

**Australian Energy Market Commission**

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## **FINAL REPORT**

# 2013 Residential Electricity Price Trends

13 December 2013

**REVIEW**

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AEMC, 2013 Residential Electricity Price Trends report, 13 December 2013, Sydney

## **About the AEMC**

The Council of Australian Governments (COAG), through its then Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. In June 2011, COAG established the Standing Council on Energy and Resources (SCER) to replace the MCE. The AEMC has two main functions. We make and amend the national electricity, gas and energy retail rules, and we conduct independent reviews of the energy markets for the SCER.

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**Box 1: Note on this year's report**

The 2013 residential electricity price trends report provides information about the factors expected to drive price changes and the trends for residential electricity prices over the next three years.

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

Our assessment of prices in the report has been based on data inputs from jurisdictional governments, retailers, the AER and modelling undertaken for the AEMC.

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

Further, our assessment of representative prices in future years are sensitive to uncertainties and changes in the factors which drive prices across the electricity supply chain. These include:

- changes in average and peak demand;
- input cost changes;
- entry and exit of generation;
- changes in cost allowances in network regulatory determinations;
- approaches to retail price regulation;
- retail price deregulation; and
- changes in legislation.

## Executive Summary

This report is the fourth annual residential electricity price trends report prepared by the AEMC at the request of the Standing Council on Energy and Resources.

The report sets out, in broad terms, the drivers of price movements and trends in residential electricity prices for each state and territory of Australia over the three years from 2012/13 to 2015/16. We also consolidate these drivers and trends to provide a national summary. There is a reasonable degree of variability between the states and territories that underlies the national summary.

The drivers of price trends are based on trends occurring in the competitive wholesale and retail market sector, the regulated network sector, and resulting from government environmental policies.

The possible future price trends presented in this report are not a forecast of actual prices but rather a guide to what may drive prices, based on current knowledge, assumptions and legislation.

### Drivers of price movements

At a national level, residential electricity price increases are expected to moderate over the next three years. This national trend is largely driven by stabilising regulated network costs, and both upward and downward pressure from the costs of different government environmental policies. Competitive wholesale and retail market costs are expected to remain relatively stable.

#### *Regulated network costs*

Regulated network costs are the costs associated with building and operating transmission and distribution networks, including a return on capital. These costs currently make up about 50 per cent of the national average electricity price.

Regulated network costs are expected to increase by 4.6 per cent a year over the three years from 2012/13 to 2015/16. These increases partly reflect revenue allowances that were included in regulatory network determinations made prior to the recent network regulation rule changes, some of which continue until the end of 2015.

The increases also reflect moderation in the underlying factors which had previously driven network cost increases. These factors include the cost of capital, expectations of peak and average demand and changes to jurisdictional reliability standards.

#### *Environmental policy costs*

The carbon pricing mechanism, renewable energy target and state and territory feed in tariff and energy efficiency schemes impact on electricity prices and currently make up around 17 per cent of the national average residential electricity price.

The effect of legacy solar bonus schemes and changes in the carbon pricing mechanism are expected to have the largest impact. The costs of the renewable energy target and energy efficiency schemes are expected to remain stable over the period to 2015/16, under current policy settings.

Our assessment of carbon pricing is based on existing legislation. However, we recognise that the Australian Government has introduced legislation to remove the existing carbon pricing mechanism as at 1 July 2014.

Our analysis shows that in 2014/15, the cost of the carbon price represents 9 per cent of the national average representative residential electricity price. This value is different for each state and territory, primarily due to the emissions intensity of generators located in each jurisdiction. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15 and 2015/16.

Under the existing legislation, the carbon price will move from a fixed price to a floating price on 1 July 2015. This change is a driver of expected price decreases in most states and territories in 2015/16.

An important driver of price movements for some jurisdictions is the costs of the closed premium feed-in-tariff schemes. Generally, payments made under these schemes are recovered from all customers through distribution network charges. While these premium schemes are now closed, the payments to consumers who entered these schemes continue for many years.

#### *Competitive market costs*

Competitive market costs include wholesale energy purchase costs and the costs of the retail sale of electricity. They currently account for around 33 per cent of the national average residential electricity price.

At a national level, competitive market costs increase, on average, by 2.3 per cent over the three years from 2012/13 to 2015/16.

We did not explicitly estimate the retail component of competitive market costs. The retail component in this report is the “residual” amount between the total cost of the other supply chain components (wholesale, network and environmental policies) and the *standing* or *market offer* price.

There are differences in the level of the competitive market costs between the four states where *market offers* are available. Some differences would be expected reflecting retailers’ different wholesale energy purchase costs, the costs of operating in each jurisdiction, and differences in the consumption levels of the representative residential consumer in each jurisdiction. However, these differences appear to be larger than expected and we intend to consider this issue further as part of our 2014 retail competition review.

#### **Trends for residential electricity prices**

The national trend shows that residential prices are expected to increase on average by 1.2 per cent a year over the next three years from 2012/13 to 2015/16. This increase is less than the expected level of inflation.

Price trends and their drivers vary across jurisdictions and time. This reflects variations in population spread and density, climate, consumption patterns, tariff structure, regulation and policies for each state or territory.

For the first time, our report considers both trends for *standing* and *market offer* prices. Our analysis of trends in *market offers* covers Queensland, New South Wales, Victoria and South Australia.

In these states, residential consumers are able to shop around for the best offer from retailers. Depending on where consumers live and their electricity consumption, they may have saved between 5 and 16 per cent by switching from a *standing offer* to a *market offer* in 2012/13. Consumers can also benefit by considering their consumption profile and seeking out an offer that best reflects the way they use electricity.

In New South Wales, South Australia and the Australian Capital Territory, residential electricity prices are expected to decrease on average over the next three years. For New South Wales and the Australia Capital Territory, prices are expected to decrease by 0.7 per cent a year over the three years from 2012/13 to 2015/16. In South Australia, *market offer* prices are expected to decrease by 0.9 percent a year over the same period.

In Tasmania, Victoria and Western Australia, prices are expected to either be flat or increase by less than inflation. In Tasmania, *standing offer* prices are expected to remain stable. In Victoria, *market offer* prices are expected to increase by 1.3 per cent a year over the next three years. The trend for *standing offers* in Western Australia is a 0.7 per cent a year increase over the next three years.

In Queensland, *market offer* prices are expected to increase, on average, by 8.6 per cent a year for the three years to 2015/16. A significant part of this increase has already occurred in 2013/14. The average increase for the final two years is 6.9 per cent a year. The total increase over the three year period is mainly driven by an increase in network costs resulting from the end of the price freeze of the regulated *standing offer* and the catch up in under-recovered costs associated with the closed premium Queensland Solar Bonus scheme that are generally reflected in distribution network costs.

The average Northern Territory price increase is 6.9 per cent a year for the three years from 2012/13 to 2015/16 as prices move towards cost reflective levels.

## Overview of findings and methodology

This report provides information on the drivers of possible future trends in residential electricity prices from 2012/13 to 2015/16. The key drivers of price movements are grouped into the impacts of outcomes in competitive wholesale and retail markets, the regulated networks sector, and government environmental policies.

The focus of the report is on drivers of prices in each state and territory. Price trends vary between jurisdictions. We also provide a national level summary using a weighted average approach across jurisdictions to determine nationally indicative electricity price trends and drivers.

Our results are expressed as nominal cent per kilowatt hour (c/kWh) values. These values are GST exclusive.

The possible future price outcomes presented in this report are not price forecasts. They should be treated as providing information as to possible residential electricity price trends and their drivers, based on current knowledge and assumptions and current legislation.

We are required to report on the supply chain cost components that contribute to residential electricity prices, including costs associated with a carbon price. Our reporting of carbon pricing costs is based on existing legislation. We note that the Australian Government has introduced legislation to remove the existing carbon pricing mechanism as at 1 July 2014. In 2014/15, costs of the carbon price under existing legislation represent 9 per cent of the national average representative residential electricity price. This value differs between jurisdictions, reflecting the emissions intensity of generators located in each jurisdiction. The removal of the carbon price will reduce the prices presented in this report for 2014/15 and 2015/16.

### Key findings

Residential electricity price increases are likely to moderate over the next three years.

Network cost pressures, which were a key driver of previous price increases, are stabilising. This reflects a general moderation in the factors that have influenced historical network costs, such as previous expectations of peak demand on different parts of the networks, the impacts of the global financial crisis on the cost of capital and changes to jurisdictional reliability standards.

The biggest driver of price trends during this period – both upward and downward – is the cost of government environmental policies. The costs of these policies currently make up around 17 per cent of the national average price of electricity.

Costs associated with closed premium solar feed in tariff schemes are expected to place upward pressure on electricity prices. These costs are higher in some jurisdictions and are a key driver of price trends in Queensland. In contrast, the impact of moving from a fixed carbon price to a floating price under current legislation drives price reductions in most states and territories in 2015/16.

The result of the impact of these various drivers is that residential electricity prices in most states and territories are likely to show either very little overall change or an overall decrease between 2012/13 and 2015/16.

At a national level, the trend in prices is an average annual increase of around 1.2 per cent a year for the three years from 2012/13 to 2015/16.

Representative *market offer* prices in New South Wales and South Australia show an average annual decrease from 2012/13 to 2015/16. Representative *standing offer* prices in the Australian Capital Territory are also expected to decrease over that period.

Prices in Tasmania are expected to be reasonably flat.<sup>1</sup> In Victoria, representative *market offer* prices are expected to increase at a rate less than inflation from 2012/13 to 2015/16, reflecting increases in regulated network costs, which are a result of revenue allowances included in regulatory network determinations made prior to the recent network regulation rule changes. For Victoria these determinations continue until the end of 2015.

While the national trend shows a moderation in residential electricity prices, some jurisdictions are expected to show a greater increase. In Queensland, price trends are principally driven by the catch up in under-recovered costs associated with the closed Queensland Solar Bonus scheme. These costs are expected to result in an increase in prices each year from 2012/13 to 2015/16. In Western Australia and the Northern Territory, price trends show a gradual increase. In the Northern Territory, this increase reflects a move to implement cost reflectivity in residential electricity prices.

In those states where *market offers* are available,<sup>2</sup> residential consumers are able to shop around for the best offer. Depending on where they live and their electricity consumption, households may have saved between 5 and 16 per cent by switching from a *standing offer* to a *market offer* in 2012/13.

We also considered the effect of different household consumption levels. We examined the cost of electricity associated with low, medium and high electricity consumption households. In general, as consumption increases, the average unit cost of electricity decreases. The extent of this effect differs between jurisdictions, depending on tariff structures.

In states where *market offers* are available, households with different consumption profiles can benefit by seeking out a *market offer* that best reflects the way that they use electricity.

### **Key drivers of trends in price movements**

There are a number of cost factors that can influence trends in future residential electricity prices. These costs can be grouped into three main components.

- The *competitive market* for the purchase of wholesale electricity and the retail sale of electricity. Wholesale energy purchase costs purchases from spot markets and financial hedging contracts, ancillary services, market fees and energy losses.<sup>3</sup>

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<sup>1</sup> Our price trends for Tasmania may be affected by changes to the Retail Price Determination that are expected to be made by the Office of the Tasmanian Economic Regulator before 1 January 2014.

<sup>2</sup> This report provides trends for both representative *market offer* prices as well as representative *standing offer* prices. We have considered *market offers* in Queensland, New South Wales, Victoria and South Australia.

<sup>3</sup> The nature of wholesale costs varies between states and territories. In the National Electricity Market (NEM), retailers face costs associated with purchasing electricity from the wholesale spot

Retail costs include retail operating costs, being the direct costs that a retailer incurs in running the retail part of its business, and a return for investing in its business and the risk it assumes in providing retail services.

- The *regulated network* sector which transmits and distributes electricity to consumers. Regulated network costs cover costs associated with building and operating transmission and distribution networks, including a return on capital and the costs associated with metering. These costs are regulated by the Australian Energy Regulator (AER) in the National Electricity Market (NEM) and the Economic Regulatory Authority (ERA) in Western Australia.
- *Environmental policies* introduced by Commonwealth, state and territory governments that directly impact on the electricity market. These policies include the carbon pricing mechanism, the renewable energy target and the various state and territory feed in tariff and energy efficiency schemes.

The costs of these environmental policies are charged to residential consumers in different ways. For example, carbon costs are recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The cost of the renewable energy target and energy efficiency schemes are recovered through retail costs.

### *Competitive market costs*

Competitive market costs cover wholesale and retail market costs. Overall, these costs do not change significantly over our reporting period.

At a national level, wholesale energy purchase costs are not expected to change markedly between 2012/13 and 2015/16. In several jurisdictions including Queensland, Victoria and New South Wales, wholesale energy purchase costs are expected to show a small increase, reflecting forecasts by the Australian Energy Market Operator (AEMO) of relatively stable growth in demand in the medium term and limited new generation capacity. In contrast, in South Australia wholesale energy purchase costs are expected to show a steady decrease, reflecting increased availability of existing generation plant.

We have not explicitly estimated the retail component of competitive market costs. Instead, the retail component reflects the “residual” amount, or difference between the total of the other supply chain cost components (wholesale, network, and environmental policies) and the representative *market offer* or *standing offer*. As a result, trends in the retail component are highly sensitive to trends in the wholesale component and it is difficult to accurately separate out these two aspects of competitive market costs.

Different retailers have different strategies for managing wholesale energy purchase costs. The extent of the wholesale costs faced by an individual retailer will be

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market, ancillary services costs, energy losses and NEM fees. In Western Australia, wholesale costs relate to costs associated with bilateral wholesale supply contracts, capacity markets and net balancing markets. In the Northern Territory, wholesale costs are incurred by the vertically integrated Power and Water Corporation in generating and supplying electricity.

influenced by factors such as the retailer's approach to risk management, economies of scale and whether or not the retailer possesses physical generation assets.

As a result, we estimated a range for wholesale costs and retail costs associated with *market offer* prices in South Australia, Victoria, New South Wales and Queensland.

Our range of wholesale energy purchase costs was developed as follows:

- As a lower bound for the range, we applied a market modelling approach to estimate the costs associated with hedging a typical retailer's customer load through the purchase of contracts. Inputs to this process included modelled spot prices, contract prices (which were assumed to trade at a 5 per cent premium to expected cash flows) and the load profile to be hedged by the retailer.
- As an upper bound for the range, we used a "stand alone" or "greenfields" long-run marginal cost (LRMC) methodology. This approach estimates the cost associated with constructing a new, optimal generation system to satisfy demand in a given year, assuming that there is currently no generation to serve the required load.<sup>4</sup>

We also estimated wholesale energy purchase costs associated with the representative *standing offers* in Queensland, the Australian Capital Territory and in Western Australia. This was done for those years where there is no published *standing offer* price. The approach replicated, as closely as possible, the methodology used by the relevant jurisdictional regulator in estimating the wholesale energy purchase cost allowance.

We have found some differences in the level of competitive market costs between the four states where *market offers* are available. Differences in the level of this component for each jurisdiction would be expected and can be caused by a number of factors, including the different approaches that can be used to estimate wholesale costs, the different consumption levels used for our calculations in each state, and different retail operating costs in each state. While these considerations need to be taken into account, we consider that these differences warrant further investigation. We intend to consider this issue further as part of our 2014 retail competition review. The terms of reference of this review are still being finalised, but the review is expected to commence in January 2014. We will be seeking stakeholder feedback as part of that review, including any supporting evidence to inform our analysis.

### ***Regulated network costs***

At a national level, regulated network costs are expected to stabilise during our reporting period. Factors that influenced many previous regulatory determinations included expectations of peak demand levels, the effects of the global financial crisis on the cost of capital and changes to jurisdictional reliability standards. Many of these factors are now moderating in their effect.

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<sup>4</sup> The modelling of wholesale energy purchase costs for the relevant jurisdictions was undertaken by NERA Economic Consulting. See: NERA, *Projections of Wholesale Energy Cost*, NERA Economic Consulting, September 2013.

However, in several jurisdictions network costs show a small gradual increase between 2012/13 and 2015/16. The increase reflects revenue allowances included in previous regulatory determinations prior to the recent network regulation rule changes. Some of these regulatory determinations continue until December 2015. These allowances in turn reflect the factors that were considered by the relevant regulatory bodies when the determinations were made.

Our assessment of regulated network costs was based on regulatory determinations made by the AER for the states and territories of the NEM, and on information provided by the relevant government for Western Australia and the Northern Territory. Where there was no regulatory determination to cover our reporting period, we have escalated network costs at an assumed rate of inflation of 2.5 per cent.

A number of reform processes are underway which are designed to improve the efficiency of regulated network costs. For example, new rules made by the AEMC in November 2012 have given the AER greater discretion and more tools to determine efficient costs and revenues when undertaking network regulatory determinations. The AEMC has also commenced a rule change on the way distribution network businesses set their network tariffs. This rule change will consider how distribution businesses can be encouraged to set network tariffs in a more cost reflective manner.

