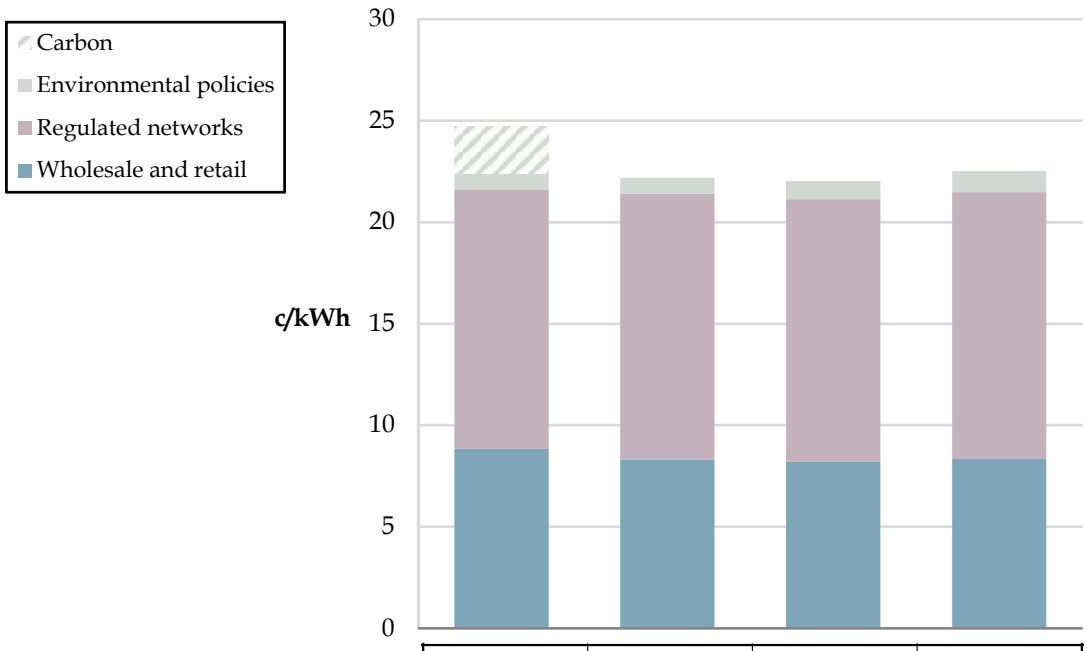
F.2 Trends in Tasmania supply chain components

Figure F.2 shows expected movements in supply chain cost components in Tasmania, which are wholesale and retail, regulated networks and government environmental policies. In our analysis we group the cost of the carbon pricing mechanism in the environmental policy cost component.

Costs associated with the carbon pricing mechanism apply only in 2013/14 as the scheme has been repealed with effect from 1 July 2014. A different pattern is used in Figure F.2 for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Regulated networks are not disaggregated into transmission and distribution for Tasmania in this report as Aurora Energy's pricing proposals present both network costs as a single component. As of 1 July 2014, the Tasmanian transmission and distribution network business, which were previously separate entities, merged to create a combined entity named TasNetworks.

Figure F.2 Tasmania supply chain cost components



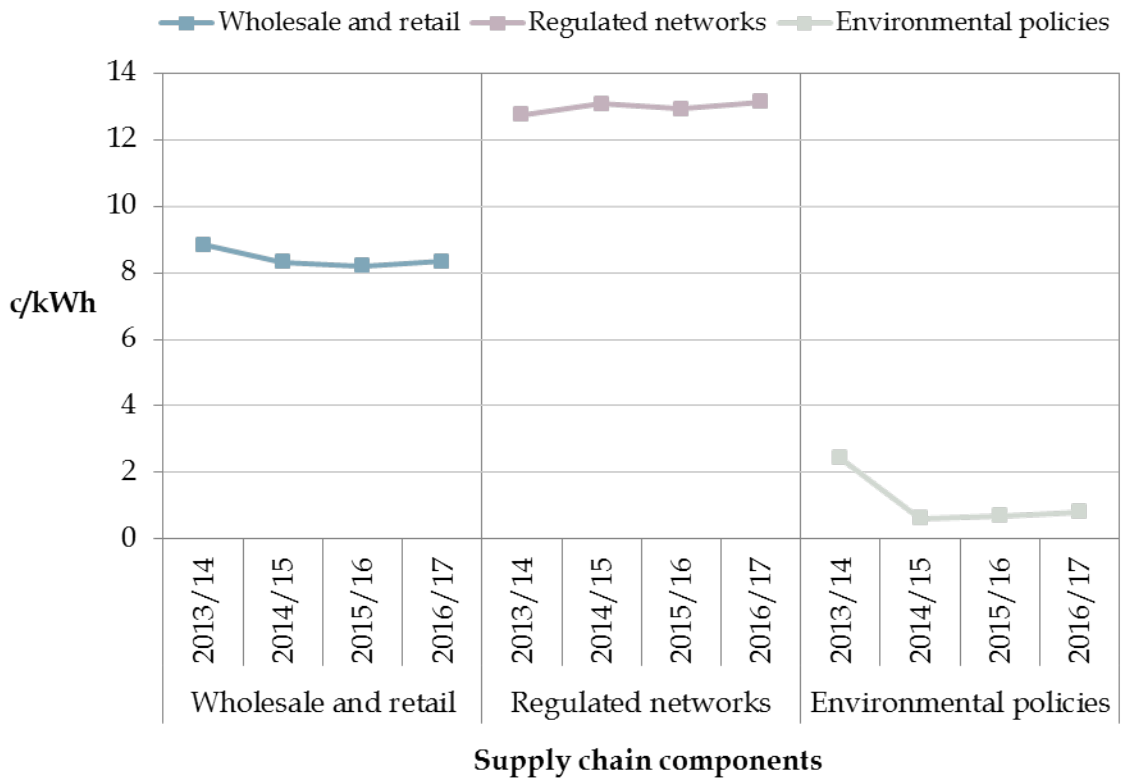
		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**3.13**	**0.79**	**0.88**	**1.03**
Carbon	c/kWh	2.32	0.00	0.00	0.00
Renewable Energy Target	c/kWh	0.81	0.79	0.88	1.03
Regulated networks	**c/kWh**	**12.74**	**13.07**	**12.93**	**13.14**
Wholesale and retail	**c/kWh**	**8.85**	**8.32**	**8.20**	**8.34**
Total	**c/kWh**	**24.72**	**22.18**	**22.02**	**22.51**

Figure F.3 shows the expected movement in each of the supply chain components for Tasmania over the reporting period. In summary, the expected trends are:

- an average annual decrease of 1.9 per cent in the wholesale and retail component;
- an average annual increase of 1 per cent in the regulated networks component; and
- an initial decrease of 75 per cent in the environmental policy component that is predominantly due to the repeal of the carbon pricing mechanism. This is followed by increases of 12 per cent in 2015/16 and 17 per cent in 2016/17 due to higher Renewable Energy Target costs.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure F.3 Trends in Tasmanian supply chain cost components



F.2.1 Wholesale and retail costs

Wholesale and retail costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. A summary of our approach is as follows:

- Wholesale energy costs for 2013/14 and 2014/15 are based on Aurora's approved pricing proposals. The 2013/14 price is the energy-weighted average of wholesale energy costs set out in two separate pricing proposals that each applied for six months. In the remaining years we have used a trend modelled by Frontier Economics.

- The retail component is the residual when all of the non-retail supply chain cost components are subtracted from the representative standing offer price in 2013/14. By using the residual method we do not explicitly calculate the retail component and the component includes any errors, positive or negative, in our estimates of the other supply chain cost components. The 2013/14 retail component is escalated for the remaining years of the reporting period at the assumed annual rate of inflation of 2.5 per cent.

The wholesale and retail component also includes a "prior year pass through", which is an adjustment for differences between Aurora's forecast revenue and actual outcomes. In 2013/14, this is a minor component of residential prices.

In Tasmania, wholesale and retail costs are estimated to decrease, on average, by 1.9 per cent per year over the reporting period.[256] These costs comprised 36 per cent of the representative consumer's bill in 2013/14 and are expected to be relatively stable over the reporting period.

Wholesale energy component

OTTER is required to regulate Hydro Tasmania's wholesale electricity contracts to provide retailers with similar levels of risk faced by retailers operating in other regions of the National Electricity Market.[257] This is to facilitate full retail contestability by providing confidence to retailers to enter the retail market, due to Hydro Tasmania's dominant generation position in Tasmania.

Wholesale energy purchase costs in Tasmania are expected to decrease during the reporting period, with the largest fall occurring in 2014/15. After 2014/15, the trend is based on Frontier's modelling of the Victorian wholesale price, which is expected to decline in the short-term due to increasing renewable energy generation under the current Renewable Energy Target.[258]

Trends in annual electricity consumption can influence wholesale energy purchase costs. Between 2009/10 and 2013/14, annual electricity consumption in Tasmania declined, on average, by 0.8 per cent per year. During the reporting period, the Australian Energy Market Operator (AEMO) expects electricity consumption to decrease on average by 0.8 per cent per year.[259]

Key drivers behind the expected continued decline in electricity consumption in Tasmania include high solar PV uptake, savings from energy efficiency measures and low economic growth.[260] In the 2014 Electricity Statement of Opportunities, AEMO found that there is currently sufficient generation capacity in Tasmania to meet expected electricity consumption for the next ten years.

Retail component

As noted above, the retail costs in the wholesale and retail component were calculated as the residual in 2013/14 and escalated by inflation for the remaining years.

In practice, the retail component of the *standing offer* price will be determined by OTTER. In its 2013 retail price determination, OTTER increased the retail component of the *standing offer* in anticipation of full retail contestability for small consumers being

256 We have separated the carbon component, which OTTER includes in the wholesale energy component, to better illustrate the underlying movements in wholesale costs.

257 OTTER, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, July 2013.

258 Tasmanian spot prices tend to shadow those in the Victorian spot market due to these regions being connected via the Basslink interconnector.

259 Australian Energy Market Operator, *National Electricity Forecasting Report*, June 2014.

260 AEMO, *National Electricity Forecasting Report*, June 2014.

introduced in 2014.[261] The increase in the retail component provides retailers with additional headroom to account for customer acquisition and retention costs and costs associated with moving to full retail contestability.

OTTER has also increased the return on investment for retailers from 3.8 per cent to 4.85 per cent for the period 1 January 2014 to 30 June 2014 (the period when Aurora was able to offer market contracts) and to 5.7 per cent in 2014/15 and 2015/16.[262] This was done in order to:

- reflect extra risks for retailers relating to the introduction of full retail contestability; and
- make the return on investment allowance more comparable to other jurisdictions with retail competition.

F.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators and major load centres, and the distribution network delivers energy at lower voltages to residential consumers.

Transmission and distribution network services in Tasmania are provided by TasNetworks, a business that was formed on 1 July 2014 by the merger of Transend, the former transmission network business, and Aurora Energy's distribution network business.

Network prices for 2013/14 and 2014/15 are based on retail pricing proposals that have been approved by OTTER. We report on a single network price as Aurora Energy's pricing proposals do not provide separate prices for transmission and distribution services. We calculated the network price by dividing the network component of Aurora's notional maximum revenue by the total expected energy sales. The resulting value was scaled so that the price is proportional to the representative residential consumer.

For 2015/16 and 2016/17, network prices are based on the weighted average of the trends in the AER's 2012-17 final determination for Aurora Energy and its draft transmission determination for TasNetworks for the 2014-19 regulatory period.

Over the reporting period, network prices are expected to increase at an annual average rate of 1 per cent. Some of the factors that influence trends in network prices are the regulated rate of return, capital and operating expenditure and changes in the size of the regulated asset base. Where applicable, these factors are noted below.

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261 OTTER, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, July 2013.

262 OTTER, *Aurora Energy Pty Ltd Interim Price-Regulated Retail Service Price Determination*, 28 February 2014.

In 2014/15, the regulated network sector made up around 60 per cent of the representative *standing offer* price and this is expected to be stable out to 2016/17.

Transmission

The AER's draft decision for transmission revenue over the 2014-19 regulatory period was released on 27 November 2014.[263] The draft decision includes:

- a proposed regulated rate of return of 6.88 per cent, which is less than the 10 per cent allowed for the previous regulatory period due to lower interest rates and risk premiums in financial markets;
- lower levels of capital expenditure than the previous regulatory period due to expected flat peak demand growth, which is resulting in historically low levels of forecast augmentation to the network; and
- lower levels of operating expenditure than the previous regulatory period due to efficiencies from combining the transmission and distribution businesses into one entity, and more efficient and less maintenance-intensive assets.

The AER will make its final decision on TasNetworks's transmission revenue determination for the next regulatory period by 30 April 2015.

Distribution

Aurora Energy's determination features a rate of return of 8.28 per cent and smaller allowances for capital expenditure compared to the previous determination. Operating expenditure remains flat over the period, although at a higher level than the previous regulatory period.[264]

F.2.3 Environmental policies

A number of schemes have been introduced by the Commonwealth and state and territory governments to achieve greenhouse gas emission reductions and other objectives. Throughout this report, we group these schemes together as environmental policies. The policies that apply in Tasmania during our reporting period are the carbon pricing mechanism and the Renewable Energy Target.

Aurora Energy also offers a number of feed-in tariffs for small-scale renewable energy generators. However, we have not assigned a cost to these schemes as they do not appear to have a direct impact on residential prices.

In 2013/14, environmental schemes were estimated to make up around 13 per cent of the representative *standing offer*. The estimated contribution of the individual components is as follows:

263 AER, *Draft Transmission Determination TasNetworks 2015-16 to 2018-19*, November 2014.

264 AER, *Final Distribution Determination Aurora Energy Pty Ltd 2012-13 to 2016-17*, April 2012.

- The carbon price made up around 9.4 per cent of the representative *standing offer* in 2013/14. There is no carbon cost in the remaining years as this policy has been repealed with effect from 1 July 2014.

- Renewable Energy Target scheme costs made up around 3.3 per cent of the representative *standing offer* in 2013/14. Under the existing legislation, the contribution of this cost is expected to be 3.6 per cent in 2014/15, 4 per cent in 2015/16, then 4.6 per cent in 2016/17.

Carbon pricing mechanism

Based on a statement from Aurora Energy, we have assumed that the carbon price made up 9.4 per cent of the representative *standing offer* price in 2013/14.[265]

Although the Tasmanian electricity generation sector has a low emissions-intensity due to the predominance of hydro generation, wholesale prices in Tasmania are influenced by the Victorian wholesale price as the two regions are connected via the Basslink interconnector.

The effect of the carbon price was to increase the value of Tasmania's hydroelectricity that could be exported to Victoria via Basslink. Under a carbon price, the Tasmanian spot price would at times reflect the Victorian spot price, which typically included a larger carbon component owing to the amount of coal- and gas-fired generation in Victoria. With the removal of the carbon price, wholesale prices in both Victoria and Tasmania are lower.