### *Environmental policy costs*

Under existing legislation, Commonwealth, state and territory government environmental policy costs will place upwards pressure on prices in a number of jurisdictions, both during and after the conclusion of our reporting period.

In particular, the costs associated with premium feed in tariff schemes are expected to place upward pressure on electricity prices, despite the fact that all of these premium schemes are now closed. The costs of these closed schemes are recovered from all customers through increases to distribution network charges, with many of these closed schemes continuing to provide payments to eligible consumers for an extended period of time.

For example, the Queensland Solar Bonus scheme, which is a key driver of increases in prices in that jurisdiction, will continue to provide payments to eligible consumers until the scheme concludes in 2028. Under current policy settings, this scheme has a significant impact on price trends between 2012/13 and 2015/16, partly because take-up of this scheme exceeded forecasts, which resulted in an initial under-recovery of costs. The Queensland Competition Authority (QCA) has assumed that costs that were under-recovered in earlier years will be caught-up in 2015/16 and 2016/17.

Our assessment of environmental policy costs is based on information provided to us by state and territory governments (for the costs of feed in tariff schemes and energy efficiency schemes) and modelling (for the costs of carbon and the renewable energy target).

As discussed above, SCER's Terms of Reference require us to report on the costs associated with a carbon price. Our estimate of the cost of the carbon price has been based on modelling and takes account of existing legislation.

The Australian Government has introduced legislation to remove the carbon price as at 1 July 2014. Our analysis shows that in 2014/15, costs related to the carbon pricing mechanism represent 9 per cent of the national average representative residential electricity price. This value will differ between jurisdictions, reflecting the emissions intensity located in each jurisdiction. The removal of the carbon price will reduce the prices presented in this report for 2014/15 and 2015/16.

Under current legislation, the carbon price will move from a fixed price to a floating price on 1 July 2015. This change is a key driver of price trends in 2015/16 and contributes to expected price decreases in most jurisdictions in 2015/16.

### **State and territory key findings**

Residential electricity price trends vary across jurisdictions. These differences reflect the specific market conditions in each jurisdiction, such as the consumption level used in this report, state and territory environmental policies, regulatory determinations applying to jurisdictional network businesses and retail price regulation, where relevant.

Broader economy-wide factors will also influence residential electricity prices across jurisdictions, such as changes in the cost of capital, demand growth and input cost trends. However, the specific market conditions and regulatory arrangements in each jurisdiction mean that these factors may have different effects on residential electricity prices in each state and territory.

#### ***Queensland***

The key drivers of price trends in Queensland from 2012/13 to 2015/16 are network costs and environmental policies. These factors are likely to drive an increase in residential *market offer* prices by an average of 8.6 per cent a year for the three years from 2012/13 to 2015/16.

Prices are expected to increase at a faster rate in the first two years of this period, with the rate of increase slowing in 2015/16.

Queensland *market offer* prices are expected to increase by 12.2 per cent from 2012/13 to 2013/14. This sharp increase reflects increases in network costs and the conclusion of the Queensland government's regulated price freeze, which applied in 2012/13.

The Queensland government achieved a freeze in regulated *standing offer* prices by directing the QCA to not make a new regulated price determination in 2012/13. The Queensland government also directed the Queensland network businesses to lower their network charges in 2012/13. When the price freeze concluded, the Queensland network businesses returned their charges to cost reflective levels. When combined with increases already included in the current regulatory determination, this resulted in an apparent increase in network costs from 2013/13 to 2013/14.

From 2014/15 to 2015/16, *market offer* prices are expected to increase, on average, by 6.9 per cent a year. The main driver of this increase for these years is associated with the network businesses recouping under-recovered costs associated the Queensland Solar Bonus scheme from earlier years. On average, the total costs associated with the

scheme increase by around 104 per cent a year for the three years from 2012/13 to 2015/16.

This increase is based on analysis undertaken by the QCA. In estimating the total cost of the Queensland Solar Bonus scheme in future years, the QCA assumed a catch up of under-recovered Solar Bonus scheme costs incurred by the Queensland network businesses in 2013/14 and 2014/15.<sup>5</sup> The QCA assumed that the full catch up of these costs would take place over the years 2015/16 to 2016/17. The QCA noted that Energex has indicated it may seek to smooth this catch up across a longer time period, however, in the absence of an actual pass through application or approval from the AER, the QCA based its estimate of the future catch up of Solar Bonus scheme costs "on the basis of usual practice to date".<sup>6</sup>

Any smoothing of the catch up of these under recovered costs would reduce the extent of the increases in the Solar Bonus scheme costs that we have included in this report, although recovery of the costs of the scheme will still result in increased residential electricity prices.

Residential consumers in south-east Queensland are actively participating in the market and are able to choose from a variety of *market offers*.<sup>7</sup> Residential consumers in south-east Queensland may have saved around 5 per cent by switching from a *standing offer* to a *market offer* in 2012/13.

Currently, the QCA regulates residential *standing offer* prices in Queensland. The QCA is currently conducting a review of the regulated *standing offer* prices that will apply from 2014/15. The QCA is expected to publish a draft determination in December 2013, with a final determination to be published by May 2014. Any final decision will impact the trends for *standing offers*.

As part of its recently announced 30 year electricity strategy, the Queensland government has announced that it intends to deregulate residential electricity prices in south-east Queensland by 1 July 2015.<sup>8</sup>

### ***New South Wales***

Residential *market offer* prices in New South Wales are expected to decrease, on average, by 0.7 per cent a year for the three years from 2012/13 to 2015/16. Within this period, prices are expected to increase slightly then fall.

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<sup>5</sup> These costs were not recovered as they were not included in the AER's original regulatory determinations that applied to those businesses.

<sup>6</sup> Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, QCA, March 2013, p.59.

<sup>7</sup> Full retail competition has been extended to all Queensland residential consumers. However, residential consumers in the Ergon region, which covers the remainder of the state, typically remain on the regulated standing offer. The *market offer* and standing offer prices in this report are based on the Energex distribution area only. This reflects the Queensland uniform tariff policy, which is designed so that consumers in the Ergon distribution area pay the same regulated standing offer price as those consumers on the regulated standing offer in the Energex area.

<sup>8</sup> Queensland Government, *Queensland Government response to the Interdepartmental Committee on Electricity Sector Reform*, Queensland Government, 2013.

- *Market offer* prices show an average increase of 1.4 per cent a year for the two years from 2012/13 to 2014/15. This below inflation increase reflects small increases in wholesale energy purchase costs.
- Prices are then expected to decrease by 5 per cent from 2014/15 to 2015/16. This primarily reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

Residential consumers in New South Wales are actively participating in the market and are able to choose from a variety of *market offers*. Consumers may have saved around 9 per cent by switching from a *standing offer* to a *market offer* in 2012/13.

The NSW Independent Pricing and Regulatory Tribunal (IPART) is responsible for determining the regulated *standing offer* price in NSW. In July 2013, IPART published a regulated retail price determination which covers the period July 2013 to June 2016. IPART developed an indicative price path for the regulated *standing offer* out to 2015/16. We have used this to inform our trends for NSW *standing offer* prices for the remainder of the reporting period. The prices that we have determined may be different to those estimated by IPART. This primarily reflects input differences, such as consumption values and load profile used.

The AEMC has recently completed a review of competition in the retail electricity and gas markets in New South Wales. We found that there is effective competition in electricity retailing and consequently recommended that price regulation be removed. We considered that removing price regulation will encourage greater innovation and lead to more tailored energy products and services for consumers.

### ***Australian Capital Territory***

Residential *standing offer* prices in the Australian Capital Territory are expected to decrease, on average, by 0.7 per cent a year for the three years from 2012/13 to 2015/16. Prices are expected to show a small increase at the start of this period, and then fall in 2015/16.

- *Standing offer* prices are expected to show an annual average increase of 3.1 per cent a year for the two years from 2012/13 to 2014/15. A major driver of this trend is a 10 per cent increase in the cost of distribution networks in 2013/14. This increase in network costs reflects revenue allowed under the existing regulatory determination for augmentations to the network to maintain reliability of supply and to replace ageing assets.
- Prices are then expected to decrease by 8.3 per cent from 2014/15 to 2015/16. This decrease primarily reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

As over 80 per cent of residential consumers in the Australian Capital Territory remain on the regulated *standing offer* with ActewAGL, this report focuses on trends in the representative *standing offer* price.<sup>9</sup> The Independent Competition and Regulatory Commission (ICRC) is responsible for determining the regulated *standing offer* price in

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<sup>9</sup> Although most customers remain on the regulated *standing offer*, other products are available, including discounts from the *standing offer* price where electricity is bundled with other services.

the Australian Capital Territory. The ICRC has published regulated *standing offer* prices for 2012/13 and 2013/14. However, at the time of publication, no regulated *standing offer* price had been published for 2014/15 and 2015/16.

To develop trends of future movements in this *standing offer* price, we undertook modelling that sought to replicate the approach taken by the ICRC in determining the regulated wholesale energy cost. This modelling was used to trend forward the ICRC's regulated *standing offer* price out to 2015/16.

### **South Australia**

Residential *market offer* prices in South Australia are expected to decrease, on average, by 0.9 per cent a year for the three years from 2012/13 to 2015/16.

Within this period, prices decreased slightly between 2013 and 2013/14 and then expected to increase, on average, by 2.2 per cent between 2013/14 and 2014/15. This increase is, primarily due to increases in distribution network costs under the current regulatory determination, which expires on 30 June 2015. These increases were included by the AER to address forecast increases in peak demand over the current regulatory period.

This increase in distribution network costs is partly offset by decreases in the South Australian wholesale energy purchase cost throughout the reporting period. This primarily reflects assumptions regarding the increased availability of existing generators.

*Market offer* prices are then expected to decrease by 4.1 per cent from 2014/15 to 2015/16. This primarily reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

*Standing offers* are expected to be relatively flat over the three year reporting period, increasing, on average, by 0.3 per cent a year for the three years from 2012/13 to 2015/16.

As part of the process of deregulation, the South Australian government and AGL negotiated a "transitional *standing offer*" which applied to all customers on the *standing offer* as at 31 January 2013. These customers received a discount of 9.1 per cent from the regulated *standing offer* price that applied at 31 December 2012. AGL has committed to retaining this discounted rate for a period of two years, subject to changes in regulated network costs and environmental policy costs.

Residential consumers in South Australia are actively participating in the market and are able to choose from a variety of *market offers*. Around 80 per cent of South Australian residential consumers have already switched from a *standing offer* to a *market offer*. Our analysis shows that consumers in South Australia may have saved around 9 per cent by switching from a *standing offer* to a *market offer* in 2012/13.

### **Victoria**

Residential *market offer* prices in Victoria are expected to increase, on average, by 1.3 per cent a year for the three years from 2012/13 to 2015/16. Within this period, prices are expected to increase over the first two years and then decrease in 2015/16.

- *Market offer* prices are expected to increase, on average, by 4.3 per cent a year for the two years from 2012/13 to 2014/15. The main driver of this is distribution network cost increases in the current regulatory determination, which expires on 31 December 2015. These increases were included by the AER to address forecast increases in peak demand, asset replacement and to address new safety related obligations.
- Prices are then expected to decrease by 4.9 per cent from 2014/15 to 2015/16. This decrease reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

As noted above, the competitive market component in Victoria appears to be significantly higher than in the three other states with *market offers* and we intend to consider this issue further as part of our 2014 retail competition review.

All retailers in Victoria are required to publish a *standing offer* for each distribution area in which they are active. *Standing offer* prices are expected to follow a similar trend to *market offer* prices over our reporting period.

Residential consumers in Victoria are actively participating in the market, with around 80 per cent of Victorian residential consumers having switched from a standing to a *market offer*. We found that consumers in Victoria may have saved around 16 per cent by switching from a *standing offer* to a *market offer* in 2012/13.

The Victorian retail market demonstrates a substantial degree of product differentiation. Retailers are offering a wide range of tariff products, with marked differences in terms of the effect on the price consumers pay for electricity depending on their consumption level and profile. This allows a consumer to choose a product that is most likely to suit their circumstances.

The rollout of enabling technologies (such as smart meters) throughout Victoria is likely to facilitate further innovation and the development of new *market offer* products and services for consumers. For example, as of 1 July 2013, Victorian consumers with a smart meter have the option of choosing to move to flexible pricing. Flexible pricing typically includes different rates for consumption at different times of the day.

### *Tasmania*

Residential electricity prices in Tasmania are currently regulated. However, the Tasmanian government has announced that full retail competition will be extended to residential consumers from July 2014.

The Office of the Tasmanian Economic Regulator (OTTER) is responsible for setting the regulated *standing offer* price in Tasmania. In 2013, OTTER published its 2013 Retail Price Determination, which provides an indicative representative *standing offer* price out to 2015/16. We have used this as the basis of our estimation of future representative *standing offer* prices in Tasmania.

OTTER has proposed changes to the 2013 Retail Price Determination with effect from 1 January 2014. Those changes are likely to affect the accuracy of the price trends contained in this report. However, as those changes were not confirmed at the time of publication, our analysis is based on OTTER's earlier determination.

Under OTTER's 2013 Retail Price Determination and retail pricing proposals issued by the Tasmanian Government, the representative *standing offer* price will decrease by around 5.2 per cent on 1 January 2014.

For the remainder of our reporting period, the representative *standing offer* price does not show any marked change. While wholesale costs are expected to decrease from 2012/13 to 2015/16, network costs increase across the same period. The net effect of these interactions is a relatively stable representative *standing offer* price across the reporting period.

### ***Western Australia***

Representative *standing offer* prices in Western Australia are expected to increase, on average, by 0.7 per cent a year for the three years from 2012/13 to 2015/16. As in several other states and territories, prices are expected to increase for the first two years of this period and then fall in the final year.

- Representative *standing offer* prices are expected to increase, on average, by 2.3 per cent a year for the two years from 2012/13 to 2014/15. The main driver of this is increases in distribution network costs.
- Prices are then expected to decrease slightly in 2015/16, reflecting the move from a fixed carbon price to a floating carbon price under existing legislation.

Since 2009, residential electricity prices in Western Australia have been increasing. *Standing offers* do not currently reflect the full cost of supplying and delivering electricity to consumers.

Residential consumers in Western Australia are supplied electricity through either the South West Interconnected System (SWIS), the two regional interconnected systems<sup>10</sup> or via one of 34 small standalone systems. The SWIS is the only one of these systems which supports a competitive wholesale market.

The Western Australian government has a uniform tariff policy which means that all Western Australian residential consumers pay the same price for electricity as residential consumers in the SWIS. Our assessment of prices and cost components is therefore based on the SWIS.

Residential electricity prices in Western Australia are currently set by the Western Australian government. Full retail competition has not been extended to residential consumers, and a single retailer, Synergy, is required to offer supply to all residential consumers.

To develop future trends in the representative *standing offer* price, we developed a stand-alone LRMC approach to estimate wholesale energy costs out to 2015/16. This approach is consistent with that used by the Economic Regulation Authority (ERA) for determining wholesale energy purchase costs for the SWIS.

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<sup>10</sup> The two small interconnected systems include one in the Pilbara, referred to as the North Western Interconnected System (NWIS) and one that connects the towns of Kununurra and Wyndham.

## *Northern Territory*

Representative *standing offer* prices in the Northern Territory are expected to increase, on average, by 6.9 per cent a year for the three years from 2012/13 to 2015/16. The rate of increase is highest in the first year of this period.

- Representative *standing offer* prices increased by 11.8 per cent from 2012/13 to 2013/14.
- Prices are then expected to show an annual average increase of around 4.4 per cent a year for the two years from 2013/14 to 2015/16.

These increases reflect the move to cost reflectivity in Northern Territory residential electricity prices.

Electricity prices are determined by the Northern Territory government, which sets prices via Electricity Pricing Orders. Residential electricity prices in the Northern Territory are not currently cost reflective. The Northern Territory government has announced a number of increases to the *standing offer* price to bring these tariffs closer to cost reflectivity.

Residential electricity supply is provided in the Northern Territory through three separate, regulated systems that supply the regions of Darwin/Katherine, Alice Springs and Tennant Creek, together with a large number of stand-alone systems that supply remote communities.

The Northern Territory government has a uniform tariff policy which means that all Northern Territory residential consumers pay the same tariff as those consumers in the Darwin Katherine system. Our assessment of prices and cost components is therefore based on the Darwin Katherine area.

Supply of electricity in the Northern Territory is predominantly provided by the vertically integrated Power and Water Corporation (PWC). While full retail competition has been extended to residential customers, PWC remains the only provider who is retailing electricity to residential consumers.

The Northern Territory Government has announced regulatory reform of the energy sector. This reform process includes a restructure of PWC from July 2014, to separate its monopoly and competitive businesses into stand-alone government owned corporations with separate boards.

### **Factors that may affect price trends over the reporting period**

Our future price trends are based on a number of assumptions regarding future outcomes.

Actual outcomes may differ from our expected price trends. For example, we have assumed a certain level of demand growth and future fuel costs in order to estimate future movements in wholesale prices. Similarly, we have assumed that price paths included in current retail price determinations will reflect the future decisions made by regulators, despite the fact that jurisdictional regulators have the discretion to make decisions which may be quite different to those included in current decisions. Any change in these kinds of variables will mean that actual outcomes will be different to our reported price trends.

The following are some of the key areas where future outcomes may be different to the assumptions we have made in our analysis. Any changes in these key areas may affect our reported price trends outcomes.

- **Changes in demand:** Over the last few years, demand has fallen, which has generally resulted in relatively low wholesale market prices. A continued reduction in demand will continue to place downward pressure on wholesale energy purchase costs.
- **Input cost changes:** Changes in input costs, such as fuel, resource costs and labour, may influence both regulated network businesses and businesses in the competitive market sector of the supply chain.
- **Entry and exit of generation:** In recent years there has been high levels of investment in renewable generation while at the same time there have been a number of coal power plants that have, temporarily or permanently, ceased operation. Future changes in generation supply may affect wholesale energy purchase costs.
- **Changes in cost allowances in network regulatory determinations:** Changes will occur as each network starts a new regulatory control period. While we have provided some commentary on the key input cost trends likely to affect future regulatory determinations, it is not possible to determine future regulatory decisions.
- **Approaches to retail price regulation:** Any changes in the approach and methodology utilised by jurisdictional regulators will influence future regulated *standing offer* prices in that jurisdiction.
- **Deregulation:** Deregulation of retail markets may influence both *standing offer* and *market offer* prices. Any future moves to retail price deregulation by jurisdictional governments may therefore influence prices in that jurisdiction.
- **Changes in legislation:** This report is based on current legislation. Costs and prices may be affected by changes to Commonwealth, state or territory legislation, in particular any changes that impact the environmental policies covered in this report.

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# 1 Introduction

## 1.1 Purpose of this report

This report aims to provide information on the drivers of possible future trends<sup>11</sup> in residential electricity prices for each state and territory across Australia to 2015/16. The key drivers of price movements are based on trends occurring in the competitive wholesale and retail market sector, regulated networks, and government environmental policies.

This is the fourth annual residential electricity price trends report published by the AEMC. It is prepared at the request of the Standing Council on Resources and Energy (SCER) on behalf of the Council of Australian Governments.<sup>12</sup>

The information provided in the report seeks to strengthen consumer participation in the electricity market by providing information about the drivers of potential future trends in residential electricity prices.

## 1.2 SCER Terms of Reference and general approach

SCER provided the AEMC with a revised Terms of Reference for this report.<sup>13</sup> The 2013 report is different from previous years, as the AEMC is required to cover both *standing offers* and *market offer* price trends. This year's report also considers different levels of consumption by residential consumers and the likely impact on average prices. We discuss our approach for this work in section 1.2.3.

In accordance with the SCER Terms of Reference, this report provides both standing and market offer prices, expressed as a single “average” nominal cents per kilowatt hour (c/kWh) value. This is based on a representative set of residential consumers for each state and territory.<sup>14</sup>

As in previous years, we also provide a breakdown of the relevant supply chain cost components that contribute to residential retail electricity prices. These are also expressed as a c/kWh value for each state and territory.

Using 2012/2013 as the base year, possible trends in residential retail electricity prices have been examined for each year to 2015/2016 (the reporting period). Our outcomes

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11 The possible future price outcomes presented in this report are not price forecasts. They should be treated as providing information as to possible retail pricing trends and drivers, based on current knowledge and assumptions.

12 The Council of Australian Governments at its 30 April 2009 meeting tasked the then Ministerial Council for Energy (MCE) to provide it with three reports detailing possible future trends in residential electricity prices for each state and territory of Australia: see Communiqué, 30 April 2009, [www.coag.gov](http://www.coag.gov). 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 reports for 2011 and 2012. Copies of these reports can be found on the AEMC website at [www.aemc.gov.au](http://www.aemc.gov.au).

13 A copy of the terms of reference for the 2013 electricity price trends report can be found here: <http://www.aemc.gov.au/market-reviews/open/retail-electricity-price-trends-2013.html>.

14 Representative refers to a common consumption value. The consumption values used for each state and territory is provided in section 1.2.3.

are presented for each state and territory, as well as on a national basis. All prices are exclusive of goods and services tax (GST).

An overview of our approach for determining standing and market offer price trends and supply chain cost components is provided below.

### **1.2.1 Market offer price trends**

Market offers are plans where prices are set by energy retailers and are provided 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 Australian Capital Territory. We discuss jurisdictional approaches regarding market offers in Chapter three.

We have estimated market offer prices for the base year of our reporting period, 2012/13. This 2012/13 market offer price has then been used to examine future price trends.

The 2012/13 representative market offer price was based on retailer data and information supplied to the AEMC.<sup>15</sup> Specifically, we asked retailers active in New South Wales, Queensland, South Australia and Victoria to nominate their lowest generally available market offer as at 1 February 2013.<sup>16</sup> The retailers' nominated market offers were required to meet a number of conditions, including that the offers were:

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

We assumed that all discounts associated with the tariff were awarded, while no penalties (such as for late payment) were incurred.

The representative market offer price for the base year of 2012/13 was derived by converting each offer to a single c/kWh value for each distribution area. This was based on an assumed set of annual and quarterly consumption values. In regions where there were multiple distribution areas, these values were then weighted by the share of total residential consumers in each distribution area.

It is very difficult to estimate trends in market prices. Accordingly, our market offer price trends for future years show a range. The range reflects the difference between the market offer:

- expressed as a mark-down from the standing offer in 2012/13; and
- expressed as a mark-up from the underlying cost stack for 2012/13.

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<sup>15</sup> For Victoria we used two separate retailer market tariffs, for 2012 and 2013, as the basis of our representative market offer. This was done to reflect the fact that network tariffs are adjusted on a calendar year basis in Victoria.

<sup>16</sup> Our analysis was limited to these jurisdictions as they display significant competitive activity in the residential customer market segment. .

### 1.2.2 Standing offer price trends

Standing offer prices are typically set by jurisdictional regulators or by the relevant state or territory government. In New South Wales, the standing offer price is the regulated offer price approved by the NSW Independent Pricing and Regulatory Tribunal. In Victoria and South Australia, standing offer prices are set by energy retailers. Standing offers are generally provided under a standard retail contract with regulated terms and conditions.<sup>17</sup>We discuss jurisdictional approaches for standing offers in more detail in Chapter three.

The standing offer prices in this report are based on published standing offer prices that were available in 2012/2013. Information was obtained from retail price determinations, state government gazettes, retailer pricing proposals and relevant jurisdictional regulators' websites.

Standing offer price trends were considered in different ways depending on the regulatory approach for the relevant state or territory. For those jurisdictions with retail price regulation, the regulated standing offer price path was used where this was available to 2015/2016 (ie NSW<sup>18</sup>). Where the regulated price period ends before the conclusion of our reporting period, the future price path was based on the movements in underlying supply chain cost components (ie ACT and QLD).

Where prices are set by the relevant governments, we used the information as supplied by the respective departments or publically available information (ie Northern Territory and Tasmania). In those states with no price regulation (ie SA and VIC), trends were applied according to movements in the underlying cost components.

A detailed explanation of our approach to estimating the range of possible indicative market and standing offer price trends is provided in Appendix A.

### 1.2.3 Representative consumption levels

Annual residential consumption values are important for determining future residential electricity price trends. This is because the annual consumption value is used to convert the tariffs included in a retailer's offer into a c/kWh average unit price.<sup>19</sup> The annual consumption value will therefore influence the final c/kWh prices that we report.

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<sup>17</sup> 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.

<sup>18</sup> The Independent Pricing and Regulatory Tribunal issued their price determination in June 2013 and covers the period from 1 July 2013 to 30 June 2016.

<sup>19</sup> Electricity prices typically have two components; a fixed (supply) charge and a variable charge. To convert these two different charges into a single c/kWh value, the fixed daily charge is multiplied by 365 days and divided by the annual kWh consumption. The variable charge is multiplied by the annual kWh consumption, given an assumed consumption pattern in each quarter of the year. The sum of these two values is the final average unit price in c/kWh.

As part of our methodology for estimating standing and market offer price trends, we used annual consumption values provided to us by each jurisdiction. These values are included in table 1.1 below.<sup>20</sup>

**Table 1.1 Jurisdictional sample consumption values used for this report**

<b>Jurisdiction</b>	<b>Annual value</b>
New South Wales	6,500 kWh
Australian Capital Territory	7,670 kWh
South Australia	5,000 kWh
Victoria	4,645 kWh
Queensland	5,370 kWh
Tasmania	8,800 kWh
Western Australia	5,801 kWh
Northern Territory	9,135 kWh

Different states and territories adopt different approaches to determining these annual consumption values. For example, in Victoria the consumption value provided is based on a household with a single rate network tariff with gas hot water. Alternatively, for New South Wales, the consumption value is based on the total residential load divided by total residential consumers in that state. We recognise that some Victorian consumers have a controlled load tariff for electric hot water or under floor heating. If these households are taken into account, the average annual consumption for Victoria may be higher. This is discussed in further detail in Chapter 8 (Victoria).

Actual annual consumption may vary among residential consumers, as well as between different states and territories. In accordance with the SCER terms of reference, we have considered in this report the impact of different consumption levels on prices.

The different consumption levels used are based on representative "low", "medium" and "high" consumption households. These categories were derived from electricity benchmark data, developed by ACIL Tasman<sup>21</sup> and the state and territory values

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<sup>20</sup> Some jurisdictions provided annual consumption values which changed across the four years of our reporting period, generally reflecting assumptions regarding decreasing household consumption. For consistency and accuracy of our results, we have used the consumption provided for the base year as the basis of our analysis.

<sup>21</sup> ACIL Tasman was commissioned to develop initial benchmarking for the SCER electricity bill benchmarking project. A copy of the ACIL Electricity bill benchmarks for residential consumers (December 2011) report is available at: <http://www.aer.gov.au/node/9751>.

provided above. This is consistent with the approach taken by the Australian Energy Regulator (AER) in their recent annual energy affordability report.<sup>22</sup>

Our "medium" household consumption value represents the average or typical annual consumption values provided by jurisdictions. We consider this is a fair representation, taking into account the ACIL Tasman data for a two person household and Australian Bureau of Statistics (ABS) census data regarding typical household size.<sup>23</sup>

The "low" and "high" household values have been determined by taking the percentage difference in consumption values between a one, two and five person household from the ACIL Tasman data and applying these percentage differences to the jurisdictional values. These values are provided in table 1.2.

**Table 1.2 Various consumption values used**

Jurisdiction	“Low” consumption, 1 person household value	Jurisdictional value	“High” consumption, 5 person household value
New South Wales	5,162 kWh	6,500 kWh	10,512 kWh
Australian Capital Territory	6,066 kWh	7,670 kWh	12,479 kWh
South Australia	4,037 kWh	5,000 kWh	7,887 kWh
Victoria	3,763 kWh	4,645 kWh	7,290 kWh
Queensland	4,029 kWh	5,370 kWh	9,391 kWh
Tasmania	7,146 kWh	8,800 kWh	13,763 kWh
Western Australia	4,599 kWh	5,801 kWh	9,408 kWh
Northern Territory	7,788 kWh	9,135kWh	13,177 kWh

These values have been applied to determine the effect of annual household consumption on the average unit price of electricity for each state and territory. Generally, as consumption increases, the average unit price of electricity decreases. This occurs because as consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.

<sup>22</sup> The AER annual energy affordability report is provided as part of the AER's annual retail market performance reports. The AER considered the effect of different annual consumption values on average annual expenditure and related impact on the cost of living. For more information see: Australian Energy Regulator, *National Energy Retail Law: Annual Compliance Report 2012-13*, AER, November 2013.

<sup>23</sup> This information sourced from the Australian Bureau of Statistics 2011 Census Basic Community Profile, *Table B30 - Household Composition by Number of Persons Usually Resident*, ABS, 2013.

#### 1.2.4 Supply chain cost components

The SCER Terms of Reference require the AEMC to provide a breakdown of the relevant supply chain cost components. The electricity supply chain can be broadly grouped into the following segments:

- The *competitive market* for the purchase of wholesale electricity and the retail sale of electricity. Wholesale energy purchase costs include purchases from the spot markets and financially hedging contracts, ancillary services, market fees and energy losses.<sup>24</sup> Retail includes a retailer's operating costs which include direct costs that a retailer incurs in running the retail part of its business, and a return for investing in its business and the risk it assumes in providing retail services.
- The *regulated network* sector which transmits and distributes electricity to consumers. Regulated network costs cover costs associated with building and operating transmission and distribution networks, including a return on capital and the costs associated with metering. These costs are regulated by the Australian Energy Regulator (AER) in the National Electricity Market (NEM) and the Economic Regulatory Authority (ERA) in Western Australia.
- *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 carbon pricing mechanism, the renewable energy target and the various state and territory feed in tariff and energy efficiency schemes.

There are a range of different drivers which may affect each of the above supply chain components. Chapter two provides a detailed overview of these drivers and their impacts across the supply chain.

We also note that the drivers and factors that affect each of the components may be different across each jurisdiction. This is due to the specific conditions and regulatory arrangements in each jurisdiction. These specific conditions are discussed in each of the relevant state and territory Chapters.

To inform our assessment of drivers and trends in prices, we used data and information from a range of sources. These are outlined below.

- Our costs for the competitive wholesale component are based on modelling.<sup>25</sup> Different retailers have different strategies for managing wholesale energy purchase costs. The extent of the wholesale costs faced by an individual retailer will be influenced by factors such as the retailer's approach to risk management, economies of scale and whether or not the retailer possesses physical generation assets. As a result, for those states where market offers are available we present a range for the wholesale and retail components. The wholesale energy purchase cost range has been based on the following:

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<sup>24</sup> In Tasmania, Western Australia and the Northern Territory, generation is predominately government owned.

<sup>25</sup> The modelling of wholesale energy purchase costs for the relevant jurisdictions was undertaken by NERA Economic Consulting. See: NERA, *Projections of Wholesale Energy Cost*, NERA Economic Consulting, September 2013.

- As a lower bound for the range, we applied a market modelling approach to estimate the costs associated with hedging a typical retailer's customer load through the purchase of contracts. Inputs to this process included modelled spot prices, contract prices (which were assumed to trade at a 5 per cent premium to expected cash flows) and the load profile to be hedged by the retailer.

The specific hedging strategy adopted by a retailer will depend 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. The results of this approach were used as the basis of future trends.

- As an upper bound for the range, we used a “stand alone” or “greenfields” long-run marginal cost (LRMC) methodology. This approach estimates the cost associated with constructing a new, optimal generation system to satisfy demand in a given year, assuming that there is currently no generation to serve the required load.

Modelling was used to inform the wholesale energy purchase costs associated with the representative standing offer in Queensland, the Australian Capital Territory and in Western Australia. This was done for those years where there is no published standing offer price. The approach replicated, as closely as possible, the methodology used by the relevant jurisdictional regulator in estimating the wholesale energy purchase cost allowance. These estimates have been used to trend forward the relevant standing offer price.

For the Northern Territory and Tasmania, wholesale energy purchase costs are based on information provided by the jurisdictional government or sourced from regulatory determinations made by the jurisdictional regulator.

The retail component of the competitive market costs was not directly modelled or estimated. The retail component represents the residual difference between the total of all the other supply chain cost components (wholesale, network, and environmental policies) and the representative market offer or standing offer. For the remaining years of our reporting period from 2013/14, we have escalated the 2012/13 retail component by the expected rate of inflation.

We note that the retail component will differ depending on how the underlying cost components are derived (and the assumptions for those cost components), the retailer costs to serve in each jurisdiction and our approach to estimating market offers.

- For the regulated network component, we used data from the AER on regulated network tariffs for both transmission and distribution networks. In some cases, network determinations ended during our reporting period. Where this occurred, we have escalated network costs by an assumed inflation rate of 2.5 per cent.<sup>26</sup>

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<sup>26</sup> Based on the mid-range of the Reserve Bank of Australia's inflation target.

- For environmental policies, we sourced information from the relevant jurisdictional regulators in relation to solar feed in tariff scheme and energy efficiency scheme costs. The costs associated with the carbon pricing mechanism and the renewable energy target was based on wholesale cost modelling.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, carbon costs are recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The cost of the renewable energy target and jurisdictional energy efficiency schemes are generally recovered through retail costs.

SCER's Terms of Reference require the AEMC to report on the supply chain cost components that contribute to residential electricity prices. This explicitly includes the costs associated with a carbon price. Our reporting of carbon has been based on existing legislation.<sup>27</sup> We note that the Australian Government has introduced legislation to remove the existing carbon price as at 1 July 2014. Our analysis shows that in 2014/15, carbon represents approximately 9 per cent of the national average representative residential electricity price. The removal of the carbon price will reduce the prices presented in this report for 2014/15 and 2015/16.