The Renewable Energy Target

The Renewable Energy Target has two components: the Large-scale Renewable Energy Scheme and the Small-scale Renewable Energy Scheme. Under both of these components, eligible renewable energy generators are able to create certificates based on the amount of electricity they produce. In most circumstances, electricity retailers are then required to purchase these certificates and surrender them to the Clean Energy Regulator.

The costs incurred by electricity retailers in purchasing the certificates are passed on to consumers. Costs associated with the Renewable Energy Target for Tasmania in 2013/14 and 2014/15 are based on Aurora's approved pricing proposal. These costs were calculated in the same way as the regulated network component - by dividing the cost by the expected energy sales and then scaling to the representative residential consumer.

In 2015/16 and 2016/17, the costs are based on a trend that was modelled by Frontier Economics.

Feed-in tariff scheme

Since 2000, Aurora has offered a Net Metering Buyback scheme to residential consumers that use renewable generation, such as solar PV, with a rated capacity of under 10kW.

For residential consumers who joined before 30 August 2013, this scheme provided a payment equal to the retail cost of electricity. Eligible parties will continue to receive this premium tariff until 1 January 2019. Consumers who installed eligible micro distributed generation systems on or after 31 August 2013 were entitled to a "transitional feed-in-tariff" of 8 c/kWh from 31 August 2013 until 31 December 2013. Consumers now receive a feed-in tariff rate which is set annually by OTTER.[266]

The cost of the Net Metering Buyback scheme is currently borne entirely by Aurora Energy's retail energy business and Aurora is not reimbursed for the cost of the scheme. As the scheme costs are not recovered directly from residential consumers via electricity bills, we have not reported on a feed-in tariff component for Tasmania.

265 See: http://www.auroraenergy.com.au/Aurora/media/pdf/Residential_Small_Business_Customer_Notice.pdf

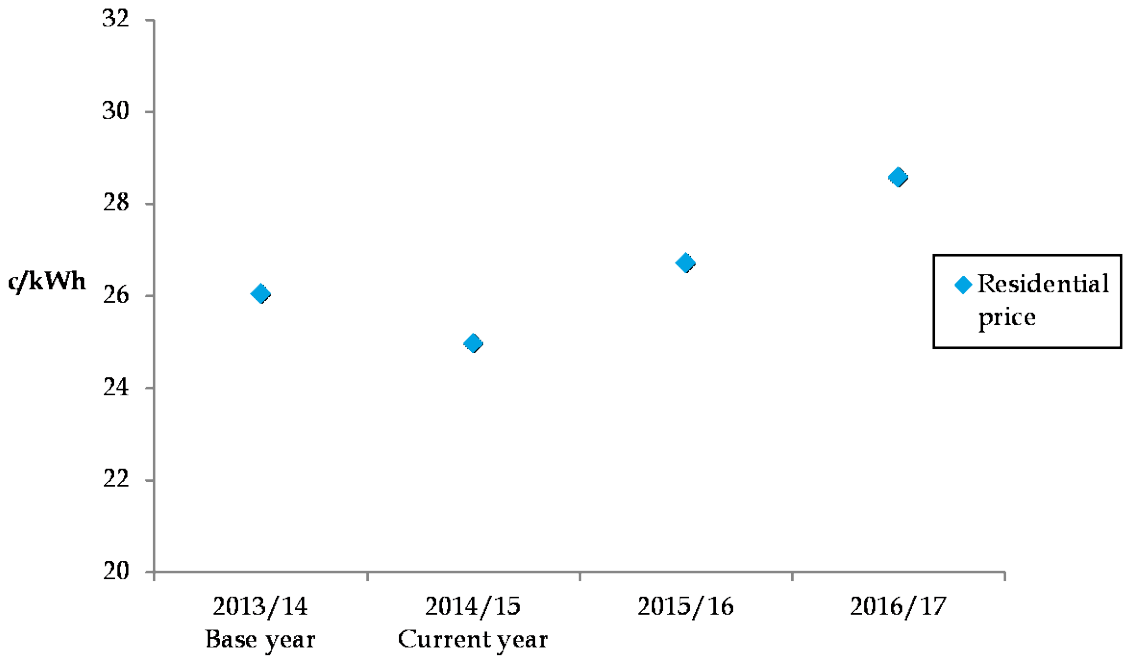
266 OTTER, Regulated Feed-in tariff for Tasmanian Small customers, final report, October 2013.

G Western Australia

Box G.1 Key points

- Residential electricity prices in Western Australia are currently set by the Western Australian Government, which subsidises electricity prices such that the prices paid by consumers are less than the cost of supply.
- Electricity prices are expected to decrease by 4.1 per cent in 2014/15, before increasing by 7 per cent per year in 2015/16 and 2016/17, as set and determined by the Western Australian Government.[267] As prices are set by the Western Australian Government, the retail price paid by consumers does not necessarily reflect underlying costs, nor follow cost trends.
- The repeal of the carbon pricing mechanism results in a decrease in prices in 2014/15. In the remaining years of the reporting period, the key drivers of supply costs are higher distribution network costs due to increases in operational spending under the current regulatory allowance, and higher wholesale energy purchase costs.

Figure G.1 Trend in Western Australia residential prices



267 The increases in 2015/16 and 2016/17 are budget assumptions only and the Western Australian Government will make tariff decisions closer the respective implementation dates. See Budget Paper No. 3 of the WA Government's 2014-15 Budget Papers, page 290 http://www.treasury.wa.gov.au/cms/uploadedFiles/State_Budget/Budget_2014_15/2014-15_bp3.pdf

G.1 Overview

For an extended period, residential electricity prices paid by consumers in Western Australia have been lower than the cost of supply. Prior to 2009, GST-exclusive electricity prices had not increased since 1997/98.[268] Despite increases of 86 per cent since then, in 2013/14 the price was still substantially less than the estimated total cost.[269]

Residential electricity prices are expected to decrease by 4.1 per cent in 2014/15, before increasing by 7 per cent per year in 2015/16 and 2016/17, as shown in Figure G.1. These movements are based on prices published by the Western Australia Government (for 2013/14 and 2014/15) and by the trend announced in the 2014-15 State Budget (for 2015/16 and 2016/17).

In undertaking this report, we calculate the supply chain costs in the South-West Interconnected System (SWIS)[270] as per our methodology set out below. The difference between the published residential price and our estimate of supply costs is indicative of the subsidy paid by the Western Australian Government.[271] We have found that 2013/14 residential prices would need to increase by 30 per cent to reflect the total estimated cost of supply in the SWIS.

Over the three years from 2013/14 to 2016/17, the subsidy is expected to decrease as the Western Australian Government has announced that it will be increasing prices more than the increase in supply costs projected in this report. Despite this, in 2016/17 electricity prices paid by consumers may still need to increase by 24 per cent to reflect the total estimated cost of supply.

The Western Australian Government is currently undertaking a wide-ranging review of the electricity market.[272] The review will examine the structures of the electricity generation, wholesale and retail sectors within the SWIS and the incentives for industry participants to make efficient investments and minimise costs. Any changes that occur as a result of this review may impact on future residential retail prices within the period covered by this report.

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268 Historical data on electricity prices in WA is available at http://www.finance.wa.gov.au/cms/content.aspx?id=15096. Prior to 2009, prices had been kept constant and were not adjusted for inflation.

269 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, phase 1 terms of reference, January 2014.

270 The SWIS is the electricity network that services the south-west region of Western Australia. Its outermost limits are Kalbarri in the north, Albany in the south, and Kalgoorlie in the east.

271 This subsidy is called the Tariff Adjustment Payment and is paid by the Western Australian Government to the electricity retailers (Synergy and Horizon Power).

272 Information on the Western Australian Government's Electricity Market Review is available at http://www.finance.wa.gov.au/cms/Public_Utilities_Office/Electricity_Market_Review/Electricity_Market_Review.aspx

Methodology

Our analysis of residential electricity prices and cost components applies to a representative consumer in Western Australia using 5,747 kWh per year.[273]

Our methodology for Western Australia differs from the other states because residential prices are set by the Western Australian Government and there is no formal statement of the supply chain costs.[274]

Due to the Western Australian Government's uniform tariff policy, residential consumers outside the SWIS pay the same price as those consumers in the SWIS. Our analysis of prices and cost components for Western Australia is for consumers in the SWIS; however, the reported price trends will also apply to residential consumers outside of the SWIS.

G.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table G.1 demonstrates how the average unit cost of electricity and the annual electricity bill in Western Australia is sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table G.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average residential price (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	29.28	$732
Western Australian-specific average (5,747 kWh)	26.04	$1,497
High (9,500 kWh)	25.06	$2,381

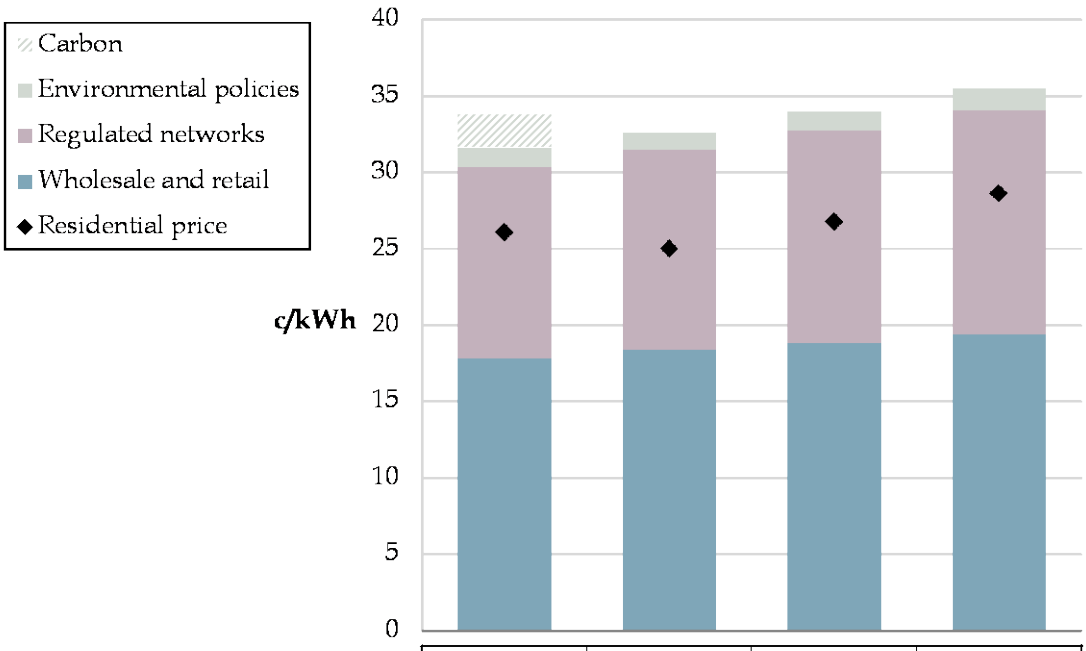
273 This representative consumption value was provided to us by the Western Australian Government. It was calculated by dividing the total residential consumption in 2013/14 by the number of residential consumers.

274 In some other jurisdictions where prices are regulated an independent regulator will set the residential tariff after considering the efficient costs of supply, including efficient retail margins.

G.2 Trends in supply chain cost components

Figure G.2 shows the expected movements in the residential price and supply chain cost components for Western Australia, which are wholesale and retail, regulated networks and government environmental policies. Costs associated with the carbon pricing mechanism apply only in 2013/14 because the scheme has been repealed with effect from 1 July 2014. A different pattern is used for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure G.2 Western Australia supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**3.46**	**1.14**	**1.28**	**1.49**
Carbon	c/kWh	2.15	0.00	0.00	0.00
LRET	c/kWh	0.63	0.68	0.82	1.03
SRES	c/kWh	0.68	0.46	0.46	0.47
Regulated networks	**c/kWh**	**12.51**	**13.14**	**13.90**	**14.68**
Transmission	c/kWh	2.00	1.98	1.80	1.63
Distribution	c/kWh	10.51	11.16	12.10	13.04
Wholesale and retail	**c/kWh**	**17.79**	**18.35**	**18.81**	**19.36**
Wholesale	c/kWh	14.86	15.40	15.75	16.17
Retail	c/kWh	2.93	2.95	3.06	3.18
Estimated total supply cost	**c/kWh**	**33.76**	**32.63**	**33.99**	**35.53**
Residential price	**c/kWh**	**26.04**	**24.97**	**26.71**	**28.58**

Note: The residential price is based on prices published by the Western Australia Government (for 2013/14 and 2014/15) and by the trend announced in the 2014-15 State Budget (for 2015/16 and 2016/17). The supply chain costs in the SWIS have been calculated using the methodology described in this appendix.

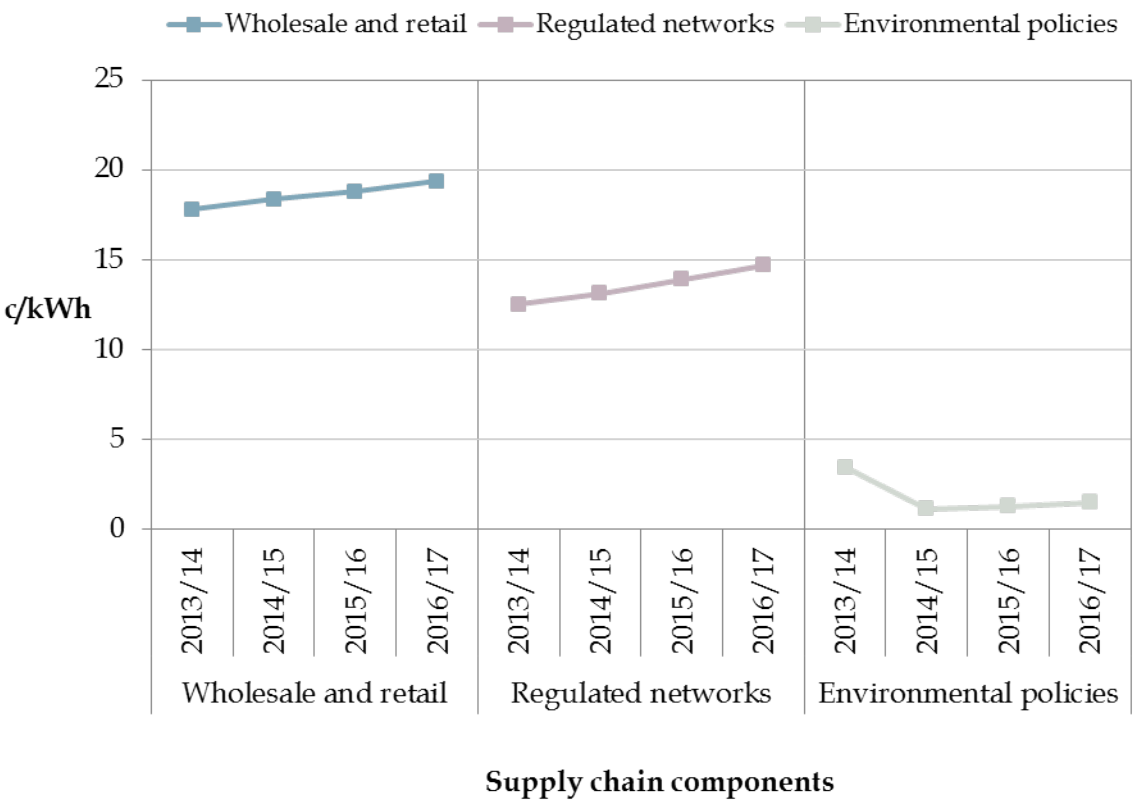
Figure G.3 shows the expected trends in the supply chain cost components in Western Australia over the reporting period. In summary, these trends are:

- an average annual increase of 2.9 per cent in the wholesale and retail component;
- an average annual increase of 5.8 per cent in the regulated network component; and
- an initial reduction of 67 per cent in the environmental component due to the repeal of the carbon pricing mechanism, then increases of 12 per cent in 2015/16 and 17 percent in 2016/17 due to Renewable Energy Target costs.