Our results are sensitive to data inputs and assumptions. A detailed overview of the methodology used for the report is provided in Appendix A, including an overview of the relevant data inputs and data limitations.

### **1.3 Structure of the report**

This report is structured as follows:

- Chapter 2 provides an overview of the key trends in national prices and cost components, and the main drivers of these trends across the supply chain.
- Chapter 3 provides information on approaches for setting residential retail electricity prices in each jurisdiction. It also discusses consumer choices and preferences and activities of retailers in the market. The next set of chapters provide the state, territory and national outcomes of our analysis.
- Chapter 4: Queensland.
- Chapter 5: New South Wales.
- Chapter 6: Australian Capital Territory.
- Chapter 7: South Australia.
- Chapter 8: Victoria.
- Chapter 9: Tasmania.
- Chapter 10: Western Australia.
- Chapter 11: Northern Territory.

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<sup>27</sup> This includes the Clean Energy Future package of legislation.

## **Appendices**

- Appendix A: Approach and methodology for the 2013 report.
- Appendix B: List of jurisdictional feed in tariff schemes.
- Appendix C: Government concession schemes and rebates.
- Appendix D: Range of pricing structures available or being trialled.
- Appendix E: Overview of suite of retailer discounts and offers.
- Appendix F: Overview of the National Electricity Market (NEM), the Western Australian Wholesale Electricity Market (WEM) and the Northern Territory power system.

## **Consultant Reports**

- NERA Economic Consulting, *Projection of Wholesale Energy Costs*, Final Report, September 2013.
- Oakley Greenwood, *Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16: Network Cost Drivers*, Final Report, November 2013.

## 2 Drivers of price trends

This Chapter explains the drivers and trends for national average residential electricity prices.<sup>28</sup> We also outline some of the factors that may affect the drivers of price trends across the relevant sectors of the market. These factors may also influence the specific trends in residential electricity prices and cost components in each state and territory. These are discussed further in Chapters four through eleven.

### National summary of drivers and trends

The national summary represents the weighted average of trends across each state and territory. There is a reasonable degree of variability between the states and territories that underlies the national summary.

#### *Key findings:*

- At a national level, residential electricity price increases are expected to moderate over the next three years.
- This national trend is largely driven by stabilising regulated network costs, and both upward and downward pressure from the costs of different government environmental policies. Competitive wholesale and retail market costs are expected to remain relatively stable.
- Generally, residential prices in most jurisdictions are expected to either increase at a rate less than inflation or decrease over the next three years from 2012/13 to 2015/16. Prices are only expected to show a real increase in Queensland and the Northern Territory.
- At an average, national level, residential electricity prices are expected to increase, on average, 1.2 per cent a year across Australia, over the next three years from 2012/13 to 2015/16.
- Residential customers are able to shop around and find a better deal from retailers. In those states where market offers are available, there are substantial savings from moving to a market offer. Households may have saved between 5 and 16 per cent by switching from a standing offer to a market offer in 2012/13.

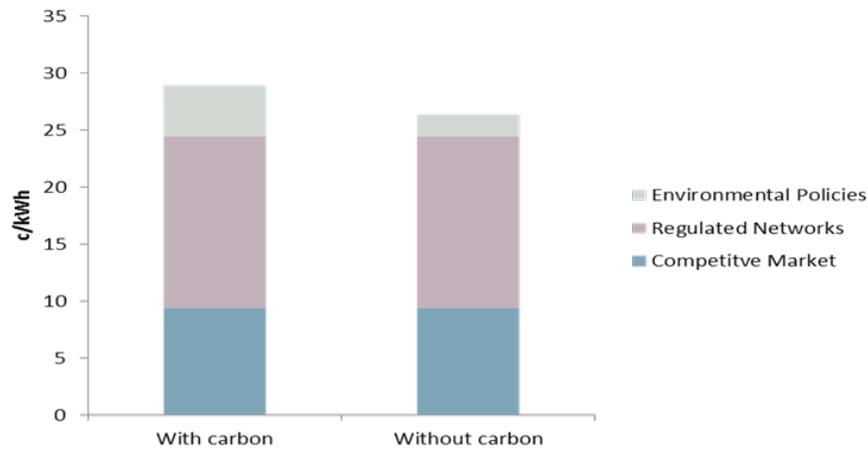
Our reporting of carbon pricing costs is based on existing legislation. We recognise that the Australian Government has introduced legislation to remove the existing carbon price mechanism as at 1 July 2014.

In 2014/15, the cost of the carbon price represents 9 per cent of the national average representative residential electricity price. This value will differ between jurisdictions, reflecting the emissions intensity of generators located in each jurisdiction. Figure 2.1 below shows the impact of removing carbon from supply chain costs, at an averaged, national level.

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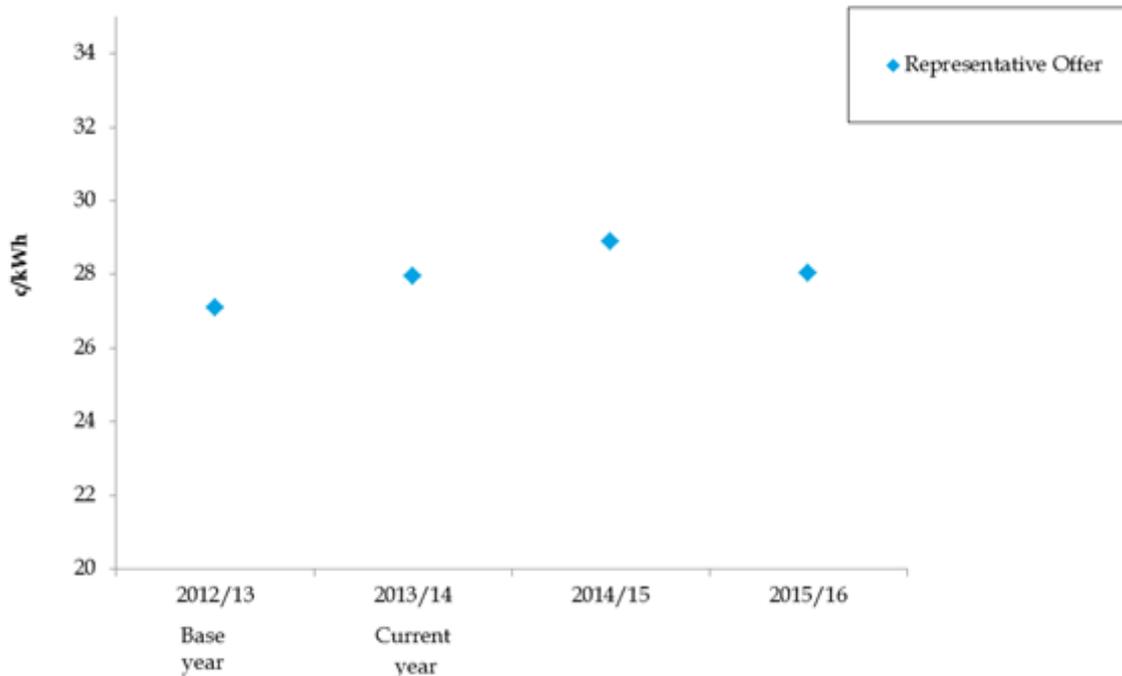
<sup>28</sup> In this report, residential electricity prices consist of both a fixed component, which is a flat daily charge, and a variable component, which is a charge levied on each kilowatt hour of electricity used by a consumer. The prices we report are an average unit price, based on these two charges, given an assumed annual consumption value.

**Figure 2.1 Supply chain costs with the carbon cost removed**

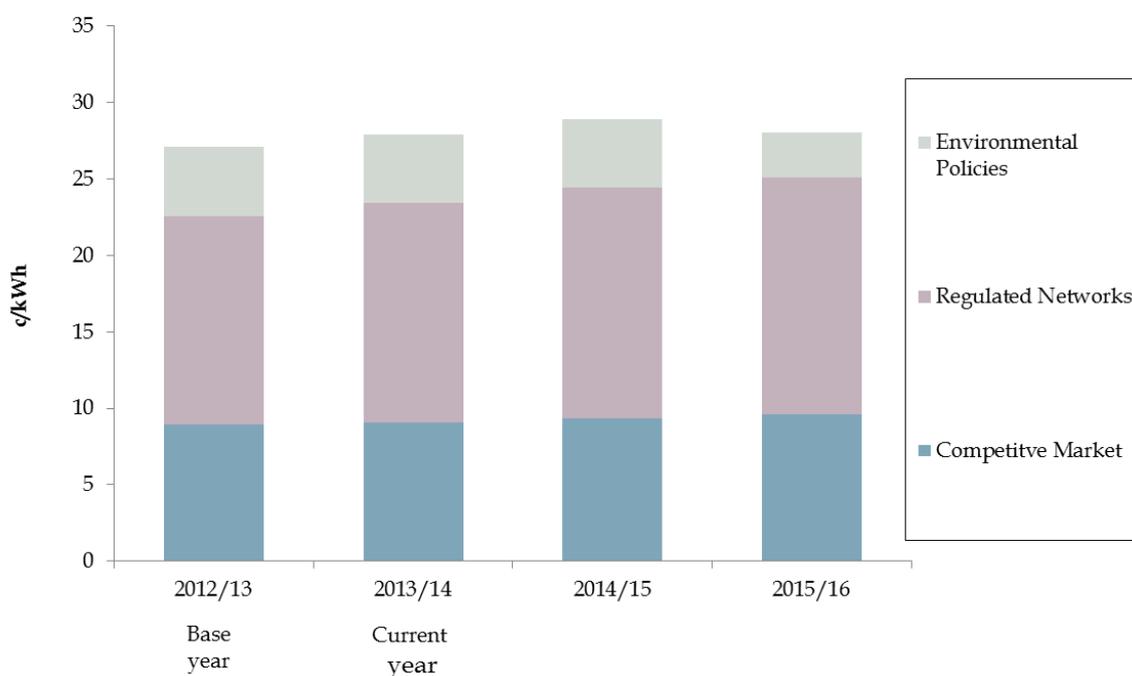


The national representative price consists of the representative market offer price for New South Wales, Victoria, South Australia and Queensland. It also consists of the representative standing offer price for the Australian Capital Territory, Tasmania, Western Australia and the Northern Territory. These different offers were weighted by the number of residential connections in each jurisdiction.

Similarly, the national cost components consist of the various cost components from each jurisdiction, weighted by the number of residential connections in each jurisdiction.<sup>29</sup> Some of the values from individual jurisdictions have been aggregated; for example, network costs in Tasmania and the Northern Territory were provided in an aggregated form and so are represented here solely in national distribution network costs.



<sup>29</sup> The sum of national cost components does not equal the representative prices in each year. This effect is mainly driven by the fact that tariffs in Western Australia and the Northern Territory are currently not cost reflective.



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>4.56</b>	<b>4.49</b>	<b>4.48</b>	<b>2.91</b>
Carbon	c/kWh	2.44	2.53	2.60	0.65
LRET	c/kWh	0.57	0.58	0.56	0.65
SRES	c/kWh	0.81	0.54	0.34	0.24
FIT Schemes	c/kWh	0.57	0.67	0.81	1.20
Other state schemes	c/kWh	0.17	0.17	0.17	0.17
<b>Regulated networks</b>	<b>c/kWh</b>	<b>13.58</b>	<b>14.40</b>	<b>15.11</b>	<b>15.53</b>
Transmission	c/kWh	2.41	2.54	2.63	2.71
Distribution	c/kWh	11.17	11.85	12.48	12.82
<b>Competitive market</b>	<b>c/kWh</b>	<b>8.96</b>	<b>9.06</b>	<b>9.30</b>	<b>9.60</b>
Wholesale	c/kWh	5.29	5.26	5.38	5.56
Retail	c/kWh	3.68	3.80	3.92	4.04
<b>Total</b>	<b>c/kWh</b>	<b>27.11</b>	<b>27.95</b>	<b>28.89</b>	<b>28.04</b>

## 2.1 Factors influencing residential electricity prices

Australian residential electricity prices are affected by a number of factors. These include changes in electricity demand, input prices, overall economic conditions, gas market developments and the impacts of external environmental policies.

The impact of these drivers will differ across the competitive wholesale market and regulated network sector of the supply chain. Others are likely to have a more limited effect.

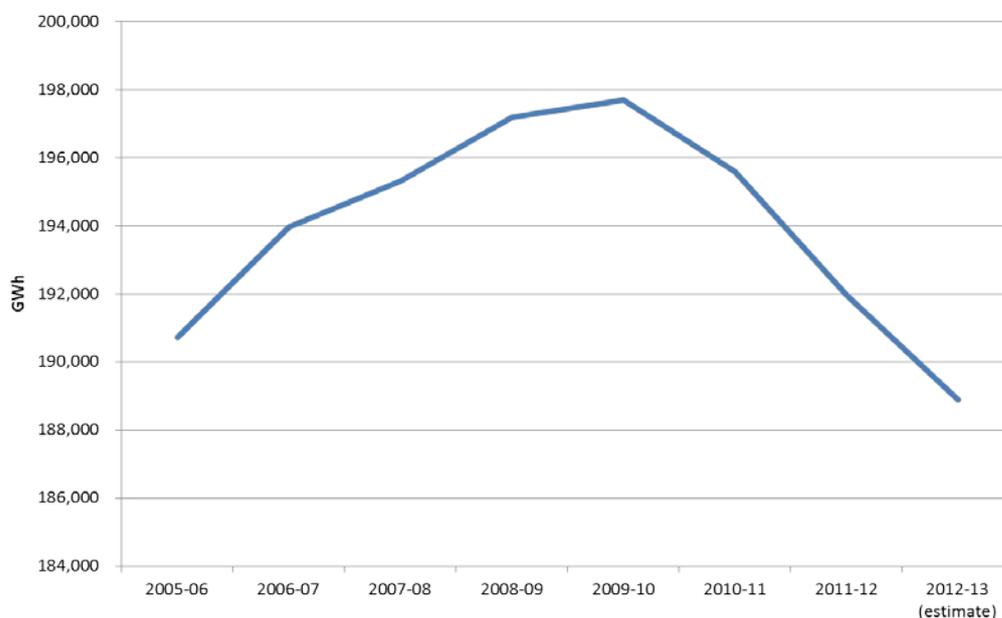
Changes in demand and the cost of capital are two drivers likely to influence outcomes across the electricity supply chain. These are discussed in more detail below.

### 2.1.1 Changes in electricity consumption

Levels of electricity consumption can be measured in different ways. The terms "average demand" and "peak demand" are used in this report to describe electricity consumption. Average demand represents the total amount of electricity that is demanded across a specific time frame.<sup>30</sup> Peak demand represents the largest volume of electricity demanded within a specific time frame.<sup>31</sup> Both of these measures of consumption have implications for the cost of generating and transporting electricity.

Levels of average demand have changed markedly in recent years. A key trend has been the general decrease in average demand since 2009/10, as shown in figure 2.2.

**Figure 2.2 Historic average demand in the NEM**



<sup>30</sup> The Australian Energy Market Operator's (AEMO's) measure of average demand is called "annual energy". AEMO measures this demand as the total electricity supplied by generators to the network, known as "sent out" energy. This measure includes all energy consumed by residential, commercial and large industrial loads, losses incurred in the transport of electricity and electricity supplied by small non-scheduled generators (generally those generators with a nameplate capacity of less than 30MW). It excludes electricity used to power auxiliary loads (electricity used to power machinery used by generators in the production of electricity, such as coal crushers and conveyor belts), as well as electricity supplied from small scale rooftop solar generation. In this report, our term "average demand" can be considered equivalent to AEMO's measure of "annual energy demand". More information can be found here: Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013, p.1-1.

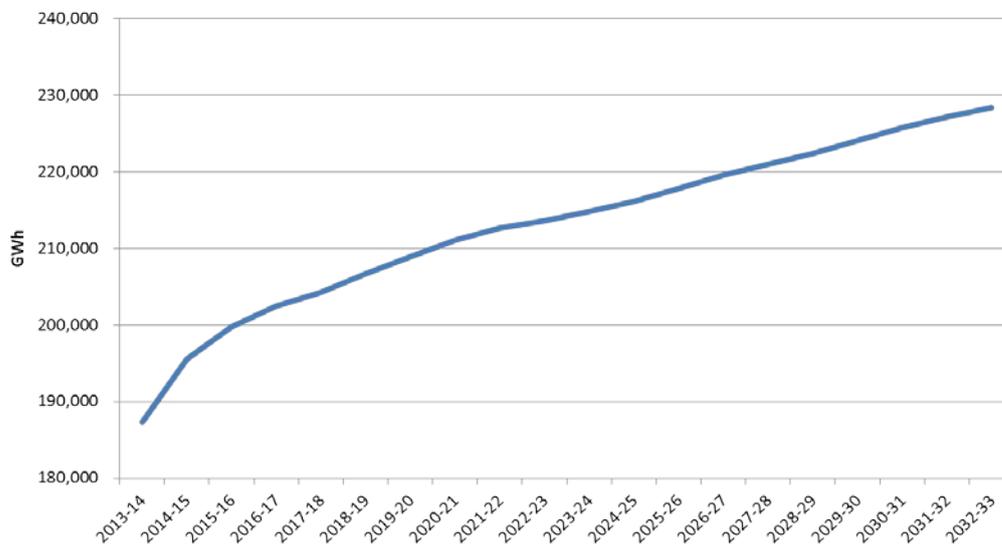
<sup>31</sup> AEMO's measure of peak demand is called "maximum demand". AEMO measures maximum demand as the total amount of electricity output of a generator at a specific point in time, known as "as generated" energy. Typically, AEMO presents regional maximum demand on an annual basis; this represents the largest as generated output of all generators at any one time within a region. In this report, our term "peak demand" can be considered equivalent to AEMO's measure of "maximum demand". More information can be found here: Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013, p.1-2.