Although the carbon price made up 8.3 per cent of the total residential price in 2013/14, the saving in 2014/15 from the repeal of this policy is partially offset by a legislated increase of 4.5 per cent in the regulated price.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure G.3 Trends in Western Australia supply chain cost components



G.2.1 Wholesale and retail costs

Wholesale and retail costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. A summary our approach is as follows:

- Wholesale energy cost estimates are based on modelling of the stand-alone Long Run Marginal Cost (LRMC) of electricity generation in the SWIS which was undertaken by Frontier Economics.

- The retail component is based on estimates from the Western Australian Economic Regulation Authority for Synergy's efficient retail operating cost, return on investment and depreciation allowance.[275]

In 2013/14, the wholesale and retail costs make up 53 per cent of the total cost of supply. We expect that the contribution of this component to be between 54 per cent and 56 per cent during the remaining years of the reporting period from 2014/15 to 2016/17.

The retail sector is not competitive because the government-owned utility, Synergy, is the only retailer for electricity users who consume less than 50 MWh per year (by comparison, an average household in the SWIS is considered to consume less than 6 MWh per year).[276] However, Synergy provides several different offers and consumers may find that one of the other offers is better suited to their individual circumstances.

As of 1 January 2014, Synergy has been merged with Verve, another government-owned entity that was formerly the largest electricity generator in the Western Electricity Market (WEM). The combined entity, which continues with the trading name of Synergy, is now both the largest retailer and the largest generator in the WEM.[277]

Wholesale energy component

The WEM is the wholesale electricity market that operates in the SWIS. Box G.2 provides an overview of the WEM market structure and how this differs from the National Electricity Market (NEM) in the eastern states.

Owing to the differences between the WEM and the NEM, modelling of the LRMC of electricity generation has been used to estimate wholesale energy costs in Western Australia. This was undertaken by Frontier Economics.

275 Economic Regulation Authority, *Inquiry into the Efficiency of Synergy's Costs and Electricity Tariffs*, final report, ERA, 4 July 2012.

276 The representative consumer is considered to have an annual consumption level of 5,841 kWh, a figure provided to us by the Western Australian Government.

277 C Barnett (Western Australian Premier), *Changes to machinery of Government*, media release, 10 April 2013.

Box G.2 Western Electricity Market

The wholesale electricity market that operates in the SWIS is called the Western Electricity Market (WEM).

Unlike the NEM, which is an energy-only market, the WEM has two components: an energy market, which allows for the buying and selling of electricity, and a capacity market, which provides payments for investment in and availability of generation capacity, irrespective of actual electricity produced.

Most energy in the WEM is traded outside the market via bilateral contracts between market participants (and therefore not at the market price). Bilateral contract positions can be modified through trading on the daily forward market, the Short Term Energy Market (STEM), and a Balancing Market. The Balancing Market is for circumstances where the actual energy supplied or consumed by a market participant differs from their net contracted position (including both their bilateral contracts and STEM trading).

The capacity market is called the Reserve Capacity Mechanism (RCM). Retailers are required to contract two years in advance for a set amount of generation capacity to meet the expected peak load in the SWIS. The amount of capacity, and the rate of payment for this capacity, is determined by the Independent Market Operator (IMO). In return for the capacity payment, generators and demand management providers are required to offer their capacity into the market at all times, unless otherwise approved.

Some of the key bodies in the WEM are:

- Independent Market Operator: the market operator which maintains and develops the Market Rules and procedures, registers Rule Participants and operates the STEM and the RCM.
- Western Power: the network owner and operator for the SWIS, responsible for operating the transmission and distribution systems. Third party access to these networks is governed by an access arrangement which is regulated by the Economic Regulation Authority.
- Synergy: a government-owned utility that is the largest retailer and the largest generator in the WEM. All consumers using less than 50 MWh per year are non-contestable and therefore served by Synergy.
- Economic Regulation Authority: the jurisdictional regulator, responsible for economic regulation and market monitoring.

Based on the LRMC modelling, wholesale energy costs are expected to increase, on average, by 2.9 per cent per year during the reporting period. It is important to note that this outcome is not based on how existing market participants may operate in the

future. Rather, the modelling results are influenced by Frontier's assumptions about future capital costs and fuel costs. These assumptions are as follows:

- Capital costs to increase, on average, by between 3.2 and 4.1 per cent per year during the reporting period, depending on the fuel source and technology of the plant.[278]

- In nominal terms, the wholesale price of gas is forecast to remain constant and coal prices are forecast to decrease.

In practice, there are a range of factors relating to WEM market design, industry structure and fuel costs that may influence future wholesale energy costs. Some of these factors are discussed here:

- The Reserve Capacity Mechanism (RCM). In addition to a market for energy, the WEM also includes a capacity market (this is explained in Box G.2). Recently, a review of the Western Australian electricity market has noted that the RCM appears to be a major contributor to high wholesale energy costs being experienced in the SWIS.[279]

- Fuel costs and contractual arrangements. In 2011/12, 53 per cent of electricity generated in the SWIS was from coal-fired generation and 39 per cent was from gas-fired.[280] Domestic gas prices depend on international prices, Synergy's contractual arrangement and the domestic gas reservation policy that requires liquefied natural gas (LNG) proponents to reserve the equivalent of 15 per cent of the LNG production from each export project for the domestic market.[281]

  With respect to coal, Synergy is the main coal customer in Western Australia. Some coal producers have expressed concerns about their rising operational costs compared with the long-term contract prices they are receiving for their coal.[282] The Western Australia Government has recently approved amendments to Synergy's contract with Premier Coal, including a price increase.[283]

Retail component

As noted above, there is not a competitive market for residential electricity supply in the SWIS because there is only one retailer. We have used estimates from the Economic Regulation Authority for Synergy's efficient retail operating cost, return on investment

278 Changes in the modelled capital costs are due to assumptions about future exchange rates, changes in the costs of labour and materials, and technology learning curves.

279 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, discussion paper, 25 July 2014, p22.

280 ESAA, *Electricity Gas Australia 2014*, 2014, Table 2.6, pp24-25.

281 ERA, *Inquiry into Microeconomic Reform in Western Australia*, final report, 30 June 2014, p20.

282 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, discussion paper, 25 July 2014, p36.

283 M Nahan (Treasurer), *State reaches agreement to secure future energy*, media statement, 14 October 2014.

and depreciation allowance.[284] The Economic Regulation Authority made the following recommendations:

- an average annual retail operating cost allowance of approximately $81 per customer (in 2011/12 dollars);
- that retail operating costs should be escalated by 3.58 per cent;
- a depreciation cost of $15.20 per customer (in 2011/12 dollars); and
- a retail margin of 3.5 per cent of Synergy's total costs.

These estimates are considered by the Economic Regulation Authority to be cost-reflective (ie they are sufficient to cover efficient input costs while also providing a reasonable return to the retailer). In calculating a retail component we have applied these costs to a representative consumer using 5,474 kWh per year and adjusted the values for inflation where appropriate.

Notably, our approach to estimating the retail cost in Western Australia is different to how the retail component is derived for other jurisdictions. As the government-set price is less than the cost of supply, calculation of the retail component via the residual method used in the other jurisdictions would not provide any indication of the retail costs and would therefore underestimate the total cost of supply.[285]

G.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers. In the SWIS, the distribution network involves voltages of less than 66 kV while the transmission network operates at 66 kV and higher.[286]

We have used Western Power's Approved Revised Access Arrangement to estimate network prices. The current determination covers the entire duration of our reporting period and applies to both the transmission and distribution networks.[287]

In 2013/14, we estimate that the regulated network component makes up 37 per cent of the total cost of supply. Of this, the distribution network component makes up around 31 per cent and the transmission network component around 6 per cent. We expect that the contribution of regulated network prices to the total cost of supply will increase

284 ERA, *Inquiry into the Efficiency of Synergy's Costs and Electricity Tariffs*, final report, 4 July 2012.

285 For other jurisdictions, a retail component is derived as the difference between the residential tariff or *market offer* price and the aggregate of the environmental, network and wholesale cost components.

286 Horizon Power and Western Power, *Western Australian Distribution Connections Manual*, May 2013.

287 The expected trend in distribution and transmission costs is set out in Economic Regulation Authority, *Decision: Variation to Western Power's Access Arrangement for 2012/13 to 2016/17*, 4 June 2013, p13.

during the reporting period and be 40 per cent of the total in 2014/15 and 41 per cent in 2015/16 and 2016/17. These increases are largely due to network replacement and augmentation to service a peakier load profile.[288]

In recent years, energy sales have been lower than forecast at the time of the regulatory decision. As the network business is regulated under a revenue cap, when energy sales are lower than forecast, the amount of revenue that is recovered per unit of energy must increase for the total amount of revenue to be consistent with the approved revenue. If the current downward trend in sales continues, network prices could be higher than our estimates. This effect on prices is discussed in Chapter 2.

We note that the network price estimates derived from the Western Power Access Arrangement include the Tariff Equalisation Charge, the cross-subsidy that is paid by SWIS consumers to fund the Western Australian Government's uniform tariff policy. The Western Australian Government estimates that the Tariff Equalisation Charge makes up around 25 per cent of the regulated network price.[289]

Transmission

Transmission network prices are expected to decrease during the reporting period due to:

- a lower rate of return on capital in the current regulatory period; and
- a decline in investment towards the end of the previous regulatory period.

Western Power's rate of return on capital, in real pre-tax terms, decreased from 7.98 per cent in the previous regulatory period to 4.33 per cent in the current one. The resulting decrease in transmission costs has been smoothed across the current regulatory period, which results in a downwards trend.[290] Lower than forecast capital expenditure in the previous regulatory period has led to a downwards adjustment in the investment allowance at the start of the current regulatory period and reduced depreciation going forward.

Distribution

Distribution network costs are increasing because of increases in operational expenditure. This is due to growth in the size of the network, greater consumer

288 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, discussion paper, 25 July 2014, p iv. A peakier load profile means that the difference between annual peak electricity demand and average electricity demand is becoming larger.

289 Western Australian Department of Finance Public Utilities Office, *Electricity Market Review*, discussion paper, 25 July 2014, p14.

290 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, 5 September 2012, p51.

numbers and increasing labour costs.[291] As explained above, part of the price increase for consumers in 2014/15 is due to energy sales being lower than expected.

G.2.3 Environmental policies

The environmental schemes that impact on residential electricity prices in Western Australia are the carbon pricing mechanism (only in 2013/14) and the Renewable Energy Target. For 2013/14, the carbon component was specified by the Western Australian Government.[292] Modelling by Frontier Economics has been used to estimate the Renewable Energy Target costs.

In 2013/14, environmental policies made up around 10 per cent of the total cost of supply. The estimated contribution of the individual schemes was as follows:

- The carbon price made up around 6.4 per cent of the total cost of supply in 2013/14. There is no carbon cost in any of the other years of the reporting period because this policy has been repealed with effect from 1 July 2014.
- Renewable Energy Target costs made up around 3.9 per cent of the total cost of supply in 2013/14. Under the current policy, the contribution of this cost is expected to be 3.5 per cent in 2014/15, 3.8 per cent in 2015/16, and then 4.2 per cent in 2016/17.

Carbon pricing mechanism

In the process of setting residential prices for 2013/14, the Western Australian Government specified a carbon component of 2.3683 c/kWh (including GST). For a representative consumer, the carbon component was 8.3 percent of the total residential price in 2013/14. However, when the full supply costs, including the government subsidy, are taken into account, the carbon component is only 6.4 per cent of the total costs.

Renewable Energy Target

The Renewable Energy Target has two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES).

We estimate that SRES costs in 2013/14 made up 2 per cent of the total cost of supply and the LRET costs made up 1.9 per cent. We expect an average annual decrease of 11 per cent in the SRES costs and an average annual increase of 21 per cent in the LRET costs. In 2016/17, the final year of the reporting period, SRES costs are expected to make up 1.3 per cent of the total and LRET costs 2.9 per cent.

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291 Western Power, *Proposed revisions to the Access Arrangement for the Western Power Network*, Appendix A, September 2011. Costs have been smoothed across the 2012-17 regulatory period, as shown in Economic Regulation Authority, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, 5 September 2012, p52.

292 Energy Operators (Electricity Generation and Retail Corporation) (Charges) By-laws 2006, Western Australia. As at 14 March 2014.

The trend in the LRET costs is based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining large-scale generation certificates. Similarly, SRES costs are also based on a renewable energy percentage and estimates of the certificate price. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[293] The expected decrease in the SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

These trends are based on the assumption that the Renewable Energy Target is maintained in its current form.

Jurisdiction feed-in tariff schemes

Residential consumers may be eligible for government feed-in tariff schemes that operate in Western Australia, these being the Residential Feed-in Tariff and the Renewable Energy Buyback Scheme. Any costs associated with these schemes have not been reported on for the following reasons:

- Consumers eligible for the Residential Feed-in Tariff, which was open for applications from 1 July 2010 to 1 August 2011, receive a payment of 40 c/kWh for exported electricity if they applied before 1 July 2011, or 20 c/kWh for applications thereafter. The scheme costs are not included in our reporting because the 40 cent and 20 cent payments are funded by Western Australian Government taxation revenue and do not flow through directly to residential electricity prices.

- Under the Renewable Energy Buyback Scheme, retailers offer a buy-back rate for electricity exported by eligible consumers from renewable energy systems.[294] The rates offered by the retailers should reflect the value of the exported electricity to the retailer, and therefore the scheme should not impose a net cost on electricity consumers.[295]

293 Clean Energy Regulator, 'The 2014 small-scale technology percentage and renewable power percentage set,' *Clean Energy Regulator*, viewed 18 May 2014, http://ret.cleanenergyregulator.gov.au/Latest-Updates/2014/The-2014-small-scale-technology-percentage-and-renewable-power-percentage-set.

294 Western Australian Department of Finance Public Utilities Office, 'Renewable Energy Buyback Scheme', website, wiewed 16 September 2014, https://www.finance.wa.gov.au/cms/Public_Utilities_Office/Energy_Initiatives/Renewable_Energy_Buyback_Scheme_-_Residential.aspx.