Source: Australian Energy Market Operator, 2013 National Electricity Forecasting Report, AEMO, 2013.<sup>32</sup>

Many factors may have contributed to this decrease in average demand, including the sectoral shifts in the economy such as growth in services sector as opposed to decreases in manufacturing sector, global economic trends, demand response from increasing electricity prices, energy efficiency programs and the installation of rooftop solar generation units.<sup>33</sup> This is consistent with Western Australia, where similar factors have contributed to a general decrease in average demand since 2008/09.<sup>34</sup>

Figure 2.3 shows AEMO's most recent forecast of average demand. This forecast predicts moderate growth in average demand from 2013/14 to 2032/33. AEMO's forecast of gradual average demand growth is based on assumptions including population and economic growth, including the development of liquefied natural gas facilities in Queensland.<sup>35</sup>

**Figure 2.3 Forecast average demand in the NEM**



Source: Australian Energy Market Operator, 2013 National Electricity Forecasting Report, AEMO, 2013.<sup>36</sup>

Historically, a key trend in energy consumption patterns has been the rapid growth of peak demand relative to average demand. As shown in figure 2.4, between 2007/08 and 2010/11, peak demand grew at a much faster rate than average demand. This is described as a decrease in "load factor", or the ratio of average demand to peak demand. Reductions in load factor can result in a proportion of the power system being underused, except on those days where peak demand is reached. This occurs

<sup>32</sup> Data shown here is AEMO's measure of native demand. This excludes all auxiliary loads and all electricity generated from rooftop solar generation.

<sup>33</sup> Australian Energy Market Operator, 2013 National Electricity Forecasting Report, AEMO, 2013, p.V

<sup>34</sup> Independent Market Operator, 2013 Electricity Statement of Opportunities, IMO, June 2013, p.7.

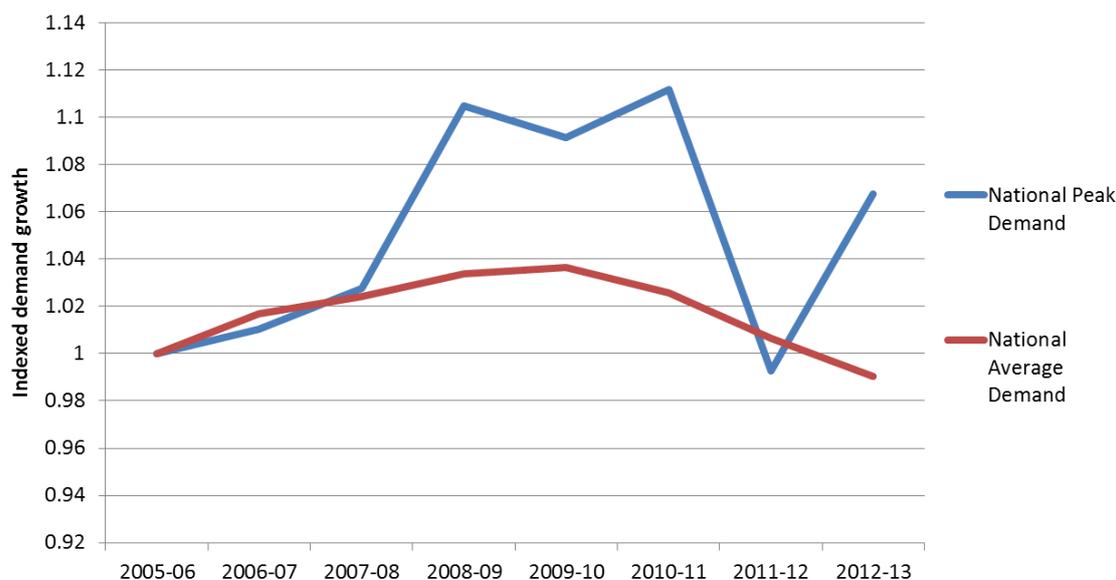
<sup>35</sup> Australian Energy Market Operator, 2013 National Electricity Forecasting Report, AEMO, 2013, p.V

<sup>36</sup> Data shown here is AEMO's measure of native demand under the planning (medium growth) scenario. This excludes all auxiliary loads and all electricity generated from rooftop solar generation. This data incorporates AEMO's updated 2013/14 average demand figures as published 15 November 2013.

because network and generation assets built to meet a few short periods of peak demand may not be used in other periods.

This is not efficient if the costs of having such spare network and generation capacity is more than the value consumers place on the end use services from the electricity supplied during these peak times. It may result in additional costs for consumers and may contribute to increases in residential electricity prices.

**Figure 2.4** Historic average vs. demand growth



Source: Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013.<sup>37</sup>

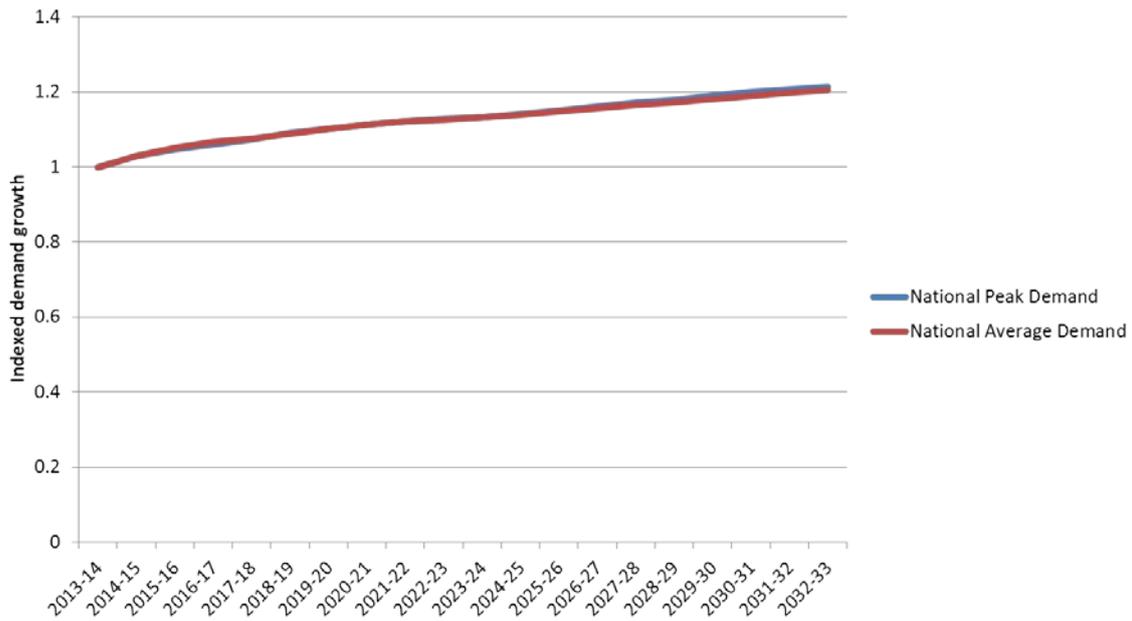
As shown in figure 2.5, recent forecasts by AEMO may indicate a potential moderation in this trend of decreasing load factors. For example, other than in Queensland and New South Wales, peak demand is either forecast to grow at the same rate as average demand, to be flat or to show an overall decline over the next decade. In Queensland, peak demand is expected grow 0.1 per cent faster than average demand, while in New South Wales the difference is 0.4 per cent.

The net effect is that across the NEM, there is little divergence in future average and peak demand growth.<sup>38</sup> A moderation in the historical trend of divergent peak and average demand growth may lead to more efficient and productive utilisation of the power system.

<sup>37</sup> Data shown here is AEMO's measure of "as generated" maximum demand. This excludes all energy from rooftop solar generation.

<sup>38</sup> Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013.

**Figure 2.5 Forecast peak vs average demand growth**



Source: Australian Energy Market Operator, 2013 National Electricity Forecasting Report, AEMO, 2013.<sup>39</sup>

*Effects of average and peak demand growth on competitive market and regulated network costs*

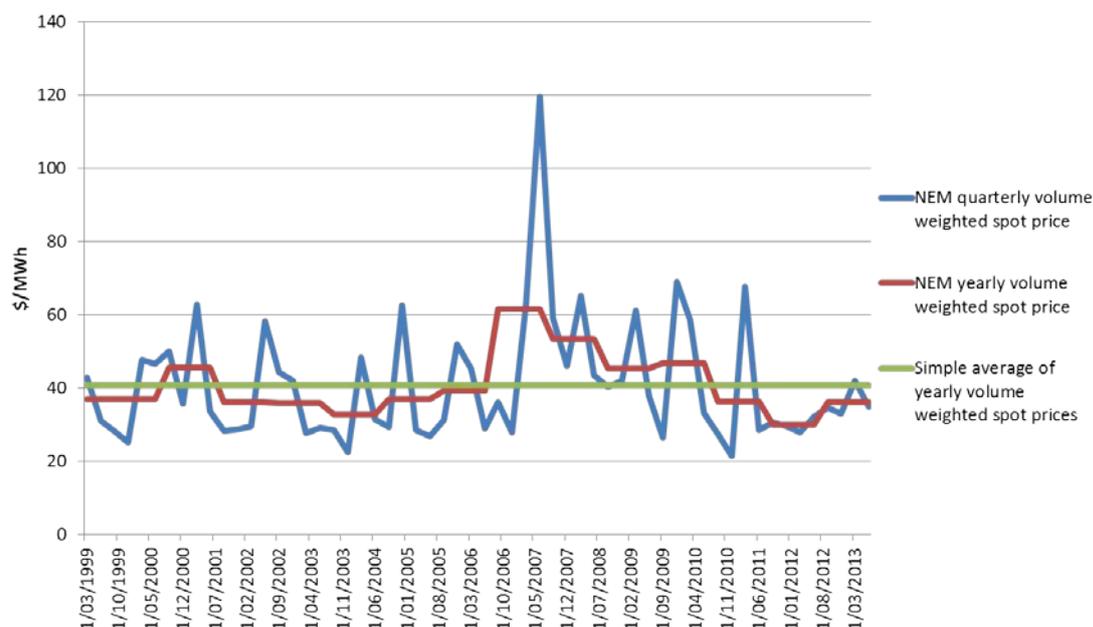
Trends in average and peak demand may drive a number of changes in both the competitive and regulated components of the electricity supply chain. In competitive markets, demand levels can influence wholesale spot market prices, which in turn can influence the investment and operational decisions made by energy suppliers.

Reductions in average demand change the balance of supply and demand in the electricity wholesale market. This can place downward pressure on wholesale electricity prices, as higher cost generation sources are required less often to meet demand.

Historically, falling demand has contributed to reductions in volume weighted spot prices. In some regions of the NEM, volume weighted prices have been at their lowest since the start of the NEM.

<sup>39</sup> Data shown here is AEMO's measure of "as generated" maximum demand. This excludes rooftop solar generation. Information shown is based on a 50 per cent probability of exceedance under AEMO's planning (medium growth) scenario.

**Figure 2.6** Historic quarterly and annual volume weighted spot prices in the NEM



Source: AER data.<sup>40</sup>

These low wholesale prices have likely contributed to the withdrawal or altered operating schedules of several generators in the NEM.<sup>41</sup> This trend is particularly apparent in South Australia, where low wholesale spot market prices have contributed to the altered operation of several generating units. This is discussed further in Chapter seven (South Australia).

As part NERA's modelling for future movements in wholesale electricity costs, Australian Energy Market Operator's (AEMO) medium demand "planning" scenario was used as an input for the base case.<sup>42</sup> Under this scenario, average demand is expected to show moderate growth out to 2015/16. It was found that this firming demand along with limited new generation capacity growth contributes to low or moderate growth in expected wholesale electricity purchase costs across several regions of the NEM.

<sup>40</sup> NEM quarterly volume weighted spot price is calculated by taking the quarterly volume weighted regional spot price and weighting by each jurisdiction's share of NEM-wide annual consumption. More information is available at: <http://www.aer.gov.au/Industry-information/industry-statistics>.

<sup>41</sup> Units that have been withdrawn or whose operation has been altered over the last few years include Northern and Playford B power stations in South Australia, Tarong power station in Queensland, Wallerawang in New South Wales and Yallourn in Victoria.

<sup>42</sup> AEMO models several different economic scenarios, each including different assumptions regarding factors such as overall GDP growth, population levels and structural composition of the Australian economy. These scenarios are used in planning documents including the National Electricity Forecasting Report (NEFR) and the National Transmission Network Development Plan (NTNDP). In the NEFR, each economic scenario corresponds to a forecast level of average demand growth. The "planning" scenario includes a positive rate of average demand growth of 1.3 per cent across the NEM out to 2022/23, while the "slow rate of growth" scenario includes a rate of average demand growth of 0.8 per cent over the same period.

A sensitivity analysis was also undertaken to determine the expected reduction in wholesale energy purchase costs if forecast average demand was lower than in the modelling base case. As highlighted above, the forecast level of average demand associated with AEMO's planning scenario was used for the modelling base case. This was compared against the lower forecast level of average demand associated with the "slow rate of growth" scenario in order to undertake a demand sensitivity.<sup>43</sup>

Generally, it was found that any future reductions in average demand would result in moderate decreases in wholesale costs. This effect was most pronounced in Victoria, where the slow rate of growth demand scenario results in a reduction of 11 per cent in wholesale energy purchase costs relative to the base case.<sup>44</sup>

In regulated networks, rates of peak demand growth can influence the network costs faced by residential consumers. These costs are related to the additional network augmentation that is built to meet expected growth in levels of peak demand.

While current expectations are for a moderation in the rate of peak demand growth, historical expectations of increases in the rate of peak demand growth have influenced previous network regulatory determinations. These determinations are the basis of current network costs in many jurisdictions and therefore continue to influence residential electricity prices throughout our reporting period.

The AER sets network determinations for a five year period. The total revenue that the business is allowed to recover is based on, among other factors, the AER's expectations of future outcomes when it makes its final determination.

Several currently applicable network regulatory determinations identify that expectations of peak demand growth were a key factor considered by the AER and the relevant network businesses when those regulatory determinations were made. These expectations resulted in the AER allowing additional revenue in its network regulatory determinations, to cover additional network infrastructure to meet expected growth in levels of peak demand. For example, the Victorian distribution businesses' 2011 to 2015 regulatory determinations, which were made in 2010, allow for increased capital and operating expenditure, in part to meet expectations of higher customer peak demand.<sup>45</sup> This allowed revenue contributes to growth in Victorian network costs during the reporting period.

A range of other factors considered by the AER in current network regulatory determinations includes the replacement of ageing assets and increased reliability standards. These factors also contributed to increased infrastructure build and increased revenue allowances for several network businesses.

Given current demand forecasts, future network regulatory determinations may include forecasts of lower peak demand growth. This may have implications for the total allowed revenue that may be included in future network regulatory determinations. This is reflected in the AER's more recent determinations, where

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<sup>43</sup> NERA, *Projections of Wholesale Energy Cost*, NERA Economic Consulting, September 2013.

<sup>44</sup> *Ibid*, p.31.

<sup>45</sup> Australian Energy Regulator, *Victorian electricity distribution network service providers Distribution determination 2011–2015*, AER, October 2010.

smaller total revenues have been allowed to meet lower expectations of growth in average and peak demand.<sup>46</sup> Further discussion of the potential future movements in this and other network cost drivers is provided in section 2.2.2.

Changes in demand may also influence the way that network businesses set their tariff structures, which may influence residential electricity prices. This issue is addressed in more detail in section 2.2.2.

### **2.1.2 Economic factors and changes in the cost of capital**

The electricity sector is highly capital intensive. The cost of funding new investment or refinancing existing investments is therefore closely linked to the overarching cost of sourcing capital.

Global economic events including the global financial crisis and European sovereign debt crisis have increased the risk premiums attached to the cost of capital. This will have both direct and indirect consequences across the competitive market and regulated network components of the electricity supply chain.

Investment in generation infrastructure is highly capital intensive. Substantial refinancing costs may also be associated with these plants as they typically have long life spans.

Increases in the cost of capital may therefore result in substantial increases in the cost and risk of building new generation infrastructure. One way for a generator to mitigate this increased risk is to also operate in the electricity retail market. These increased cost pressures may therefore contribute to concentration of new generation investments among vertically integrated generators and retailers (gentailers).<sup>47</sup> In the short term, this may act as a hedge if wholesale prices fall. However, the generator will still be exposed to long term economic factors. It will also be exposed to additional risks related to operating in the retail market, such as customer retention and bad debts. Increased levels of vertical integration may alter the demand for and the supply of contracts in secondary hedging markets, which may affect contract market liquidity. This may have consequences for the wholesale purchase cost of electricity, which may influence residential electricity prices.<sup>48</sup>

In the regulated network sector of the electricity supply chain, increases in the cost of borrowing have historically contributed to the AER determining higher rates of return for network businesses. These may flow through to residential electricity prices through increased network costs.

When making a regulatory determination, the AER calculates the rate of return that a network business may earn, known as the weighted average cost of capital (WACC). The level of the WACC will be influenced by general economic conditions. Historically, increases in WACC during the global financial crisis (GFC) contributed to increases in

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<sup>46</sup> Australian Energy Regulator, *2012 State of the Energy Market*, AER, 2012, p.70.

<sup>47</sup> In the electricity sector, vertical integration refers to a business model where both upstream generation assets and downstream retail assets are owned and/or operated by the same company.

<sup>48</sup> It may also be the case that vertical integration is a natural solution to increased price volatility and wholesale market uncertainty, as it provides a physical hedge against price risk.

network costs. There is some evidence that this trend is moderating, with levels of WACC potentially returning to more typical, long run levels. This issue is examined in further detail in section 2.2.2.

The level of the WACC, and regulated network costs in general, are related to the form of regulation applied by the AER. In 2012, the AEMC completed the Economic Regulation of Network Service Providers rule change. This rule was made to give the regulator more discretion to set network prices. Changes included an enhanced approach for setting the rate of return on capital. The AER is currently progressing work on developing a new guideline on how it will determine the rate of return in future network determinations.<sup>49</sup> Further information on these reforms is provided in section 2.2.3.

## **2.2 Drivers affecting specific components of the electricity supply chain**

There are a number of factors likely to influence outcomes in specific components of the electricity supply chain. These include trends in input costs, reforms related to the regulation of network businesses and environmental policies implemented by state and federal governments. In the next section, we discuss some of the main input cost drivers that are likely to influence the competitive market and regulated network components.

### **2.2.1 Competitive market cost drivers**

Until recently, it was widely assumed that demand growth and climate change policies would drive increased investment in gas fired generation. Given this, it was expected that domestic gas prices and reliability would have an increasingly important influence on electricity market outcomes.<sup>50</sup>

Moderating demand and competing investment in renewable generation has reduced the likelihood of this linkage. AEMO predicts that there is currently sufficient existing and committed generation to meet demand until 2019/20, with no new gas generation investment currently committed.<sup>51</sup> These factors indicate that there is a reduced likelihood of gas market outcomes influencing residential electricity prices, at least in the short term.<sup>52</sup> Over the longer term this situation may change, particularly if the future generation mix trends towards more gas fired generation.

The modelling of movements in electricity wholesale prices included a sensitivity analysis of wholesale prices given different gas price scenarios. Specifically, the effect

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49 More information is available here: <http://www.aer.gov.au/node/18859>.

50 The increasing linkage between the gas and electricity markets is sometimes referred to as "convergence" between the markets. This issue is discussed in further detail in the AEMC's Strategic Priorities report; Australian Energy Market Commission, *2013 Strategic Priorities for Energy Market Development 2013: Final Report*, AEMC, October 2013, p.19.

51 Australian Energy Market Operator *Electricity Statement of Opportunities, Executive Summary*, AEMO 2013.

52 Ibid.

on wholesale electricity prices if gas prices were held constant from 2013/14 to 2015/16.<sup>53</sup>

Generally, it was found that changes in gas prices are unlikely to have any major effect on the final wholesale electricity purchase cost out to 2015/16.<sup>54</sup>

## 2.2.2 Regulated network cost drivers

As noted, we have used information from the AER's regulatory determinations as the basis for the regulated network costs provided in this report. Where a regulatory determination concludes during our reporting period, we have escalated network costs at an assumed inflation rate of 2.5 per cent. While we consider this to be a reasonable assumption for the purposes of our reporting, trends in various factors may mean that actual future network costs are different to this assumption.

The revenues allowed in future determinations, and hence the network costs faced by residential customers, are determined by the AER. We have not sought to quantify or otherwise predict the outcomes of these future regulatory decisions.

This section identifies some of the factors that are likely to influence future network costs, including an indication of potential new pressures on network costs, or whether historic cost pressures may be moderating.

Some of the key factors that are likely to influence network costs include:

- the regulated rate of return (WACC);
- changes in the level of demand;
- the price of inputs, such as raw materials and labour; and
- augmentation and asset replacement programs.

We commissioned Oakley Greenwood to inform our assessment of the factors outlined above. Oakley Greenwood specifically focussed on those network businesses with a regulatory determination that concludes during our reporting period.

### *Trends in the regulated rate of return*

The regulated rate of return reflects the AER's estimate of the cost of debt and equity that an efficiently run regulated network business incurs in order to make investments in its business. The WACC is used to determine a businesses' return on investment. This return on investment can generally comprise anywhere up to 50 per cent of the revenue requirement of a regulated network business.<sup>55</sup>

Figure 2.7 below shows the level of WACC allowed in the 21 determinations made since March 2007. Since 2009/10, WACC values have decreased markedly, potentially reflecting a return to more "normal" capital market conditions.

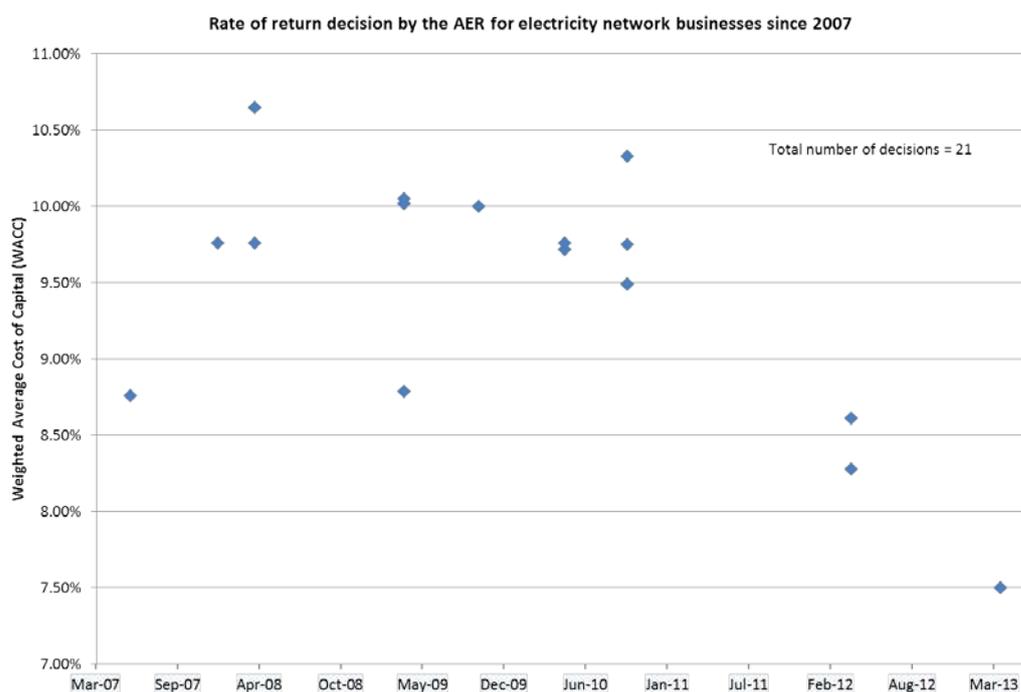
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<sup>53</sup> Gas supply contracts are typically negotiated for a period of several years. Fixing prices at 2012/13 levels reflects an assumption that all generators have gas supply contracts that are locked in for the entirety of the reporting period.

<sup>54</sup> NERA, *Projections of Wholesale Energy Costs*, NERA Economic Consulting, September 2013.

<sup>55</sup> Australian Energy Regulator, *Better Regulation: Draft Rate of Return Guideline - Fact Sheet*, AER, 30 August, 2013, p. 1.

**Figure 2.7 Historic rate of return decisions**



Source: AER determinations, available at [www.aer.gov.au](http://www.aer.gov.au)

To illustrate the potential magnitude of a reduction in the level of the WACC, Oakley Greenwood examined the WACC from the AER's draft 2013 SP AusNet transmission determination.<sup>56</sup> This determination included a WACC value of 7.4 per cent, which is markedly lower than the WACC values allowed by the AER in many current regulatory determinations. Typical WACC values in many of these determinations, which were approved between 2009 and 2010, are around 10 per cent.

Oakley Greenwood applied the lower SP AusNet WACC value to several of these current regulatory determinations.<sup>57</sup> Application of the lower WACC value generally reduces each network businesses' revenue requirement by 6 to 17 per cent. The results of this analysis are included in figure 2.8 below.

<sup>56</sup> Australian Energy Regulator, *Draft decision SP AusNet Transmission determination 2014-15 to 2016-17*, AER, August 2013.

<sup>57</sup> Oakley Greenwood utilised the PTRM models for each of these businesses, replacing relevant variables to test for these sensitivities and holding other variables constant. More information is available at: Oakley Greenwood, *Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16: Network Cost Drivers*, Oakley Greenwood, October 2013.

**Figure 2.8 Indicative impact of a change in WACC on network business revenue requirements, 2013/14**

Business	Rate of return as a proportion of revenue requirement in final year of current regulatory period [A]	% reduction in rate of return from using SP AusNet Tx WACC [B]	Proportionate impact on revenue requirement [A]*[B]
TransGrid	67.00%	-26.1%	-17.50%
Ausgrid	61.00%	-25.8%	-15.70%
Essential	49.00%	-25.8%	-12.60%
Endeavour	53.00%	-25.8%	-13.70%
ActewAGL	38.00%	-15.5%	-5.90%
Energex	70.00%	-23.6%	-16.50%
Transend	58.00%	-25.7%	-14.90%
SA Power Networks	45.00%	-23.9%	-10.80%

Source: Oakley Greenwood, *Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16: Network Cost Drivers*, Oakley Greenwood, October 2013, p.5.

A moderation in the level of WACC may mean a reduction in the allowed revenue included in future regulatory determinations, compared to previous regulatory determinations.

It is recognised that this effect may not automatically translate into reductions in actual network charges faced by consumers. There are a range of other factors that will influence actual network charges, principally related to the form of regulatory control placed on a regulated network business, levels of demand forecast when the regulatory determination was made and actual outturn levels of demand. These factors are described in further detail below.

#### *Changes in average demand*

As discussed, expectations of low levels of average demand and peak demand growth can reduce the need for further network augmentation, therefore reducing the revenue that is allowed in a regulatory determination.

Falling levels of average demand may also impact on the ability of a network business to recover its allowed revenue from consumers.<sup>58</sup> As discussed in section 2.1.1, network businesses typically recover their costs by charging consumers a tariff with both a fixed and variable component. Reductions in average demand can mean that network businesses are able to recover less revenue through the variable component of their tariffs.

The extent to which falling average demand may have this effect on individual businesses depends on several factors, including:

<sup>58</sup> In this context, average demand is equivalent to the total energy throughput on a network in a given time period.

- Whether the business is subject to a revenue cap or a weighted average price cap form of regulatory control.
- The proportion of the business' revenue that is recovered through variable usage charges.
- Whether the business accurately forecast any change in demand in its regulatory proposal and pricing submissions.

Network businesses that are subject to falling average demand may therefore seek to restructure their network charging arrangements, in order to ensure that they continue to recover their allowed revenue. The net effect of these changes could mean that the network charges faced by individual residential consumers actually increase in the presence of falling average demand

To illustrate this effect, Oakley Greenwood took several different average demand scenarios and examined the change in the annual total electricity charge that a residential household would face under each average demand scenario.<sup>59</sup> Oakley Greenwood examined three different scenarios: a 1% increase in average demand, a 1% decrease in average demand and a 3% decrease in average demand.<sup>60</sup>

The results of this analysis are shown in table 2.9 below. It shows that as average demand falls, the average residential annual total electricity charge increases.

**Figure 2.9** Impact of change in average demand on the a residential annual total electricity charge, 2013/14

Scenario	AusGrid	Endeavour	Essential	SP AusNet	Citypower	Powercor	Jemena	United Energy
1% increase in residential consumption	-0.66%	-0.64%	-0.51%	-0.89%	-0.85%	-0.84%	-0.88%	-0.85%
1% decrease in residential consumption	0.66%	0.64%	0.51%	0.89%	0.85%	0.84%	0.88%	0.85%
3% decrease in residential consumption	1.97%	1.91%	1.52%	2.68%	2.55%	2.51%	2.65%	2.55%

Source: Oakley Greenwood, *Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16: Network Cost Drivers*, Oakley Greenwood, October 2013, p.83.

<sup>59</sup> More information on Oakley Greenwood's approach can be found at Oakley Greenwood, *Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16: Network Cost Drivers*, Oakley Greenwood, October 2013, p.82.

<sup>60</sup> Oakley Greenwood's analysis was a sensitivity analysis, which held all other variables constant while changing levels of average demand. For example, this analysis did not consider how reduced average demand expectations would reduce a business' network augmentation requirements, reducing the extent of allowed revenue and therefore overall network costs. This analysis is necessarily limited to examining the magnitude of the effect on network charges related to changes in demand.

This effect of falling average demand placing upwards pressure on network charges may act to partially offset the effects of other factors, such as a reduction in the level of WACC.

Overall, the extent to which each of the different factors and changes in network costs will actually translate into change in network charges (and hence residential electricity prices) will be influenced by changes in average demand.

#### *Trends in labour and material costs*

The costs of inputs including labour and raw materials will principally affect a network business' operating and capital costs.

There are many interrelated factors which influence labour costs, including demand from other industries for labour, competition for labour between electricity businesses and general economic conditions.

Oakley Greenwood concluded that while labour costs are unlikely to increase markedly in the medium term, they are still likely to exert some upward pressure on network costs in the forthcoming review periods. However, this effect is likely to be less than in previous recent periods.

Oakley Greenwood also examined the expected trends in the costs of aluminium, copper, iron ore and crude oil. They concluded that the cost of these raw materials is likely to show a moderate increase over the medium term. However, this increase reflects assumptions regarding the Australian dollar exchange rate; any appreciation of the Australian dollar will reduce the extent of this upward trend on the cost of raw materials.

#### *New network augmentation investment*

A key driver of increases in network costs in recent regulatory periods has been network augmentation. This is network investment which occurs in addition to network asset replacement.

Expectation of average and peak demand growth and increased reliability standards were key factors that drove network augmentation in several current regulatory determinations.

Oakley Greenwood identified that as current expectations are for low peak and average demand growth in the near future, it is unlikely that additional augmentation will be necessary. Furthermore, increased levels of reliability standards have generally been met by the relevant businesses.

Given these two factors, Oakley Greenwood found that network businesses are likely to propose lower levels of network augmentation than those included in many current regulatory determinations.

#### *Asset replacement*

In each regulatory determination, an allowance is made for the replacement of a portion of a network business' assets. As these assets are typically long lived, the amount of asset replacement that takes place in any given regulatory period is typically a function of the network investment that took place several decades previously.

Estimating the asset replacement that will take place in any given regulatory period is a complex process. Most businesses base their proposed asset replacement schedule on the probability and consequence of failure of each asset.

Given the complexity of this forecasting process, Oakley Greenwood used the aged asset profile of each business as a proxy to determine the likelihood of a business undertaking asset replacement in upcoming regulatory periods.

The likelihood of asset replacement in the near term differs between businesses. Oakley Greenwood found that there was a reasonable probability that several of the businesses considered would seek an increased level of asset replacement investment in upcoming regulatory periods. However, there were at least two businesses where this was not the case.

### **2.2.3 Regulatory developments**

Regulatory reform is another major driver of change in the regulated network component of the electricity supply chain. Current reforms include rule changes and reviews being considered by the AEMC, as well as work being undertaken by the AER and SCER.

These reforms will have varying degrees of influence on network costs in the short term. However, by improving the regulation of network businesses, these processes are intended to promote efficiency in regulated networks.

#### *Transmission frameworks review*

In April 2013, the AEMC published the final report of its Transmission Frameworks Review. A key recommendation of this review was for the introduction of measures to more closely align outcomes in the competitive and regulated components of the electricity supply chain. This involves an integrated package of market arrangements, termed "optional firm access", which would introduce more commercial drivers on transmission businesses and more commercial financing of transmission infrastructure. The approach should result in a closer alignment of generation and transmission investment.

In May 2013, SCER issued a response to the review. SCER agreed that further work would be undertaken to design the optional firm access model. SCER also identified further work to be undertaken regarding demand forecasting, inter-regional investment, network planning and connections.<sup>61</sup>

The changes that may result from this work are not expected to be implemented during our reporting period.