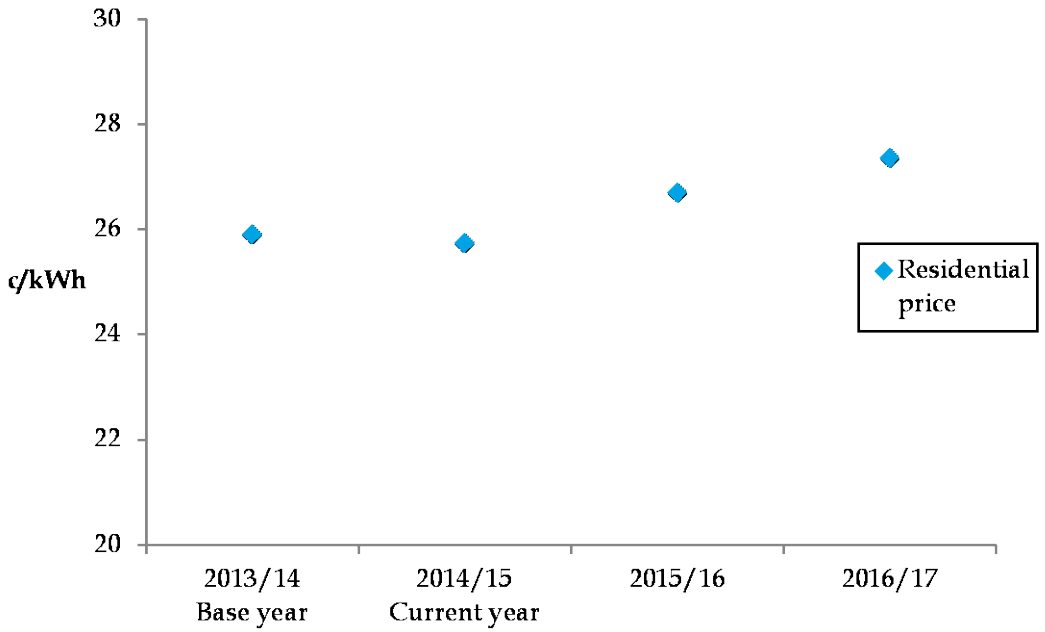
295 In November 2008 the Western Australian Government committed to the National Principles for Feed-in Tariff Schemes through the Council of Australian Governments. The Western Australian Government considers that the scheme meets the first of these principles, which is that micro renewable generation are to receive fair and reasonable value for exported energy.

H Northern Territory

Box H.1 Key points

- Residential electricity prices in the Northern Territory are set by the Northern Territory Government, which subsidises electricity prices such that the prices paid by consumers are less than the cost of supply.
- Residential electricity prices in the Northern Territory are expected to decrease by 0.6 per cent in 2014/15, before increasing by 3.7 per cent in 2015/16 and 2.5 per cent in 2016/17. Because prices are set by the Northern Territory Government, the retail prices paid by consumers do not necessarily reflect underlying costs, nor follow cost trends.
- The key drivers of supply costs in the Northern Territory are an initial decrease in 2014/15 due to the repeal of the carbon price and higher network costs in the 2014-19 regulatory period due to a new asset management regime and higher regulatory depreciation allowance.
- Our analysis of residential prices applies to a representative consumer in the Darwin-Katherine Interconnected System. As the Northern Territory Government has a uniform tariff policy, these prices apply to all residential consumers in the Northern Territory.

Figure H.1 Trend in Northern Territory regulated residential prices



H.1 Overview

Residential electricity prices in the Northern Territory are expected to increase, on average, by 1.9 per cent per year in the three years from 2013/14 to 2016/17, as shown in Figure H.1. This includes a 0.6 per cent decrease in 2014/15 and then increases of 3.7 per cent in 2015/16 and 2.5 per cent in 2016/17.

In addition to estimating the trend in residential electricity prices for the representative consumer, we also estimate the supply chain costs in the components of wholesale and retail, regulated network and environmental policies. The difference between the residential price and our estimate of the supply costs is indicative of the subsidy paid by the Northern Territory Government.

A representative consumer in the Northern Territory is estimated to receive a subsidy of $705 per year for their electricity consumption.[296] However, as we do not know all of the supply costs we have not been able to estimate the subsidy as a percentage of the total costs.

A number of reforms are currently underway in the Northern Territory electricity industry, including:[297]

- reforms to the regulatory framework governing the Northern Territory's electricity market, to be implemented progressively in the period to February 2016; and
- the structural separation of the Power and Water Corporation's monopoly and contestable businesses into stand-alone government-owned corporations.

Structural separation has now occurred and two new government-owned corporations, Jacana Energy and Territory Generation, commenced operations on 1 July 2014. Jacana Energy is responsible for the retail part of Power and Water Corporation and Territory Generation manages electricity generation. Power and Water Corporation will continue to operate the power network.[298]

Through regulatory reform, the Northern Territory Government intends to promote more competition in electricity supply. Where competition is not possible or effective, the aim is to more closely align the Northern Territory's regulatory arrangements with those operating in the National Electricity Market in the eastern states.

Some specific initiatives, including measures to support retail competition and the development of a wholesale electricity market, are mentioned below.

296 D Tollner (Northern Territory Treasurer), *Helping the family budget by up to $2145*, media release, 13 May 2014.

297 Northern Territory Department of Treasury and Finance, *Northern Territory Electricity Market Reform*, information paper, February 2014.

298 Power and Water Corporation, *New corporations created as Power and Water splits*, news update, 1 July 2014.

Methodology

Our analysis of residential electricity prices and cost components applies to a representative consumer in the Northern Territory using 9,135 kWh per year.[299]

Prices in 2013/14 and 2014/15 are based on Electricity Pricing Orders and other announcements by the Northern Territory Government.[300] From 1 January 2016 onwards, it is assumed that prices will increase in line with inflation, which is assumed to be 2.5 per cent. The Northern Territory Government's Pricing Orders currently apply on a calendar year basis from 1 January to 31 December whereas our reporting is on financial year basis from 1 July to 30 June.[301]

H.1.1 Effect of different household consumption levels

The representative consumer is developed using a set of assumptions in order to provide information about the trends in and drivers of electricity prices. The price outcomes based on the representative consumer are sensitive to these assumptions and may not reflect actual prices paid by individual consumers.

Table H.1 demonstrates how the average unit cost of electricity and the annual electricity bill in the Northern Territory is sensitive to changes in consumption levels. Lower consumption levels result in lower annual household bills, but a higher per unit average price as the fixed component of the retail electricity price is spread over a smaller volume of electricity.

Table H.1 Effect of different consumption levels on average electricity price and annual expenditure in 2013/14

Annual consumption level	2013/14 Average residential price (cents per kWh)	2013/14 Annual household bill
Low (2,500 kWh)	30.65	$766
Northern Territory-specific average (9,135 kWh)	25.90	$2,366
High (9,500 kWh)	25.83	$2,454

299 This consumption level was provided to us by Northern Territory Government officials.

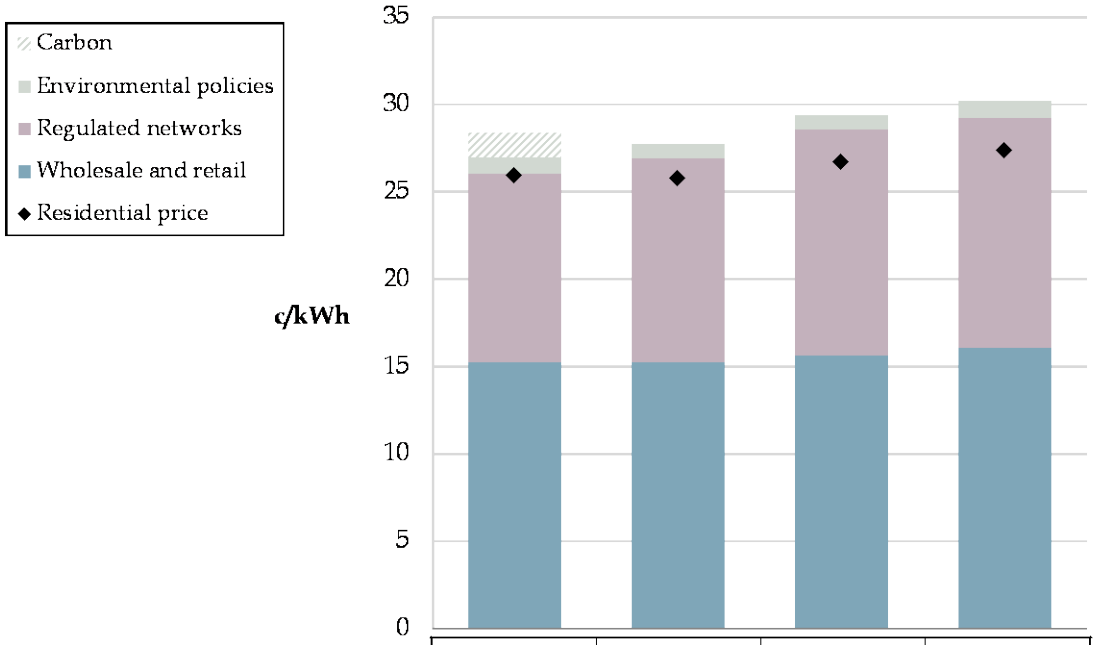
300 A five per cent increase came into effect on the 1 January 2014 and another five per cent increase will be applied on 1 January 2015. A Giles (Northern Territory Chief Minister), *Giles acts on power and water concerns*, media release, 14 March 2013.

301 However, an amendment to the Pricing Order was signed by the Treasurer on 19 June 2014 to reflect the repeal of the carbon price legislation from 1 July 2014.

H.2 Trends in supply chain cost components

Figure H.2 shows the expected trends in the residential price and supply chain cost components for the Northern Territory, which are wholesale and retail, regulated network and government environmental policies.[302] Costs associated with the carbon price apply only in 2013/14 as the scheme has been repealed with effect from 1 July 2014. A different pattern is used for carbon so that it is possible to observe the trend in the cost of the other environmental schemes.

Figure H.2 Northern Territory supply chain cost components



		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**2.32**	**0.83**	**0.88**	**0.97**
Carbon	c/kWh	1.39	0.00	0.00	0.00
LRET	c/kWh	0.38	0.38	0.44	0.54
SRES	c/kWh	0.54	0.46	0.44	0.44
Regulated networks	**c/kWh**	**10.77**	**11.65**	**12.88**	**13.20**
Network	c/kWh	10.77	11.65	12.88	13.20
Wholesale and retail	**c/kWh**	**15.27**	**15.28**	**15.66**	**16.06**
Residual		-2.46	-2.03	-2.73	-2.86
Residential price	**c/kWh**	**25.90**	**25.74**	**26.69**	**27.36**

Note: The "residual" is the difference between the residential price and the aggregate of the supply chain costs. Its represents part, but not all, of the government subsidy. Renewable Energy Target costs were provided by the Northern Territory Government on a calendar year basis for 2013 and 2014. We have adjusted these costs by inflation to report on the 2013/14 and 2014/15 financial years.

302 Our estimates of costs are for the Darwin-Katherine system. Supply costs are higher outside of this region.

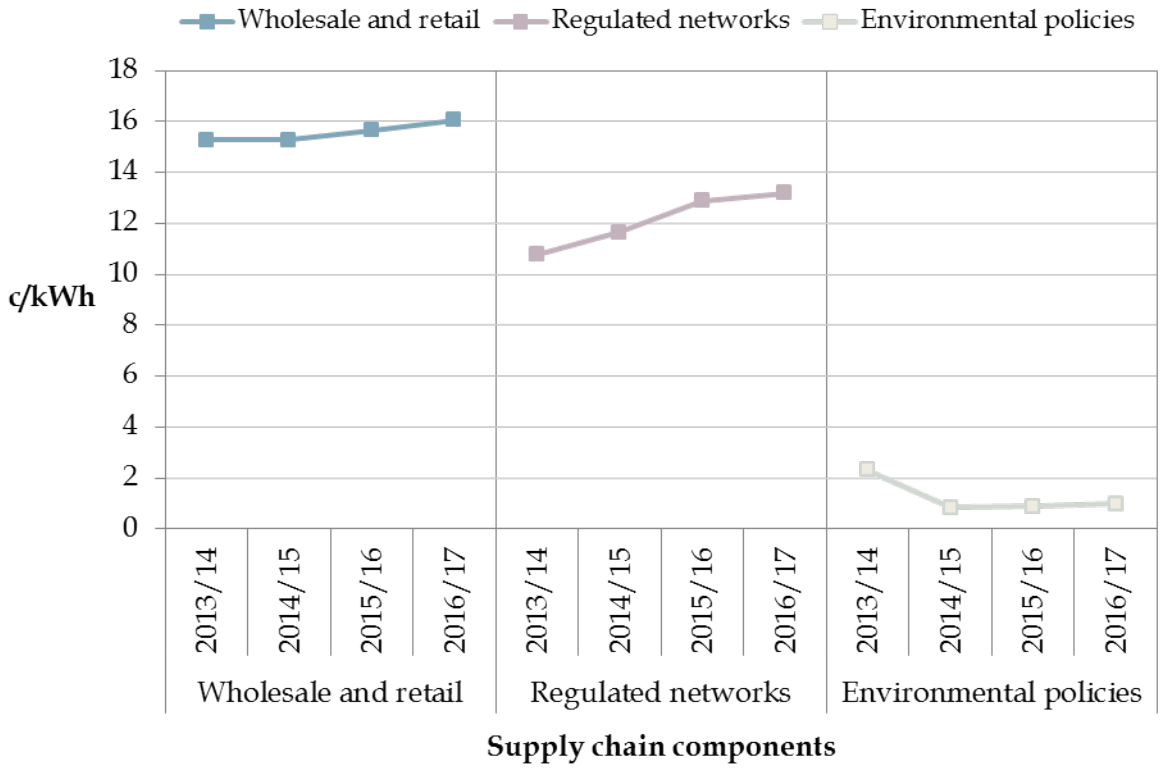
Figure H.3 shows the expected trends in the supply chain cost components in the Northern Territory over the reporting period. In summary, these trends are:

- an average annual increase of 1.7 per cent in the wholesale and retail component, including a small increase in 2014/15, then increases in line with inflation in 2015/16 and 2016/17;
- an average annual increase of around 7.5 per cent in regulated network component, including increases of 8.2 per cent in 2014/15, 11 per cent in 2015/16 and 2.5 per cent in 2016/17; and
- an initial reduction of 64 per cent in the environmental component due to the repeal of the carbon pricing mechanism, then increases of 5.7 per cent in 2015/16 and 10 percent in 2016/17 due to the Renewable Energy Target costs.

Although the carbon price made up 5.4 per cent of the total residential price in 2013/14, the saving in 2014/15 from the repeal of this policy is mostly offset by an increase in the network component.

Further detail on these trends can be found below in the supply chain component-specific sections.