#### *Power of Choice review*

In November 2012, AEMC published its final report for the Power of Choice review.

The purpose of the review was to investigate and identify the market and regulatory arrangements needed across the supply chain to facilitate efficient investment in, operation and use of demand side participation (DSP) in the NEM. The review

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<sup>61</sup> More information is available at: <http://www.scer.gov.au/files/2011/12/SCER-Bulletin-3-May-2013.pdf>

identified the opportunities for consumers to make more informed choices about the way they use electricity, including information, education, and technology and flexible pricing options.

The review also addressed the market conditions and incentives required for network operators, retailers and other parties to maximise the potential of efficient DSP and respond to consumers' choices.

A number of recommendations for change were made at the conclusion of the report, including the priority areas of consumer awareness and access to information, energy management services for residential and small business consumers, enabling technology, DSP in the wholesale electricity market, flexible pricing options, distribution network incentives, distributed generation and energy efficiency measures.

The recommendations of this report are currently being progressed, including through several rule changes being considered by the AEMC. Some of the changes that emerge from the rule changes may be implemented during our reporting period. If this is the case, these may impact trends in the regulated network sector and the competitive wholesale and retail markets.

#### *Distribution Network Pricing Arrangements rule change*

In November 2013, the AEMC commenced consultation on the Distribution Network Pricing Arrangements rule change request. This rule change will consider proposed reforms to the way distribution businesses set and structure network prices.

The rule change request was submitted by SCER. Due to a significant overlap of issues, an earlier rule change proposal from the NSW Independent Pricing and Regulatory Tribunal has been consolidated with SCER's rule change request.

In assessing this rule change request, the AEMC will consider how the distribution network pricing principles should be adjusted to encourage distribution businesses to set and structure network prices on a more cost reflective basis, which will provide more efficient pricing signals to consumers. The AEMC will also consider how to provide greater certainty for retailers and consumers on how and when distribution businesses will change their network prices over time, how to provide more opportunity for those affected by distribution network prices to be consulted on the development of those prices.

This rule change is currently being considered by the AEMC. It is likely that any changes that may result from the rule change would be implemented in 2015/16. Any changes will affect the regulated network sector and competitive retail market.

#### *Economic regulation of network businesses rule change*

The Economic Regulation of Network Service Providers rule change was made by the AEMC in November 2012.

This rule was made to give the regulator more discretion when determining network revenues. Changes included an enhanced approach for setting the rate of return on capital. They gave the AER more tools to determine efficient costs for each regulated

business including new requirements for the regulator to benchmark network companies against each other and publish reports about their performance.

In November 2013, the AER released guidelines which set out in detail how it will go about regulating network businesses. The first full application of the new frameworks will be for the New South Wales and Australian Capital Territory network businesses, on 1 July 2015.

#### *Distribution and transmission reliability framework reviews*

The AEMC recently published its final reports for its reviews of the development of national frameworks and methodologies for electricity transmission and distribution reliability across the NEM.

These reviews are examining ways to better reflect the value consumers place on reliability in planning transmission and distribution investment. Network reliability is currently regulated differently in each jurisdiction. Our advice will set out a framework for developing reliability standards that can be adopted in all jurisdictions in the NEM.

According to the terms of reference for the reviews, reliability standards under the national framework need to take account of the trade-off between the costs of investing in, and maintaining, transmission networks (and non-network solutions), and reliability outcomes. The value customers place on reliability can then be used to guide selection of the appropriate reliability target, in light of this trade-off. This could lead to more efficient investments by network businesses and electricity prices more consistent with the value that customers place on reliability.

#### *Limited merits review*

Another relevant reform process is the review of the limited merits review process, which was undertaken at the direction of the SCER.

Network businesses may lodge an application to the Australian Competition Tribunal for a limited merits review of a regulatory determination made by the AER. If successful, the final determination may be varied, in which case the post appeal outcome will be locked in for the remainder of the regulatory control period.

The review made a number of recommendations for change to this process, including making clear references to consumers' long term interests in the applicant's claim and the tribunal's decision, requiring the consideration of links between different components of a regulatory decision and placing clear requirements on the applicant when making a claim to the tribunal.<sup>62</sup> Amendments to the National Electricity Law have enacted to implement these recommendations.

## **2.2.4 Environmental policies**

State and Commonwealth governments have introduced a number of policies designed to address climate change.

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<sup>62</sup> Further information can be found on SCER's website, available at <http://www.scer.gov.au/workstreams/energy-market-reform/limited-merits-review/>

Commonwealth government policies include a carbon pricing mechanism and the renewable energy target. At the jurisdictional level, multiple solar feed in tariff and energy efficiency schemes have been introduced.

#### *Carbon price mechanism*

SCER's Terms of Reference for this review required the AEMC to consider the costs associated with a carbon price. Accordingly, our assessment of the cost of carbon is based on the existing legislation.

We note that the Commonwealth government has committed to removing the carbon price mechanism and has introduced legislation to effect this change.

A carbon price mechanism was introduced in July 2012. This mechanism placed an initial price of \$23 for each tonne of carbon dioxide (or equivalent) emitted by liable entities, increasing by 2.5 per cent above inflation each year until 30 June 2015. From 1 July 2015, the carbon price mechanism was to convert to an internationally linked emissions trading scheme, with prices determined by the market.

The carbon price mechanism creates an additional cost for generators. This cost is directly proportional to the amount of carbon dioxide each generator emits. Generators emitting more carbon dioxide per MWh of electricity produced will face higher costs than other generators that emit less.

Since the introduction of the carbon price mechanism on 1 July 2012, the general impact of the cost of carbon has been to increase wholesale electricity prices.<sup>63</sup>

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>64</sup> The input price of carbon permits assumed for this modelling was based on the legislated forward price of carbon permits to 2014/15. For 2015/16, the input price of carbon permits was based on the forward curve for European Union emissions allowances.<sup>65</sup>

From 2012/13 to 2014/15, the cost of carbon averages around \$25/MWh. This reflects the assumption that the input price of carbon permits will follow the legislated price path. In 2015/16, this amount falls to around \$7/MWh, reflecting a move to an internationally linked emissions trading scheme.<sup>66</sup>

#### *Renewable energy target*

Australia has had some form of renewable energy target since 2001. These schemes require a set portion of Australia's projected average demand to be met by renewable energy sources. In June of 2010, the previous renewable energy target was split into two components, the large scale renewable energy target (LRET) and the small scale

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<sup>63</sup> Average annual spot prices are available at AEMO's website: [www.aemo.com.au](http://www.aemo.com.au)

<sup>64</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>65</sup> NERA, *Projections of Wholesale Energy Costs*, NERA Economic Consulting, 12 September 2013, p.10.

<sup>66</sup> Ibid.

renewable energy scheme (SRES). Existing legislation requires the renewable energy target to be reviewed in 2014.<sup>67</sup> This will include consideration of all aspects of the program, including the overall renewable energy target of the LRET.

The LRET has a current target of 41,850 GWh of energy to be supplied by renewable generation in 2020. Under the LRET, certain eligible renewable generators create Large-scale Generation Certificates (LGCs) for each MWh of renewable energy they generate. Other liable parties, typically electricity retailers, are required to surrender a number of LGC's, equal to a proportion of their total electricity sales. There is a specific target for how many GWh hours of renewable energy are to be generated by renewable generators in a given year.<sup>68</sup>

Similar to the LRET, small scale renewable generators create Small-scale Technology Certificates (STCs). Retailers are then required to surrender a number of these 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.

The purpose of the LRET is to drive investment in large scale renewable generation. Increased supply of new generation tends to reduce overall wholesale spot market prices, particularly in the context of reductions in average demand described above.

The renewable generation that is supported by the LRET also tends to offer its capacity into the wholesale spot market at a low price. In regions where there is significant entry of renewable generation, the net effect of this behaviour may be an overall reduction in wholesale spot market prices.<sup>69</sup>

Although the LRET may contribute to low wholesale spot market prices, this does not necessarily translate into lower residential electricity prices. This is because the cost of the renewable energy target, which retailers face directly, is also recovered from consumers via retail electricity prices. In addition, retailers are facing higher costs due to the significant investment in recent years in network infrastructure. Falling demand may also be causing higher average retail prices, as fixed network costs are recovered from fewer units of consumption. The net effect is that all of these additional costs are reflected in higher retail prices for consumers.

The purpose of the SRES is to drive investment in small scale renewable generation. Unlike the LRET, there is no legislated annual target for how many STCs are to be created. Instead targets are set annually by the Clean Energy Regulator, taking into account projections of expected future STC creation and any surplus STCs from the previous year. Based on this target, the Clean Energy Regulator sets the small scale technology percentage that determines how many STCs each retailer is required to surrender in a given year.

In June 2009, the Commonwealth government announced the Solar Credits scheme. The Solar Credits scheme effectively multiplied the number of certificates created

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<sup>67</sup> More information is available at: [http://www.comlaw.gov.au/Details/C2013C00237/Html/Text#\\_Toc358022803](http://www.comlaw.gov.au/Details/C2013C00237/Html/Text#_Toc358022803)

<sup>68</sup> More information is available at: <http://ret.cleanenergyregulator.gov.au/about-the-schemes/LRET>

<sup>69</sup> Australian Energy Regulator, *2012 State of the Energy Market*, AER, 2012, p.46.

through the installation of rooftop solar generation systems. The effect of this scheme was to provide an upfront subsidy for the installation of rooftop solar.

As part of their modelling of the cost of the SRES, NERA identified that high small scale technology percentage values in 2012/13 and 2013/14 contributes to a high relative SRES cost in the early years of our reporting period. This effect moderates as the small scale technology percentage is forecast to decrease.

In conjunction with the jurisdictional feed in tariff schemes described below, the SRES and the Solar Credits scheme have contributed to a rapid increase in the uptake of rooftop solar generation in many regions of Australia. This uptake of rooftop solar generation has a number of implications for residential electricity prices.

Penetration of rooftop solar generation is forecast to increase substantially over the coming years. AEMO expects that installed capacity could increase by around 40 per cent between 2012/13 and 2015/16, while energy produced by rooftop solar PV units may increase by almost 50 per cent.<sup>70</sup> Recently, AEMO has suggested that the widespread uptake of small scale solar PV and solar hot water may be contributing to the overall reductions in demand.<sup>71</sup>

#### *Feed in tariffs*

At the state and territory level, several jurisdictional governments have introduced a number of feed in tariff schemes. These schemes are designed to encourage the uptake of small scale rooftop solar generation.

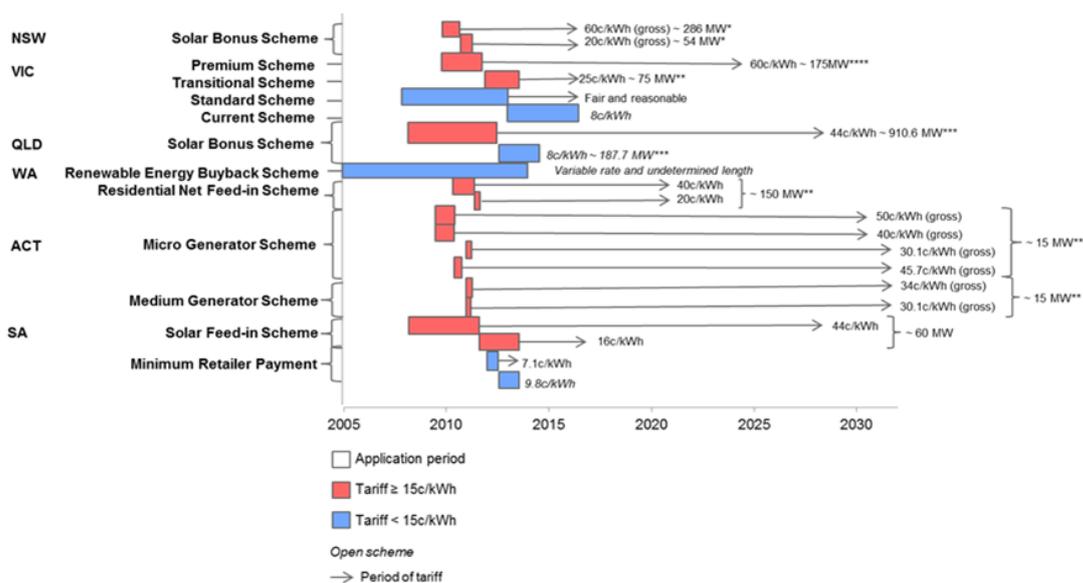
Figure 2.10 below provides an overview of some of the feed in tariff schemes currently in operation in Australia. Appendix B provides a more detailed summary of these schemes.

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<sup>70</sup> Sourced from NEFR Supplementary Information 2013, Rooftop PV projections. More information is available at: <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013/NEFR-Supplementary-Information-2013>.

<sup>71</sup> AEMO, *2013 National Electricity Forecasting Report*, Australian Energy Market Operator, p.1-3.

**Figure 2.10 Australian feed in tariff schemes**



\* Estimated from IPART, (2013), *Solar feed-in tariffs - The subsidy-free value of electricity from small-scale solar PV units from 1 July 2013*, Final Report, June, pp. 30 & 32.  
 \*\* Planned capacity under each scheme, is not actual installed capacity.  
 \*\*\* Forecast actual capacity installed for 2013. See: QCA, (2013), *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, Final Report, March, p. 57.  
 \*\*\*\* Department of Environment and Primary Industries website, available at: <http://www.dpi.vic.gov.au/energy-environment-and-community/victorian-feed-in-tariff-schemes/closed-schemes/premium-feed-in-tariff/about-the-closure>

Source: Jurisdictional regulator and departmental publications.

Feed in tariff schemes generally fall into two categories: premium schemes, which provide a tariff payment that is significantly greater than the wholesale cost of electricity; and non-premium schemes, which generally provide a tariff payment that is equivalent to the avoided cost of supply due to the operation of a rooftop solar generator.

Feed in tariffs can be further divided into gross tariffs and net tariffs. A gross feed in tariff provides a payment for every kWh of energy produced by a rooftop solar generation system, while a net feed in tariff provides a payment only for energy exported to the grid.

The cost of most of closed premium feed in tariff schemes are recovered via the distribution network charges faced by all consumers. This is the case in Queensland, South Australia and Victoria, while in New South Wales and the Australian Capital Territory a portion of these cost are also recovered from retailers.<sup>72</sup>

This cost recovery process means that all residential customers share the cost of these premium feed in tariff schemes.

Although all premium feed in tariff schemes are now closed to new entrants, the cost of the schemes will continue to impact future retail electricity prices. This is because many of the now closed premium schemes provide a stream of payments for an extended period of time. In some cases, these premium schemes provide payments

<sup>72</sup> In contrast, with the exception of the current Queensland Solar Bonus Scheme, the costs of all currently mandated non-premium FiT schemes are funded by retailers and are set by reference to avoided wholesale costs. Therefore, these schemes are not expected to translate into significant net changes to electricity prices. Retailer funded schemes also include voluntary schemes. Recovery of the cost of these schemes is at the discretion of individual retailers. They are also not expected to translate into substantial changes in electricity prices.

until the early 2030's, and will continue to place upwards pressure on electricity prices until that time.

The extent to which these schemes will impact on future electricity prices is dependent on a wide range of factors. These include:

- The length of the scheme. As identified in figure 2.9 above, several premium schemes provide a stream of payments to eligible consumers for at least another decade, with some schemes potentially providing payments until the early 2030's. This will in turn be affected by the ongoing eligibility conditions of each scheme, such as whether a consumer is eligible for the scheme when moving into house with rooftop solar PV.
- The rate of the feed in tariff itself. Some of the now closed feed in tariffs included payments of up to 66 c/kWh. Most current, non-premium schemes pay between 5 and 10 c/kWh.
- The volume of capacity installed under the scheme. In some jurisdictions, the extent of uptake of rooftop solar generation has been substantial. For example, in Queensland, the total installed capacity of the premium Solar Bonus scheme is expected to peak at around 1100 MW in 2013. Given that Queensland's total installed scheduled and semi scheduled capacity is around 13200MW, this represents a substantial proportional increase in the volume of installed generation capacity in that region.<sup>73</sup>
- The amount of energy actually produced. This is influenced by the degree of solar irradiation in each jurisdiction. For example, installed rooftop solar generation in southern states is expected to produce smaller volumes of energy than generation installed in northern states.
- Whether the scheme provides a gross or net payment. As described above, gross schemes provide payment for all energy produced from rooftop solar PV, while net schemes only pay for energy exported to the grid.

Distribution network businesses generally determine how the costs of feed in tariff schemes are recovered. Clause 6.18.7A of the NER permits distributors to pass on to consumers the estimated costs of feed-in tariff schemes for the coming regulatory year, adjusted for any over/under recovery from the previous two regulatory years. In effect, this rule provides distribution network businesses with some discretion as to how the costs of feed in tariff schemes are recovered from consumers.