Figure H.3 Trends in Northern Territory supply chain cost components



H.2.1 Wholesale and retail costs

Wholesale and retail costs consist of the wholesale energy component and the costs associated with retailing electricity to residential consumers. A summary of our approach is as follows:

- Wholesale energy costs in 2013/14 and 2014/15 were provided to us by the Northern Territory Government.[303] For the remaining years of the reporting period we have escalated this cost component by an assumed inflation rate of 2.5 per cent.
- We have not estimated a retail component, however the Northern Territory Government has provided us with retail margin of 0.3621 c/kWh for 2013/14 (including GST). This is only a sub-component of the full retail costs and our understanding is that this does not represent the full cost of retailing electricity to electricity consumers in the Northern Territory.

In 2013/14, the wholesale and retail costs made up 54 per cent of the total cost of supply in the Darwin-Katherine system. We expect that the contribution of this component to be between 53 per cent and 55 per cent during the remaining years of the reporting period from 2014/15 to 2016/17.

As noted above, Power and Water Corporation's functions have been separated out and now Jacana Energy and Territory Generation are responsible for retail and generation functions respectively. Jacana Energy serves all electricity consumers using less than 750 MWh per year, which includes all residential consumers. Retail competition in this market sector has been allowed since 2010, however none of the new entrant retailers are currently active in the residential market.

Wholesale energy costs

There is currently no market for electricity in the Northern Territory and prices are established through bilateral contracts between generators and energy users or retailers. Previously, Power and Water Corporation was the largest generator in the Darwin-Katherine system and the only retailer for residential customers. In 2013/14, a Franchise Generation Transfer Price was specified as the wholesale energy cost that Power and Water Corporation could charge.

Future wholesale energy costs will be influenced by fuel costs and demand growth. We have assumed that wholesale energy costs will increase by an inflation rate of 2.5 per cent in 2015/16 and 2016/17. Based on forecast maximum demand growth of 2.7 per cent per year, the Darwin-Katherine system is considered to have adequate generation

303 Costs in these years are based on the 2013-14 Franchise Generation Transfer Price for the Darwin-Katherine region.

capacity during the reporting period.[304] Gas, the main fuel source for electricity generation in the Northern Territory, is supplied under a long-term contract.

As electricity generation is currently a monopoly service, price oversight is undertaken by the Utilities Commission to ensure that the wholesale energy prices paid by contestable customers are similar to those that would occur in a competitive environment. Under this arrangement the Utilities Commission is also to ensure that the generation business recovers no more than the reasonable long-run cost of supplying wholesale energy.[305]

Electricity supply in the urban areas of Darwin-Katherine, Alice Springs and Tennant Creek is subsidised and all consumers pay the same price. The subsidy for consumers outside of the Darwin-Katherine system is larger owing to wholesale energy costs being more expensive in these areas. A Community Service Obligation payment covers the subsidy paid to all urban electricity consumers. In 2014/15, this payment is $65.88 million.[306]

Retail costs

In aggregate, the supply chain costs shown in Figure H.2 are likely less than the actual costs because we have not been able to account for the retail operating cost.

As explained in Chapter 1, the retail component includes a range of different costs, including the retailer operating costs, customer acquisition and retention, and return on investment for investing capital in the business.

With the data available to us, it has not been possible to show the full retail cost in the Northern Territory. Instead we report on a retail margin for 2013/14 which was provided to us by the Northern Territory Government. We have escalated this by an inflation rate of 2.5 per cent per year for the remaining years of the reporting period.

We also include a residual in Figure H.2 which has been calculated as the difference between the regulated residential price and the aggregate of the estimated supply chain costs that we have reported on for the Northern Territory (including wholesale energy costs, retail margin, regulated network costs and environmental policy costs). It represents part, but not all, of the government subsidy.

304 The Utilities Commission considers generation capacity in the Darwin-Katherine system to be adequate out to 2022/23 under N-2 contingency conditions. Utilities Commission, *Power System Review 2012-13*, final report, June 2014, pp16-17.

305 Utilities Commission, *Wholesale Generation Pricing*, viewed 30 September 2014 at http://www.utilicom.nt.gov.au/Electricity/pricing/Pages/Wholesale-Generation-Pricing.aspx

306 A separate government payment, the Indigenous Essential Services grant, subsidises utility services in remote areas. In 2014/15, this is $73.13 million and includes electricity, water and sewage. See page 338 of Budget Paper No. 3 from the 2014-15 Budget.

H.2.2 Regulated networks

Regulated network costs consist of the costs of the transmission and distribution networks. Generally, transmission lines connect electricity generators to major load centres and the distribution network delivers energy at lower voltages to residential consumers. In the Northern Territory, there is no distinction between transmission and distribution costs when network costs are recovered from consumers.

In 2013/14 and 2014/15, regulated network prices are based on information published by Power and Water Corporation (now Jacana Energy).[307] Prices in 2015/16 and 2016/17 are based on the revenue trend for the network business, which was provided to us by the Northern Territory Government.

We estimate that in 2013/14 the regulated network component made up 38 per cent of the total cost of supply. This contribution is expected to increase to 42 per cent in 2014/15, then 44 per cent in 2015/16 and 2016/17.

In April 2014, the Utilities Commission published a final determination on network prices for the 2014-19 regulatory period.[308] However, the Treasurer subsequently issued a Ministerial Direction for the network utility to apply an alternative revenue path of 7.7 per cent plus inflation in 2014/15, 8 per cent plus inflation in 2015/16, and 0 per cent plus inflation from 2016/17 and 2018/19.[309] We have used this revenue path to escalate network prices during the reporting period, however, our explanation of the trend is based on information contained in the Utilities Commission final determination.

The increases in regulated network prices are due to higher operational expenditure and regulatory depreciation allowance. Operational expenditure for the 2014-19 regulatory period is 45 per cent higher than in the previous five year period. This is due to a new asset management regime that has an increased focus on condition monitoring and preventative maintenance. In recent years, there have been several instances of wide-spread power outages in the Darwin-Katherine system, including the System Black events on 12 March 2014 and 30 January 2010.

The higher regulatory depreciation allowance is a result of a re-evaluation of the asset life of the network infrastructure.[310]

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307 Jacana Energy, *2014-15 Electricity Network Standard Control Service Tariffs* viewed 30 September 2014, http://jacanaenergy.com.au/news_and_publications/publications/2014-15_Electricity_Network_Standard_Control_Service_Tariffs, .

308 Utilities Commission, *2014 Network Price Determination, final determination, Part A - Statement of Reasons*, 24 April 2014, Darwin.

309 The alternative revenue path was provided to us by the Northern Territory Government. The revision includes a downwards adjustment of the WACC from 7.86 per cent used by the Utilities Commission to the cost of borrowing of the government, which is 4.61 per cent.

310 The depreciation methodology was revised to align it with the approach of the Australian Energy Regulator. Under the new methodology, the network asset base was considered as having 48 per cent of its life remaining. If the values from the previous regulatory period had been rolled forward then this figure would have been 59 per cent.

H.2.3 Environmental policies

The environmental schemes that impact on residential electricity prices in the Northern Territory are the carbon pricing mechanism (only in 2013/14) and the Renewable Energy Target. For 2013/14, the carbon component is specified by the Northern Territory Government.

Renewable Energy Target costs for 2013/14 and 2014/15 were provided to us by the Northern Territory Government on the advice of Power and Water Corporation (now Jacana Energy).[311] The remaining years of the reporting period are based on national trends that were developed by Frontier Economics.

In 2013/14, environmental policies made up 8.2 per cent of the total cost of supply. The estimated contribution of the individual schemes is as follows:

- The carbon price made up around 4.9 per cent of the total cost of supply in 2013/14. There is no carbon cost in any of the other years of the reporting period because this policy has been repealed with effect from 1 July 2014.
- Renewable Energy Target costs made up around 3.3 per cent of the total cost of supply in 2013/14. Under the current policy, the contribution of this cost is expected to be 3 per cent in 2014/15 and 2015/16, then 3.2 per cent in 2016/17.

Carbon pricing mechanism

For 2013/14, the Northern Territory Government specified a carbon component of 1.53 c/kWh for residential consumers (including GST), which was approximately 4.9 per cent of the total cost of supply. However, as residential prices are less than the cost of supply, the carbon component appears larger, in percentage terms, from the perspective of a residential consumer. We estimate that the carbon component was 5.4 percent of the total residential price in 2013/14.

Renewable Energy Target

The Renewable Energy Target has two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES).

We estimate that SRES costs in 2013/14 made up 1.9 percent of the total cost of supply and the LRET costs make up 1.4 per cent. We expect an average annual decrease of 6.6 per cent in the SRES costs and an average annual increase of 13 per cent in the LRET costs. In 2016/17, the final year of the reporting period, SRES costs are expected to make up 1.4 per cent of the total and LRET costs 1.8 per cent.

The trend in LRET costs are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining certificates. Similarly, SRES costs are also based on a renewable energy percentage and estimates of the

311 These costs were provided on a calendar year basis for 2013 and 2014 and were adjusted by inflation to report on the 2013/14 and 2014/15 financial years.

certificate price. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[312] The expected decrease in the SRES scheme costs is due to a lowering of the power percentage from 2013/14 to 2014/15.

These trends are based on the assumption that the Renewable Energy Target is maintained in its current form.

Feed-in tariff

Jacana Energy offers a voluntary feed-in tariff for residential customers with an eligible solar photovoltaic system. As of September 2014, an energy buy-back rate of 25.60 c/kWh is payable to domestic customers.[313] As this scheme is not legislated by the Northern Territory Government, we have not included the scheme in our reporting on environmental policy costs.

H.2.4 Further developments

As discussed above, the Northern Territory Government is going through a process of electricity industry reform that covers all parts of the electricity supply chain.

Network regulation

It is proposed that economic regulation of the electricity networks will be transferred from the Northern Territory Utilities Commission to the Australia Energy Regulator.[314] Once this occurs, the AER will initially regulate according to the Northern Territory regulatory framework for the duration of the 2014-19 network determination. The National Electricity Law and National Electricity Rules will be adopted and then apply for the subsequent regulatory period commencing 1 July 2019.

Retail competition

The Northern Territory Government has proposed measures to support retail competition for residential customers.[315] This would involve:

- The subsidy for households and small consumers being made available to all consumers regardless of the electricity retailer they are served by.
- For consumers using up to 750 MWh per year, standard contracts will be introduced and consumers will be able to negotiate an alternative market contract with an electricity retailer.

312 Clean Energy Regulator, 'The 2014 small-scale technology percentage and renewable power percentage set,' *Clea Energy Regulator* website update, 18 May 2014.

313 Jacana Energy, 'Photovoltaic (PV) solar systems,' *Jacana Energy*, viewed 30 September 2014 at http://jacanaenergy.com.au/sustainability_and_environment/photovoltaic_pv_solar_systems

314 Northern Territory Department of Treasury and Finance, *Northern Territory Electricity Market Reform*, information paper, February 2014, p11.

315 Northern Territory Department of Treasury and Finance, *Northern Territory Electricity Market Reform*, information paper, February 2014, pp3-4.

- The introduction of the National Energy Retail Law, including the National Energy Consumer Framework.

Wholesale electricity market

The Northern Territory Government is currently investigating market designs to reform the wholesale electricity market.[316] The Utilities Commission has recommended the establishment of a Northern Territory Electricity Market that would initially cover the Darwin-Katherine system, with later application to the separate Alice Springs and Tennant Creek networks.[317]

316 Northern Territory Department of Treasury and Finance, *Northern Territory Electricity Market Reform*, information paper, February 2014.

317 Utilities Commission, *Review of wholesale electricity generation market arrangements for the Northern Territory*, final report, February 2014.

I National summary

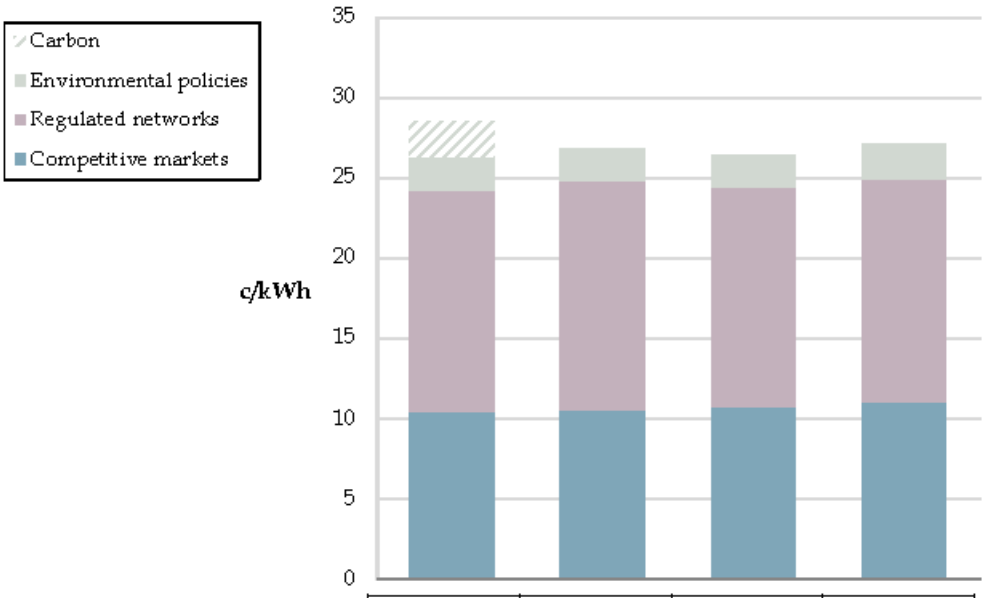
Under the terms of reference provided to the Australian Energy Market Commission by the Council of Australian Governments' Energy Council, we are required to produce a national level summary where the jurisdictional estimates are weighted to determine nationally indicative prices and cost components.

As the national numbers are an average of jurisdictional results that are, in some cases, already averages of several different network regions, they do not reflect the actual costs faced by consumers in Australia. Due to this averaging process, the trends are only indicative.

Jurisdictional estimates have been weighted by the number of residential connections in each jurisdiction. As such, the trends in the national summary most closely reflect the cost trends in the most populous jurisdictions. This also means that the national summary is more representative of trends in the National Electricity Market that covers the eastern states.

As observed in Figure I.1, the national average of residential electricity prices falls in 2014/15 and 2015/16, before increasing moderately in 2016/17.

Figure I.1 National summary of supply chain cost components



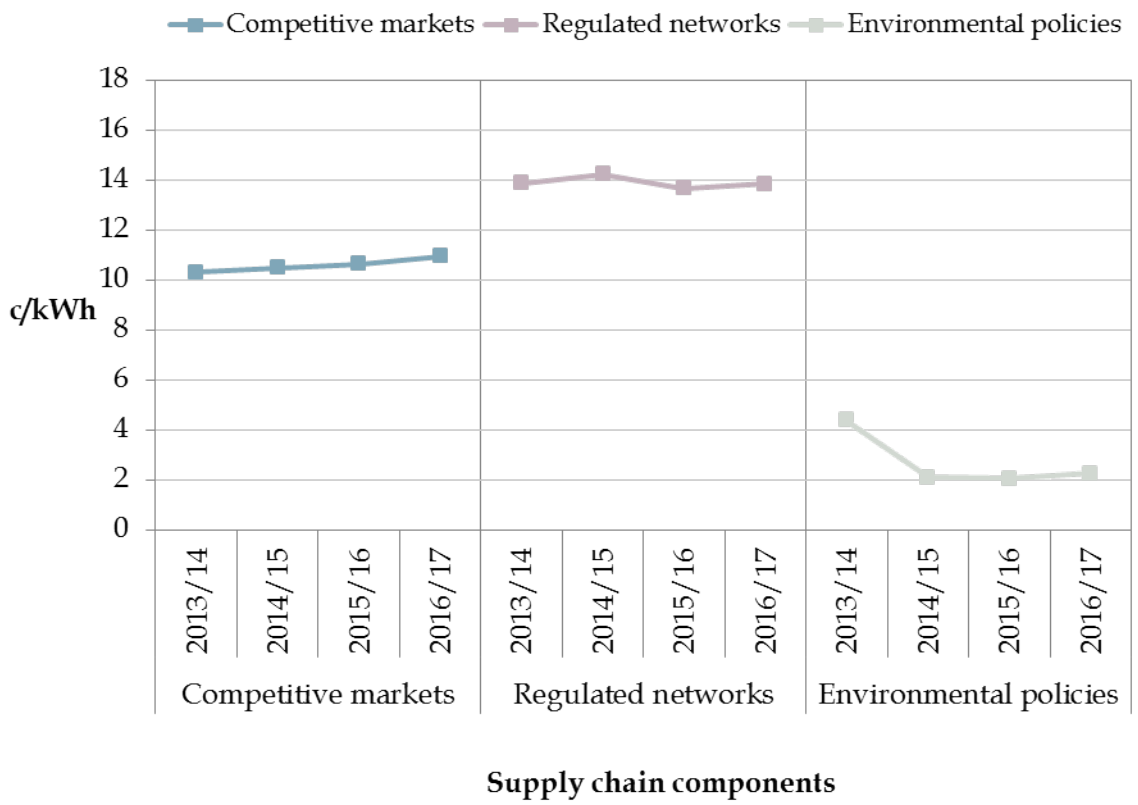
		2013/14 Base year	2014/15 Current year	2015/16	2016/17
Environmental policies	**c/kWh**	**4.39**	**2.11**	**2.07**	**2.25**
Carbon	c/kWh	2.34	0.00	0.00	0.00
LRET	c/kWh	0.60	0.65	0.78	0.97
SRES	c/kWh	0.63	0.43	0.43	0.43
FIT Schemes	c/kWh	0.71	0.94	0.80	0.80
Other state schemes	c/kWh	0.11	0.09	0.06	0.04
Regulated networks	**c/kWh**	**13.87**	**14.23**	**13.68**	**13.86**
Transmission	c/kWh	2.33	2.43	2.43	2.38
Distribution	c/kWh	11.54	11.81	11.26	11.48
Competitive market Wholesale and retail	**c/kWh**	**10.30**	**10.49**	**10.64**	**10.96**
Total	**c/kWh**	**28.57**	**26.83**	**26.38**	**27.08**

Over the reporting period, residential electricity prices are expected to decrease at an annual average rate of 1.7 per cent on a national basis. Excluding the effect of the carbon price in 2013/14, prices are estimated to increase on average by 1.1 per cent per year over the reporting period.

Figure I.2 shows the expected national trends in the supply chain cost components over the reporting period. In summary, the trends are:

- an average increase of 2.1 per cent per year in the competitive market component;
- regulated network costs that are stable on an annual average basis; and
- an initial reduction of 52 per cent in the environmental policy component, mostly due to the repeal of the carbon price mechanism. This is followed by a decrease of 2 per cent in 2015/16 and an increase of 9 per cent in 2016/17.

Figure I.2 National trends in supply chain cost components



The repeal of the carbon price is estimated to result in an average decrease of 8 per cent in the costs of supply between 2013/14 and 2014/15, when all other supply chain components are held constant. However, the decrease in 2014/15 is partially offset by increases in other cost components, including regulated network costs and other Commonwealth and jurisdictional environmental schemes.

Changes in the cost components differ by jurisdiction as outlined and discussed in Chapter 3 and the jurisdictional appendices.

I.1 Note on our methodology

The national summary is an average of the jurisdictional estimates, where these estimates have been weighted by the number of residential connections in each jurisdiction.

Different methodologies have been used to estimate jurisdictional costs and prices. Where there are *market offers* available in a jurisdiction, representative *market offers* were used. In other jurisdictions, the regulated *standing offers* or government set tariffs were used.[318]

318 The national representative price consists of: representative *market offer* prices in New South Wales, Victoria, South Australia and Queensland; representative *standing offer* prices in the ACT and Tasmania; and the government determined tariffs in Western Australia and Tasmania.

Our methodology for estimating *market offers* and *standing offers* for each jurisdiction is described in Appendix J.

J Methodology

This appendix outlines our approach to estimating trends in residential electricity prices over the period of 2013/14 to 2016/17 (the reporting period). We cover the types of data that we have collected and how they have been used in our analysis. The Appendix is structured as follows:

- Household electricity consumption.
- Representative *standing offers*.
- Representative *market offers*.
- Electricity supply chain cost components.

J.1 Household electricity consumption

In accordance with our terms of reference, we have estimated the electricity prices that would be paid by a representative set of residential consumers. The prices are expressed for each year as a single c/kWh value for each jurisdiction.[319]

The representative consumers are defined in terms of the total amount of electricity that they consume in one year (measured in kWh), and how this consumption is split across the quarters of the year (the consumption profile). These two characteristics are important inputs to the process of calculating the representative *standing offers* and *market offers*. Another characteristic is how residential consumption is distributed throughout the day. In our methodology this impacts on the wholesale energy costs because prices in the electricity market vary throughout the day (this is explained in Box J.2).[320]

The annual consumption values that we have used were provided to us by the jurisdictional governments and are shown in Table J.1. The same consumption levels have been used for the whole reporting period. We note that the methodologies for determining annual consumption differ between jurisdictions and, as such, the representative prices calculated for these consumption levels are not directly comparable. Assumptions relating to the representative customer's consumption profile were provided by Frontier Economics.[321]

319 The c/kWh value is calculated by dividing the total amount of money spent on electricity in one year by the total consumption in kWh.

320 Although residential consumers are not directly exposed to wholesale electricity market prices, the costs incurred by electricity retailer in procuring wholesale electricity in order to supply their residential customers will depend upon the residential consumption profile throughout the day.

321 Frontier Economics were engaged by the AEMC to model future trends in the wholesale energy cost component of residential electricity prices. Their report can be accessed via the Price Trends project page on the AEMC website.

Table J.1 Annual consumption values provided by jurisdictions

Jurisdiction	Consumption value used (kWh)	Methodology for determining annual consumption
Queensland	4,533	Total residential consumption within the Energex network divided by residential customer numbers
New South Wales	6,500	Total residential consumption divided by the number of residential customers
Australian Capital Territory	7,180	Total residential consumption divided by the number of residential customers
South Australia	5,000	Based on the consumption of a "typical" consumer, as determined by ESCOSA[322]
Victoria	4,645	Average customer usage in each distribution zone weighted by the number of residential customers in each distribution zone
Tasmania	7,627	Sourced from the Office of the Tasmanian Economic Regulator[323] calculated using a weighted average median consumption level for the two most common tariff combinations
Western Australia	5,747	Total residential demand divided by number of customers
Northern Territory	9,135	Total energy sales divided by the number of connections.

A range of factors lead to differences in the representative levels of consumption for each jurisdiction. Some of these are variations in climate, population density, economic conditions and the availability of domestic gas. Jurisdictions have also used different methods to determining these representative consumption values. As discussed in Chapter 4, a consumer's consumption level has a significant impact on the resulting c/kWh value that they will pay.

Quarterly consumption profiles allocate household electricity consumption depending on the quarter of the year in which the electricity is used. Some retail offers are structured such that the first block of energy is charged at a different price to subsequent blocks. When this is the case, the way in which consumption is distributed

322 Essential Services Commission of South Australia

323 OTTER, Comparison of 2014 Australian Standing Offer Energy Prices, September 2014, p.21.

throughout the year may impact on the overall c/kWh value that a household will pay.[324]

We have used quarterly consumption profiles that were developed as part of the 2013 Residential Price Trends Report and which are representative of an average residential consumer in each jurisdiction.[325]

For Western Australia, the same quarterly profile data used for the NEM jurisdictions was not available and instead the quarterly profile for South Australia has been used. This does not impact the calculation of the Western Australia *standing offer* price because under Synergy's current offer structure all consumption is charged at the same price. However, the quarterly profile is an input to the wholesale modelling. No quarterly profile was required for the Northern Territory because, like Western Australia, our modelling is based on a retail offer where all consumption is charged at the same price.

J.2 Representative *standing offers*

Standing offer contracts are basic electricity contracts with terms and conditions that are set by governments or jurisdictional regulators, which may or may not include price. In jurisdictions that have adopted the National Customer Energy Framework, the applicable terms and conditions are set out in the National Energy Retail Rules.

In practice, *standing offer* prices are set by either jurisdictional regulators or governments if there is a regulated retail price or by electricity retailers if retail prices have been deregulated.[326] In Queensland, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory (ACT) there is a regulated *standing offer* price for residential consumers. Retail prices have been deregulated in Victoria (since 2009), South Australia (since 2013) and New South Wales (since 1 July 2014) and in these jurisdictions the *standing offer* prices are set by electricity retailers.[327]

We have estimated *standing offer* prices in different ways based on the information available to us and whether retail prices are regulated or unregulated. Our approach is summarised below in Figure J.1.

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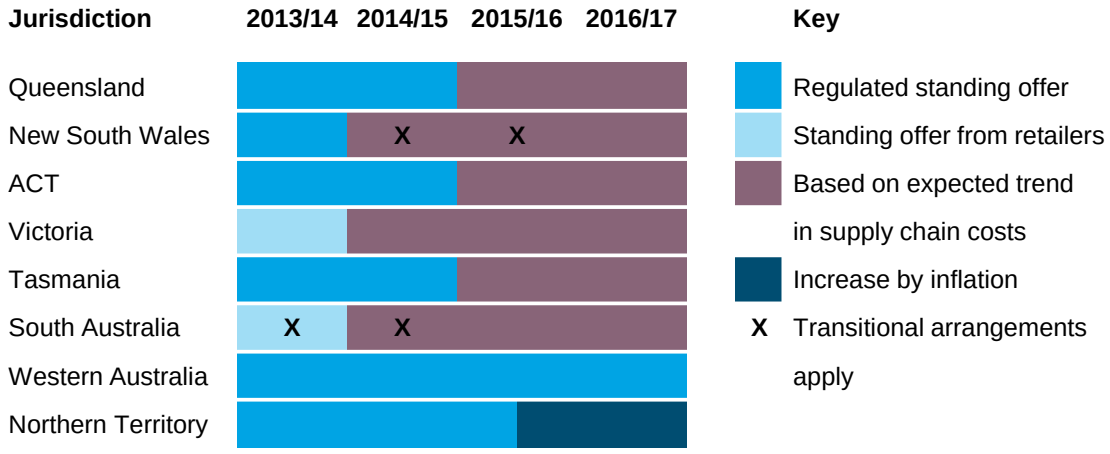
324 For example, it is common for retail offers available to consumers in the Ausgrid distribution network region in NSW to feature different c/kWh values for the first 1000 kWh per quarter, the next 1000 kWh per quarter, and any consumption in excess of 2000 kWh per quarter.

325 AEMC, *2014 Residential Electricity Price Trends*, 13 December 2014, Sydney, p. 129.

326 In jurisdictions that have implemented the National Energy Customer Framework, retailers must publish their *standing offer* prices on their website. This still applies if retail price deregulation has come into effect.

327 In South Australia and New South Wales, consumers who were on a regulated offer when retail price deregulation was announced are eligible for a transitional *standing offer* that is specified by the jurisdictional regulator. This is discussed in the appendices for these jurisdictions.

Figure J.1 Summary of approach to estimating *standing offers*



We have obtained *standing offer* prices from jurisdictional regulators, government publications and announcements, retailer pricing proposals and retailer websites. Using the fixed and variable components of these offers we have calculated a single c/kWh value using the consumption levels provided to us by the jurisdictions.[328] This process is described in Box J.1.

Box J.1 Process of calculating a single c/kWh value

Residential electricity prices are generally made up of the following structure:

- a fixed charge that applies on a daily basis and is independent of the amount of electricity consumed; and
- a variable charge (also referred to a "usage" or "energy" charge) for each unit of electricity consumed. Some retail offers have only one price for all electricity consumed whereas others are structured such that the first block of energy is charged at a different price to subsequent blocks.

We report on prices in terms of a single c/kWh figure that includes both the fixed and variable charges. The steps involved in calculating this are as follows:

- multiply the variable charge by the amount of electricity (in kWh) that is consumed in each block of the tariff in each quarter of the year;
- multiply the fixed daily charge by the number of days in the quarter;
- sum the fixed and variable results from each quarter to obtain an annual total cost; and
- divide the annual total cost by the average annual consumption to obtain a single c/kWh value.

328 Fixed charges typically apply on a daily basis and are independent of the amount of electricity consumed. Variable charges apply for each unit of electricity consumed.

The single c/kWh value is specific to the consumption level and quarterly consumption profile, as discussed in Chapter 4.

For 2013/14 and 2014/15, *standing offer* prices for the jurisdictions that have regulated prices are based on those that were published by governments or jurisdictional regulators. For Victoria and South Australia, where *standing offer* prices are set by retailers, we have only collected *standing offer* prices for 2013/14. Our methodology for doing this is the same as for the *market offers*, which is explained below.

Retail price deregulation has only commenced in New South Wales as of 1 July 2014 and, consistent with our approach to Victoria and South Australia, we have not estimated a deregulated *standing offer* price for 2014/15. There is, however, a transitional offer for consumers who were on the regulated offer immediately prior to retail price deregulation. This transitional offer applies in 2014/15 and 2015/16.[329]

A transitional offer also applies until the end of December 2014 for South Australian consumers who were on the *standing offer* at the time that retail price deregulation was announced.[330]

Our data sources for *standing offer* prices are summarised in Table J.2 below.

Table J.2 *Standing offer* data sources

Jurisdiction	Data source	Explanatory note
Queensland	Queensland Competition Authority	Tariff 11, the most common tariff for residential consumers, used for 2013/14 and 2014/15.
New South Wales	Independent Pricing and Regulatory Tribunal	For 2013/14 only.
Australian Capital Territory	Electricity retailer	ActewAGL Home plan used for 2013/14 and 2014/15.
Victoria	Electricity retailers	Offers collected in September 2013 and March 2014. Averaged for 2013/14.
Tasmania	Office of the Tasmanian Economic Regulator	2013/14 and 2014/15 calculated using Aurora's approved retail pricing proposals for the 2013 Standing Offer Determination.
South Australia	Electricity retailers	Offers collected in February 2014.

329 The transitional offer for eligible consumers in New South Wales is for a 1.5 per cent discount in 2014/15 and will increase by no more than inflation in 2015/16.

330 The transitional offer for eligible South Australian consumer is 9.1 per cent lower than the residential standing contract price in December 2012. These prices will be fixed for two years, until 31 December 2014, except for changes to network charges, carbon, renewable and energy efficiency scheme costs.

Jurisdiction	Data source	Explanatory note
Western Australia	Electricity retailer and Western Australian Government	Synergy Home Plan (A1) tariff for 2013/14 and 2014/15. Remaining years based on trend specified in 2014-15 Budget Papers.
Northern Territory	Northern Territory Government	Government Pricing Orders and other announcements for 2013/14 and 2014/15.

Estimates of future trends in *standing offer* prices for the years where published *standing offers* are unavailable have been determined according to the expected movements in the underlying supply chain cost components. An exception to this is the Northern Territory where we have assumed that prices will increase in line with inflation of 2.5 per cent after 31 December 2015 as prices are set by the Northern Territory Government and do not necessarily follow cost trends.

When *standing offer* prices are based on the underlying supply chain costs, the prices are calculated as the aggregate, for a specific year, of the estimated wholesale energy cost, regulated network costs, and environmental policy costs, plus the inflation-adjusted residual from the base year (2013/14). The residual is the amount that is left over when the estimated costs (wholesale energy, networks and environmental policies) for 2013/14 are subtracted from the 2013/14 *standing offer* price.

The residual can be thought of as being a proxy for the retail component as this is the main cost that remains after taking the *standing offer* price and excluding all costs that occur up the supply chain (wholesale and network) and externally imposed environmental policy costs on retailers. However, as it is a residual, the retail component includes any errors, positive or negative, in our estimates of the other supply chain components. This is explained further in the section on competitive market costs.

J.3 Representative *market offers*

Market offers are electricity contracts determined by retailers in the competitive market, in accordance with a regulated set of minimum terms and conditions. This is in contrast to *standing offer* contracts where the terms and conditions, and in some jurisdictions the price, are determined by either governments or jurisdictional regulators.

In 2012, the COAG Energy Council terms of reference were revised so that the AEMC is to now report on *market offer* prices where practicable.[331] Accordingly, this is the second year in which we report on *market offers* for consumers in Queensland, New South Wales, Victoria and South Australia.[332]

331 The terms of reference are available from the AEMC website.

332 Our analysis did not include the ACT because until recently there were only two active retailers in this market and the offers available are very similar; approximately 19 per cent of consumers are on

For this report, we have calculated *market offer* prices for the base year of the reporting period, which is 2013/14. These 2013/14 prices have then been used to extrapolate future price trends, according to estimated movements in the underlying supply chain cost components. The 2013/14 representative *market offer* prices were estimated using retailer data and information supplied to the AEMC. We requested retailers to nominate their lowest, generally available *market offer* for each distribution network region where they were active as of 1 February 2014. The retailers who responded to our data request represent 99 per cent of consumers in the regions that we are reporting on.

In Victoria, *market offers* change on a calendar year basis, in conjunction with changes in the costs of the regulated networks. To account for this we have collected offers from retailers active in Victoria in September 2013 and February 2014. The 2013/14 *market offer* for Victoria is the average of these.

For *market offers* to be included in our analysis, they were required to meet a number of conditions. These were that the offer had to be:

- available to all residential consumers in the relevant distribution region;
- a single price, inclining block or seasonal block structures (i.e. not time-varying); and
- published, either on the retailer's website or a generally available comparator website (e.g. the AER's Energy Made Easy website).[333]

Retailers typically offer discounts that may be tied to contract length, timely payments or using specific payment options (for example, direct debit and online payment). In our analysis, we have assumed that all discounts are awarded and that no penalties are incurred. We have not attempted to assign a monetary value to non-monetary incentives (such as gift vouchers).[334]

As with *standing offers*, *market offers* have the same pricing structure and hence typically feature both a fixed daily rate and a variable rate that applies to the amount of electricity that is consumed. These are used to calculate a single c/kWh value, as described in Box J.1.

A single c/kWh value was calculated for all of the retailer's offers collected. Then, for each network region, we took all of the c/kWh values and weighted them by the market share of the respective retailers to calculate an average rate for each network region. For New South Wales and Victoria, where there are multiple network regions, we weighted the network region rates by the proportion of consumers in each network region to obtain a jurisdictional average. This process is illustrated in Figure J.2 below.

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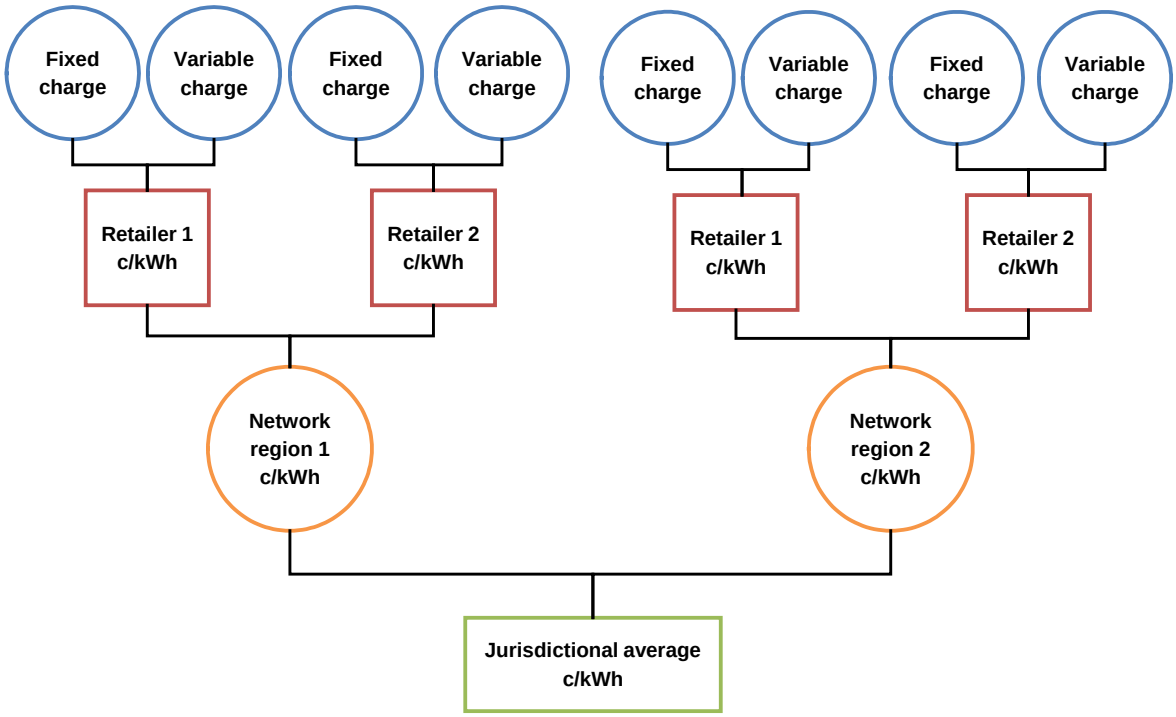
a *market offer*. In Tasmania, full retail competition was introduced on 1 July 2014 for residential consumers; however, no alternative retailers have entered the market yet.

333 http://www.energymadeeasy.gov.au/

334 Discounts are discussed in Chapter 4.

Figure J.2 Process of calculating jurisdictional average



For the remaining years of the reporting period, 2014/15 to 2016/17, our estimates of *market offer* prices are based on movements in the underlying cost stack components. Future prices are calculated as the aggregate, for a specific year, of the estimated wholesale energy cost, regulated network costs, environmental policy costs, plus the inflation-adjusted residual from the base year (2013/14). The residual is the amount that is left over when the estimated costs (wholesale energy, networks and environmental policies) for 2013/14 are subtracted from the 2013/14 representative *market offer* price.

The difference in how we have calculated future movements in *market offer* prices and future *standing offer* prices (where this is no retail price determination) is that the *market offers* are based on the absolute value of the modelled wholesale energy costs, whereas standing offer prices are based on the trend in the modelled wholesale energy costs. This is to avoid a step-change in this cost component if there is a difference (in absolute terms) between the wholesale energy costs calculated by the jurisdictional regulator in their price determination and those estimated by Frontier Economics for this report.

J.4 Electricity supply chain cost components

In our reporting on the supply chain cost components, we have grouped these components into the following segments:

- The *competitive market* sector for the purchase of wholesale electricity and the retail sale of electricity. Wholesale electricity costs include purchases from the spot market and financial hedging contracts, ancillary services, market fees and energy losses from transmission and distribution networks. The retail component

captures all of the costs that arise from retailing electricity and marketing to customers, as well as any return to the owners of the retailer for investing in the business. For most jurisdictions we do not report separately on the wholesale energy and retail components.

This terminology is most appropriate to the mainland states of the National Electricity Market (NEM) where there is competition between firms in the generation and retail sectors.

- The *regulated network* sector transports electricity from the location where it is generated to where it is consumed. Regulated network costs refer to the costs associated with building and operating transmission and distribution networks, including a return on capital and metering costs. These costs are regulated by the Australian Energy Regulator (AER) in the NEM, the Economic Regulation Authority in Western Australia, and the Utilities Commission in the Northern Territory.

- *Environmental policies*, introduced by Commonwealth and/or state and territory governments. There are a number of environmental policies or programs that directly impact or integrate with the electricity market. These include the Renewable Energy Target and the various state and territory feed-in tariff and energy efficiency schemes.[335] The carbon pricing mechanism was included only in the base year of the reporting period (2013/14).

In the following sections we discuss our approach to estimating the supply chain costs for the mainland NEM jurisdictions. The other jurisdictions - Tasmania, Western Australia and the Northern Territory - are covered in Chapter 3 and the jurisdictional appendices. All costs are reported on in c/kWh terms, in accordance with the terms of reference from the COAG Energy Council. The supply chain cost components are reported on separately in the jurisdictional sections and also inform our analysis of future trends in the representative *market* and *standing offers*.

J.4.1 National Electricity Market

The NEM is the interconnected power system that services the eastern state and territories of Queensland, New South Wales, ACT, Victoria, Tasmania and South Australia. A brief overview of the NEM is provided in Box J.2. A similar methodology has been used to estimate the supply chain costs in these jurisdictions (with the exception of Tasmania).

335 The Renewable Energy Target comprises the Large-scale Renewable Energy Target and the Small-scale Renewable Energy Scheme.

Box J.2 National Electricity Market

The NEM is the interconnected power system that covers New South Wales, Victoria, Queensland, South Australia, Tasmania and the ACT.

The NEM is an energy-only market where all electricity is traded through a central clearing mechanism. There are five market regions, corresponding to one region for each of the jurisdictions listed above (with the exception of the ACT, which is included in the New South Wales region). For each region, a price is calculated for each five minute interval, based on generator bidding and electricity demand.

In 2012/13, there was 48,154 MW of total installed generation capacity and 188 terrawatt-hours (TWh) of electricity was supplied to around 9.4 million consumers (of which 8.3 million were residential consumers). Around 75 per cent of the energy generated in the NEM was produced by coal-fired generation, 13 per cent by gas-fired generation and 9 per cent by hydroelectricity. Wind generation is the primary non-hydro renewable and currently provides around 3 per cent of total energy generated.[336]

In 2013/14, the average regional prices ranged from $42 per MWh in Tasmania to $68 per MWh in South Australia.[337] In any five minute interval, prices can be set between the market price cap ($13,500 per MWh in 2014/15) and the market price floor (negative $1,000 per MWh). To manage potential price volatility, market participants hedge risk via secondary contract markets and/or vertically integrate retail and generation activities.

The main governance institutions in the NEM are:

- The Australian Energy Market Commission (AEMC) is the institution responsible for developing changes to the National Electricity Rules and providing market development advice to the Council of Australian Governments' Energy Council.
- The Australian Energy Regulator (AER) is responsible for the economic regulation of electricity distribution and transmission networks. The AER also has compliance responsibilities under the National Electricity Rules and National Energy Retail Rules.
- The Australian Energy Market Operator (AEMO) operates the power system and is responsible for long term planning, including forecasting demand and supply scenarios and network development.

All of the governance institutions are guided by the National Electricity Objective, as stated in the National Electricity Law, which is:

336 ESAA, *Electricity Gas Australia 2014*.

337 AER industry statistics, available at https://www.aer.gov.au/node/9756

> "to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to – price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the national electricity system."

Competitive market

As noted above, the competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers.

Wholesale energy costs

Our wholesale energy cost estimates are based on modelling that was undertaken by Frontier Economics.[338] We have used these costs in calculating *market offer* prices. In jurisdictions that have a regulated *standing offer* price, we have used the wholesale energy costs from published price determinations and then escalated the prices in future years by the trend in Frontier's modelled wholesale energy costs.

The wholesale energy costs include modelled spot prices, hedging costs, market fees and ancillary service costs.

Modelling of the **wholesale spot prices** involves forecasting supply and demand conditions in the market and the strategic bidding behaviour of market participants. Importantly, the prices are correlated to assumed residential load shapes to properly capture the risks faced by retailers. In the base case of the modelling, the key assumptions are:

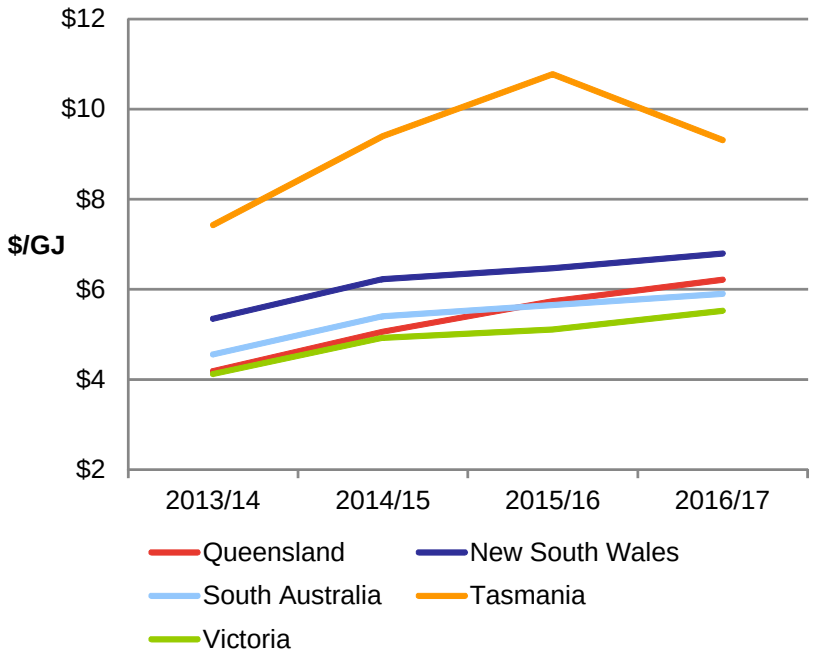
- Electricity demand consistent with the medium scenario from the Australian Energy Market Operator's 2014 National Electricity Forecasting Report and the low scenario from the Western Australian Independent Market Operator's 2013 Electricity Statement of Opportunities.
- The repeal of the carbon pricing mechanism from 1 July 2014.
- The current legislation of the Renewable Energy Target.
- Fuel prices based on Frontier's modelling and analysis of the Australian gas and coal markets. The forecasts are specific to each power station and thereby account for factors including coal mine ownership arrangements, exposure to international commodity prices and the operational regimes of gas-fired generators.

  An important variable for future gas prices is the scale of the liquefied natural gas (LNG) export facilities in Gladstone. In the base case Frontier assume that

338 Frontier's approach is explained in their wholesale modelling report which is available from the Price Trends project page on the AEMC website.

there will be six LNG export trains developed during the modelling period, with gas prices on the east coast ranging between $4 and $6 per gigajoule (GJ) in 2013/14 and increasing over the reporting period (see Figure J.3).

Figure J.3 Forecast gas prices used in base case of wholesale modelling



Source: Frontier Economics' report on wholesale energy cost modelling, accessible via the Price Trends project page on the AEMC website.

Potential generator retirements from the market play a role in determining future wholesale spot prices. Other things being equal, retirements will act to reduce supply in the market, offsetting to some extent the additional renewable energy capacity brought on by the Renewable Energy Target, and potentially lead to higher whole spot prices that could flow through to retail prices. It was assumed that only coal-fired plant older than 20 years would be able to be retired in the modelling.

Retailer's **hedging costs** will depend on the specific hedging strategy adopted by a retailer, which in turn depends on its expectations of future price volatility and its appetite for risk. A single hedging strategy was assumed across all regions. This involved the purchase of peak and off-peak swap contracts to cover a fixed proportion of the assumed load on a quarterly basis and cap contracts to cover the remaining load. Frontier has assumed that contract prices represent a 5 per cent premium on spot prices for all retailers.

This contract premium value was established based on initial analysis of spot and contract price data over 2006/07 as part of Frontier Economics' advice to IPART's 2007 retail price determination. In practice, there is no single percentage or absolute contract premium value that applies exactly to all retailers in all markets at all times. Expectations around both the level and volatility of spot and contract prices evolve over time and differ by region.

Both the **market fess and the ancillary service costs** were estimated by Frontier Economics. Market fees are charged to market participants in order to recover the cost of operating the market. Ancillary services are those services used by the market operator to manage key technical characteristics of the power system. Frontier make note of the specific components on these costs in their wholesale modelling report.

For the NEM, Frontier used the Australian Energy Market Operator's estimated market fees for the years they were available and escalated the value in the final available year by inflation for the remaining years when necessary. The SWIS market fee for 2013/14 was escalated by inflation for the remaining years of the reporting period.

Ancillary services costs for the NEM jurisdictions were based on the average of historical costs. Costs for the SWIS are based on an inflation-adjusted estimate from the Independent Market Operator.

Retail component

The retail component is not directly observable and we have calculated this as the residual when all of the non-retail cost components are subtracted from the representative *market offer* price in 2013/14 (this is shown in Figure J.4). By the nature of using this residual method, the retail component also includes any errors, positive or negative, in our estimates of the other supply chain cost components. For example, if the wholesale contracting premium is more than 5 per cent, then this method of calculation would overestimate the size of the retail component

Figure J.4 Graphical representation of residual method

In aggregate, the retail component consists of the retailer operating costs (OPEX), customer acquisition and retention costs (CARC), return for investing in the business, and any errors in the other supply chain cost components, as shown in Figure J.5.

Figure J.5 Graphical representation of retail component

As the retail component is derived in aggregate, we do not report on the individual sub-components shown in Figure J.5. Importantly, this means that our reported retail component is not equivalent to the profit earned by retailers. Further, the retail component is only estimated for a single point in time. Retail markets are dynamic and retailers will respond to changes in costs and competitive dynamics over time.

For all NEM jurisdictions we have derived a retail component for 2013/14 and escalated this retail component by an inflation rate of 2.5 per cent for the remaining years of the reporting period. For the jurisdictions that still have retail price regulation (in the NEM these are Queensland, Tasmania and ACT), we have used the retail allowances that have been set by the jurisdictional regulators in their retail price determinations.

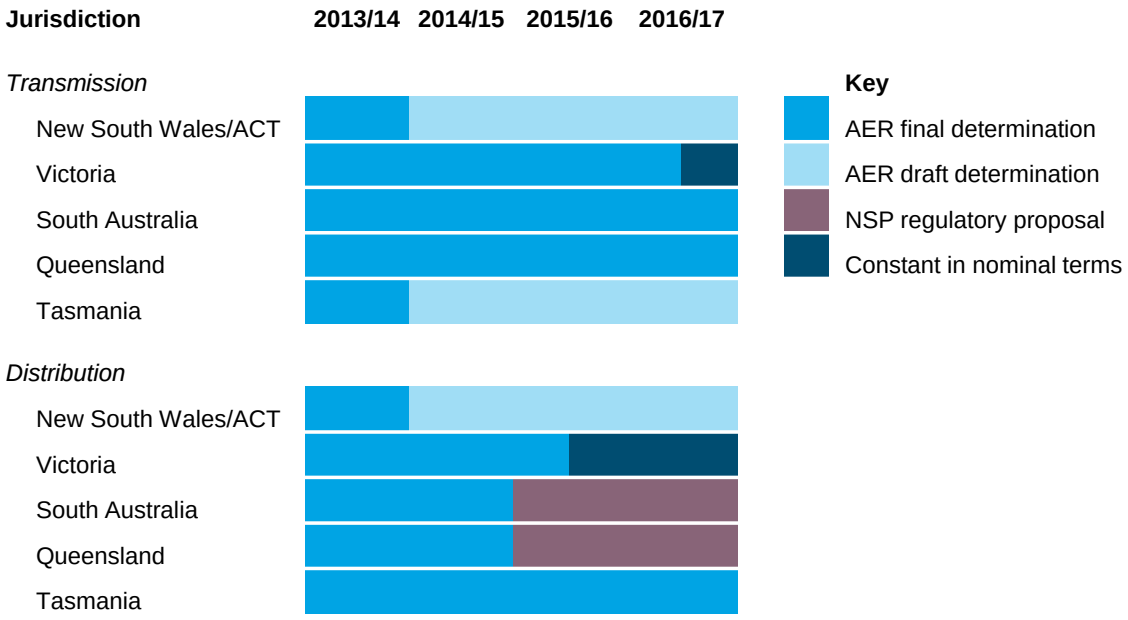
Regulated networks

Transmission and distribution networks in the NEM are regulated by the AER. The AER makes determinations that set out the revenue that network business are allowed to recover during the regulatory period. There is then some flexibility in how network businesses structure their prices in any particular year to recover their total revenue. Currently, network businesses typically publish their prices shortly before they come into effect. We have used these published prices for the years in which they are available (2013/14 and 2014/15).

In future years, where a determination has been made by the AER, network costs are escalated by the trend indicated in this determination. This trend may differ from actual cost outcomes depending on how network businesses structure their prices, and if there are any cost pass-through events for allowable costs that were unforeseen at the beginning of the regulatory period.

Where the current AER determination ends before for the final year of our reporting period, we have used regulatory proposal from the network businesses where possible, or otherwise kept network prices constant in nominal terms. The cases in which we have done this are indicated in Figure J.6.

Figure J.6 Summary of approach to estimating network costs



Note: NSP = network service provider.

Network businesses submit regulatory proposals to the AER ahead of new regulatory periods. The AER evaluates these proposals and runs a consultation process that ends with a final determination to apply for the upcoming regulatory period. Where applicable, we have used the network cost trend indicated by regulatory proposals as this is the best information currently available. However, we acknowledge that the AER's final determination, and thereby the actual prices outcomes for consumers, may differ.

For years where there was no AER determination or regulatory proposal we have kept network prices constant in nominal terms. In previous report, we have escalated unknown network prices by the rate of inflation. However, in the upcoming regulatory period we expect that the regulated rate of return, which has a big impact on the prices for consumers, will be lower in comparison to the previous regulatory period.[339]

Based on this, and our assessment of potential trends in peak demand growth and network investment, we consider that increases in line with inflation may overestimate future network prices. Instead, a constant nominal assumption has been used.

The regulated network prices were separately determined for each distribution region. In jurisdictions with multiple distribution regions, these values were then weighted by the share of total residential consumers in each distribution region, to provide a state-wide, representative transmission and distribution cost estimates for each year in c/kWh terms.

Environmental policies

A collection of schemes have been introduced by the Commonwealth and state governments to achieve greenhouse gas emission reductions and other objectives.[340] Throughout this report we group these schemes together as environmental policies. The costs of the schemes that apply, or previously applied, on a national basis were estimated by Frontier Economics. This includes the costs of the carbon pricing mechanism and the Renewable Energy Target. Jurisdictional scheme costs were generally provided to us by jurisdictional government.

Our approach is to include scheme costs for the duration that the schemes have been legislated. In some cases, schemes are legislated to end during the reporting period and it is unknown whether or not the schemes will continue. Where this occurs we have not attempted to quantify the costs for the unknown years.

Carbon pricing mechanism

From 1 July 2012 to 30 June 2014, a price on carbon emissions applied to most sectors of the economy, including electricity generation. During this time, the carbon price was a

339 The potential impact is demonstrated in NERA, 2012, *Analysis of Key Drivers of Network Price Changes*, A report prepared for the Energy Networks Association (ENA), 16 April 2012, pp7-9.

340 Other objectives include to encourage investment, support employment and make energy efficiency measures more affordable.

fixed price that started at $23 per tonne of carbon dioxide emission in 2012/13 and increased to $24.15 per tonne in 2013/14. As the carbon price has been abolished, 2013/14 is the only year of the reporting period where this cost is incurred by consumers.

Costs associated with the carbon pricing mechanism were estimated by Frontier Economics. Frontier's methodology to estimate the costs of the carbon pricing mechanism involved running the same model with and without a carbon price. The costs of the scheme were then calculated as the difference between these two scenarios.

In general, carbon costs are higher in jurisdictions where a higher proportion of electricity is generated by coal-fired generators. However, actual costs will depend on the fuel source and technology type of generators, consumer load shapes and market outcomes. The interconnection between the regions of the NEM is also an important factor.[341]

Renewable Energy Target

The Renewable Energy Target consists of two components: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). The costs of both of these schemes have been estimated by Frontier Economics based on the current legislation of an LRET of 41,000 GWh by 2020.

Scheme costs are assumed to be the same across all jurisdictions because both schemes involve certificates that can be traded on a national basis. Therefore, all liable entities, in theory, have access to the same certificate price.[342]

The trends in the LRET are based on assumptions about the percentage of renewable energy that will be required and the resource costs of obtaining certificates. Similarly, SRES costs are also based on a renewable energy percentage and estimates of the certificate prices. The Clean Energy Regulator sets the renewable energy percentages for both schemes.[343]

Jurisdictional schemes

Jurisdictional schemes mostly involve incentives for energy efficiency and feed-in tariffs for solar PV systems. Solar PV feed-in tariffs can be defined in terms of either net or gross electricity generation. A gross feed-in tariff means that the consumer receives a payment for all electricity generated by the solar PV system, whereas under a net feed-in tariff the consumer is only paid for the electricity generated that is in excess of the household's electricity needs and is exported to the grid.[344]

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341 These factors are discussed in detail in Frontier's report.

342 We acknowledge that in some cases certificate costs are determined through bilateral contracts. As such costs are not publically available they are not considered in this analysis.

343 Clean Energy Regulator, 'The 2014 small-scale technology percentage and renewable power percentage set,' *Clean Energy Regulator*, website update, 18 May 2014.

344 Details on the current and closed feed-in tariff schemes can be found on the websites of jurisdictional governments and electricity retailers. A summary of these schemes can be found in

Originally all solar PV feed-in tariff schemes involved payments that were in excess of the value of the electricity to the retailer. Most of these schemes have now closed and the feed-in tariffs that are currently available are either set by retailers, or determined by government's or regulators with consideration to the value of the exported electricity. When the feed-in tariff payments are set at the value of the exported electricity then the payments should have a neutral impact on electricity prices. The solar PV feed-in tariff schemes that we report on are those that involve a payment in excess of the electricity value as these can impact directly on electricity prices (depending on how the costs are recovered).

Our estimates of the jurisdictional scheme costs are based on information provided to us by the jurisdictional governments. Extra analysis was undertaken by us in several cases where scheme costs were only provided for the initial years of the reporting period.

In the case of the Queensland Solar Bonus Scheme, the scheme costs are based on assumptions from the Queensland Competition Authority as to how the historical costs of the scheme will be recovered once the new distribution network regulatory period commences in 2015/16.

The costs of the solar feed-in tariff schemes in South Australia (all paid on a net basis) were based on the trend in the jurisdictional scheme costs set out in SA Power Network's Annual Pricing Proposal for 2014/15.[345] It was assumed that the 2014/15 scheme costs would apply in the remaining years of the reporting period, with the exception of the 16 cents per kWh part of the scheme which is scheduled to end on 30 September 2016.[346]

Appendix D of the AEMC's 2014 Retail Competition Review as well as in APVI, 2014, *PV in Australia 2013*, July 2014, pp15-17.

345 SA Power Networks, 2014, *Annual Pricing Proposal 2014-2015*, 28 May 2014, p77.

346 Government of South Australia, 'Solar feed-in scheme,' *sa.gov.au* website, viewed at http://www.sa.gov.au/topics/water-energy-and-environment/energy/energy-supply-and-sources/renewable-energy-sources/solar-energy/solar-photovoltaic-systems/solar-feed-in-scheme

K Abbreviations

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
COAG	Council of Australian Governments
ENA	Energy Networks Association
ERA	Economic Regulation Authority
ESAA	Energy Supply Association of Australia
GJ	Gigajoule
GWh	Gigawatt hours
ICRC	Independent Competition and Regulatory Commission
IMO	Independent Market Operator
IPART	Independent Pricing Regulatory Tribunal
kWh	Kilowatt hours
LGCs	Large-scale generation certificates
LNG	Liquefied natural gas
LRET	Large-scale Renewable Energy Target
LRMC	Long run marginal cost
MCE	Ministerial Council on Energy
MWh	Megawatt hours
NECF	National Energy Consumer Framework
NEM	National Electricity Market
OTTER	Office of the Tasmanian Economic Regulator

QCA	Queensland Competition Authority
RBA	Reserve Bank of Australia
RCM	Reserve Capacity Mechanism
REES	Residential Energy Efficiency Scheme
SRES	Small-scale renewable energy scheme
STCs	Small-scale Technology Certificates
SWIS	South-West Interconnected System
TNSPs	Transmission Network Service Providers
VEET	Victorian Energy Efficiency Target
WACC	Weighted average cost of capital
WEM	Western Electricity Market