The costs of solar feed in tariff schemes are likely to place upward pressures on electricity prices in some jurisdictions over the next three years. In particular, the recovery of previously incurred costs, as well as ongoing costs of the Queensland Solar Bonus scheme are expected to be a key driver of price increases in that state. More generally, the fact that many feed in schemes provide a stream of payments for the next two decades means that these schemes will continue to place upwards pressure on electricity prices over the long term.

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<sup>73</sup> Energy Supply Association of Australia, *Electricity and Gas Australia 2013*, ESAA, 2013.

### *Energy Efficiency schemes*

Energy efficiency schemes have been introduced by the New South Wales, South Australian, Victorian and Australian Capital Territory governments. These schemes include:

- Victorian Energy Efficiency Target;
- New South Wales Energy Savings scheme;
- South Australia Residential Energy Savings scheme; and
- Australian Capital Territory Energy Efficiency Improvements scheme.

The Energy Savings scheme in NSW and the Victorian Energy Efficiency Target are both “white certificate” schemes, where retailers are obligated to purchase and surrender certificates created by other parties who have undertaken energy savings activities.

The South Australian Residential Energy Efficiency scheme and the Australian Capital Territory Energy Efficiency Improvement scheme both place direct obligations on retailers to meet specified energy efficiency targets, by undertaking specified energy savings activities.

These schemes provide assistance to eligible residential customers to reduce their electricity consumption, which may help to reduce final electricity costs for those customers. The cost of these schemes are generally recovered from all residential customers.

### 3 Consumer Choice

Consumers are becoming increasingly active in the electricity retail market, both in terms of choosing their electricity supplier and how they use electricity.

In most cases, consumers could realise substantial benefits and savings by taking up a competitive market offers. This is because market offers can provide better deals than standing offers.<sup>74</sup> Market offers can also provide a variety of prices and plans that are more aligned with consumer needs and circumstances. For example, if a residential consumer who has average consumption<sup>75</sup> in New South Wales shopped around for a competitive offer, they could save an average of 11 per cent, or \$220 on their annual electricity cost, by switching from a standing offer to a discounted single rate<sup>76</sup> market offer in 2013/14.<sup>77</sup>

This chapter provides an overview of approaches applied in each state and territory for setting residential retail electricity prices. We also outline some of the activity of retailers in the market, including different pricing strategies.

#### 3.1 Approaches for setting retail prices

In Chapter one, we noted that in some cases standing offers are set by the relevant state or territory independent regulator. This applies in New South Wales, south-east Queensland, the Australian Capital Territory and Tasmania. For these jurisdictions and Tasmania from 1 January 2014,<sup>78</sup> while there are standing offers, consumers can also choose to take up a competitive market offer set by a retailer.

In South Australia and Victoria there is no price regulation. Prices for standing offers are set by retailers that operate in those states. Consumers can choose a standing or market offer.

In the Northern Territory, Western Australia and rural 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 rate only.

In Table 1.1 we provide an overview of the percentage of residential consumers in each jurisdiction on market offers and standard offers.<sup>79</sup>

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74 St Vincent de Paul "Energy Tariff Tracking Project and Reports", see <http://www.vinnies.org.au/energy-reports-vic>, AEMC 2012, Review of Competition in Retail Electricity and Natural Gas markets in New South Wales, Final Report 2013, Vic Essential Services Commission 2013, Energy retailers comparative performance report – pricing 2012-13, October 2013.

75 As noted in Chapter one, the NSW sample annual household consumption is 6,500Kwh in 2012/13.

76 Single rate refers to a flat or inclining block pricing structure.

77 We note that some consumers may not be in a position to take up different pricing offers due to their individual circumstances.

78 As part of Tasmania's 'Energy for the Future' reforms announced in May 2012, the government plans to introduce retail competition in the state from 1 July 2014.

79 Information on percentages has been obtained from publically available material or jurisdictional departments. Estimates for Victoria is based on surveys of residential consumers undertaken for

**Table 3.1 Percentage of residential consumers in each jurisdictional on standard or competitive market offers**

Jurisdiction	Able to move to a market offer	Market offers - percentage of residential consumers	Standing offers - percentage of residential consumers
QLD	Yes	55	45
NSW	Yes	60	40
ACT	Yes	18	82
SA	Yes	81	19
VIC	Yes	80	20
TAS	No - expected to transition from 1 July 2014.	n/a	100
WA	No	n/a	100
NT	No - while consumers can choose an alternative retailer, there is only one government owned retailer operating in the residential market in the Northern Territory.	n/a	100

### Concessions

It is important to recognise that some consumers may be under financial hardship and may struggle to pay for their electricity usage. Consequently, there are a variety of programs across states and territories to support these individuals and take into account their circumstances. The state and territory concession programs are summarised in Appendix C.

### Consumer protections

In July 2012, the National Energy Customer Framework (NECF) and supporting regulations commenced for a number of states and territories.<sup>80</sup> The NECF establishes the energy specific consumer protection obligations and arrangements for regulating

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the Victorian Essential Service Commission to inform their 2013 Comparative Performance Report - Pricing. This analysis may underestimate the number of customers actually on market offers. For more information see: Wallis Strategic Market and Social Research, *Victorians' Experience of the Electricity Market*, Wallis, 2013, p.25.

<sup>80</sup> Supporting legislation and regulations include the National Energy Retail Law, the National Energy Retail (South Australia) Act 2011 (the Act); the National Energy Retail Regulations (the Regulations); and the National Energy Retail Rules (the Rules).

the sale and supply of electricity and gas to consumers. It covers a range of matters, including, but not limited to, retailer and consumer relationships (contractual arrangements), associated rights, obligations, and consumer protection measures (marketing, informed consent, security and privacy provisions). There are also provisions that relate to the relationship between distribution businesses and consumers, specifically for consumer connection services.<sup>81</sup>

The NECF currently applies in New South Wales, South Australia, Tasmania, and the Australian Capital Territory. Queensland has conditionally agreed to adopt the NECF in 2014 after consideration of consumer protection options for consumers outside of south-east Queensland.<sup>82</sup> Victoria is in the process of harmonising the Victorian Energy Retail Code with the NECF. The Northern Territory Government has announced regulatory reform of the energy sector to bring the Territory's regulatory arrangements more into line with those in other jurisdictions, by introducing initiatives to encourage retail competition, including the introduction of standard supply contracts. Western Australia is not expected at this stage to implement the NECF reforms.

## **3.2 Retailer product offers**

In a competitive market, retailers will offer different products and services to effectively compete for different market segments. Product innovation can be seen in the innovative billing structures, monetary and non-monetary incentives as well as value added services being offered to consumers.

When considering the package of retail product offers, retailers may take into account the factors that influence consumer choices. For example, these may include price and non-price factors, such as preferences, individual circumstances and perceived benefits that a product or service may offer. These and other social behaviours<sup>83</sup> are important when determining the types of offers and services that consumers may choose to adopt. This can be seen in retailer approaches to marketing and sales, where, in most cases, multi-channel approaches, are used (such as online comparators, energy stores, third party alliances, direct mail or email advertising).

### **3.2.1 Pricing structures**

Residential electricity prices are generally made up of:

- a fixed charge (otherwise known as the “service availability” charge). This is typically charged on a daily basis and applies regardless of energy consumption; and
- a variable (or “energy”) charge, which is a charge for each unit of electricity consumed. For residential consumers the unit charge is most commonly either a flat rate, which prices every unit of electricity consumed equally, or an inclining

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81 For more information, see: <http://www.aemc.gov.au/Media/docs/Binder1-84bb7f5b-d82f-4484-851b-5e3c662c5f84-1.PDF>

82 Queensland Government Department of Energy and Water Supply, *The 30 Year Electricity Strategy Discussion Paper: Powering Queensland's Future*, DEWS, 2013, p.10.

83 For example, capacity of consumers and status quo basis.

block rate structure, where the unit price increases once a certain consumption threshold has been reached within a given period.

The AEMC's Power of Choice review found that existing fixed and inclining block tariff structures do not necessarily signal the time-varying impacts on network and electricity supply costs associated with a consumer's consumption. The AEMC recommended a gradual phase-in of efficient and flexible retail energy pricing options for residential and small business consumers, in part through the introduction of cost-reflective distribution network pricing structures. SCER has since provided the AEMC with a rule change regarding reform of distribution network pricing arrangements.<sup>84</sup>

As noted in Chapter one, we have considered different consumption levels for residential households. The current pricing structure described above is important, as a higher ratio of fixed to variable energy charge in the final retail price will have a greater impact given different levels of consumption. This is because a fixed level of costs applies, regardless of the actual levels of consumption. Supply charges vary depending on retailers and the state or territory in which they are operating. For example, supply charges in South Australia and Victoria<sup>85</sup> vary more than in New South Wales, where there is generally little variation between retailers. In Queensland, there is also little difference, although we note one retailer does offer different supply charges.

Pricing plans with different pricing structures allow consumers to choose a plan that may be more suited to them. There is a range of different pricing structures available for consumers to consider. As noted above, offers may have a tariff that has flat or inclining block structure, or more recently, flexible pricing options.<sup>86</sup> Flexible pricing options generally mean that different rates are changed for different times of the day (ie "off-peak", "shoulder" and "peak" times).<sup>87</sup>

Flexible pricing options have not been included in this report, although we recognise that there are other pricing offers with different pricing structures available in the market. Our terms of reference require us to use 2012/13 as a base year for comparison. Given that flexible pricing was not introduced on a broad scale until after the base year of our reporting period, we have not included of these tariffs in this report. Flexible pricing, if taken up on a wider scale by residential consumers, may need to be considered in future reports. Appendix D provides a description of the different pricing structures that are available or are being trialled in the market.

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<sup>84</sup> Australian Energy Market Commission, *National Electricity Amendments (Distribution Network Pricing Arrangements) Rule 2014: Consultation Paper*, AEMC, November 2013.

<sup>85</sup> Before taking into account additional discounts, differences in the supply charge can reduce customers' costs by around \$56/year in South Australia (considering the difference between the highest and lowest offerings) and between \$40 and \$136/year in Victoria, depending on the DNSP area.

<sup>86</sup> Victoria introduced flexible pricing on 1 July 2013.

<sup>87</sup> The time period predominantly used by retailers is currently a three part tariff, with "peak" being 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.

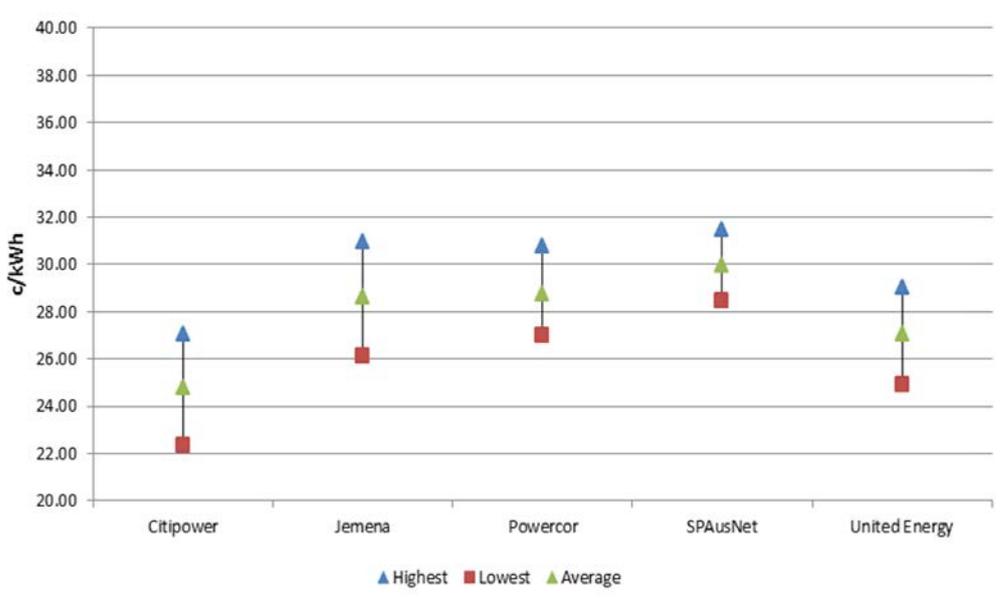
### 3.2.2 Pricing offers - monetary incentives

One of the most common incentives for retailers to attempt to retain and attract consumers is monetary incentives. These can be ongoing discounts tied to a contract term or one-off initial payments.

The most common form of discount currently available to consumers is a percentage discount from their variable energy charge. The second most common form of discount is a discount from the total bill. Some retailers were offering discounts of up to 15 -20 per cent from the market offer during the timeframe we used to determine the representative average market offer.<sup>88</sup> Other monetary discounts include savings on consumption if electricity are paid on time or if paid by direct debit. In some cases, credit is offered on sign up. Discounts or fixed rates are also sometimes offered based on contract length. 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.<sup>89</sup>

Given the range of discounts and other products provided, retailers' market offers and prices can vary within and across jurisdictions. For example, there can be large difference between the lowest and highest market offer prices offered to consumers within a given distribution area. Figure 3.1 provides an example of the difference between the highest, average and lowest, post discount residential electricity charge by distribution area for Victoria, based on the 1 February 2013 market offers supplied.

**Figure 3.1 Highest, average and lowest post-discount residential electricity charge by distribution area, Victoria, February 2013, c/kWh**



To determine price trends in New South Wales, Victoria, South Australia and south east Queensland, the AEMC used information provided by retailers on market offers which were offered during the base year of 2012/13. For the relevant market offers, we

<sup>88</sup> We note that if consumers shop around and call retailers they may receive even higher discount.

<sup>89</sup> For example, ActewAGL offer a bundle for electricity, water and cable television (TransAct).

have assumed that the consumer is in a position to claim all discounts from the market offer.

We also recognise that some discounts are conditional 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. Therefore, we have examined the impacts on price if a consumer did not receive the discounts that were available as part of the average market offer for 2012/13. While this analysis aims to show differences with and without conditional discounts, consumers are able to still obtain market offers with non-conditional discounts that are still largely cheaper than the relevant standing offer. The results of this analysis are provided in Table 3.2.

**Table 3.2 Discount analysis of average market offers 2012/13**

Jurisdiction	Annual Bill (\$)		
	Market offer with conditional discounts	Market offer without conditional discounts	Standing offer
New South Wales	\$1,810	\$1,903	\$1,999
Queensland	\$1,273	\$1,328	\$1,334
South Australia	\$1,564	\$1,712	\$1,723
Victoria	\$1,285	\$1,394	\$1,521

As noted, we considered the retailer market offers as available as at 1 February 2013 given our base year for reporting. We note that offers have changed as a result of changes in network pricing or retail market conditions. Consequently, we reviewed the market offers available in the market as at September 2013. It was found that while the market offers provided to the AEMC are broadly consistent with current offers, there have been some changes to prices and pricing structures. Generally, some retailers appear to have re-balanced their charges and changed the level of some discounts. Discounts have also fallen relative to prevailing prices in February 2013, while the average post-discount price has risen only very marginally. This is particularly relevant for New South Wales. Chapter 5 and 8 discuss the change in offers in more detail.

### 3.2.3 Pricing offers - non-monetary incentives

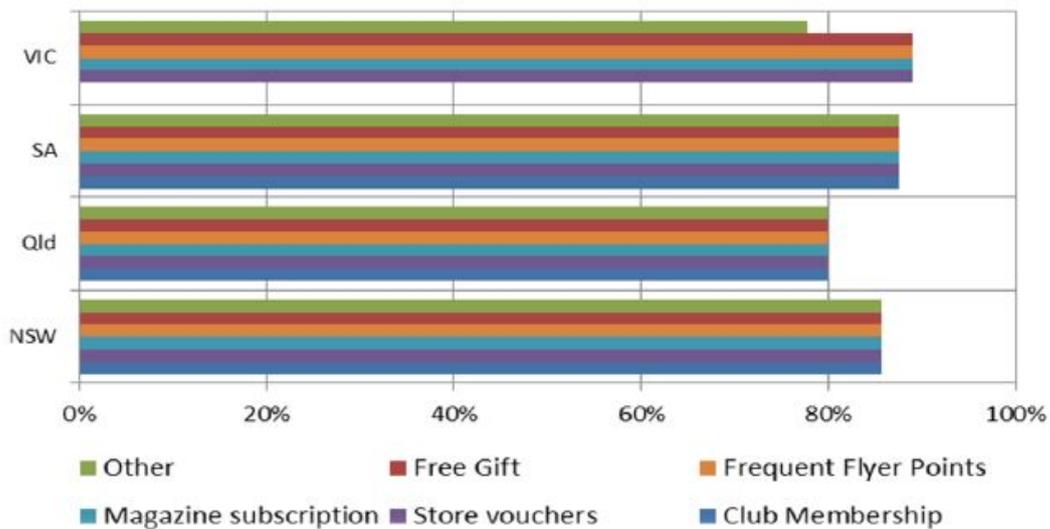
Retailers are also providing consumers with non-monetary incentives to enter and remain in market contracts. All retailers who provided information to the AEMC offer some non-monetary incentives. Some of these non-monetary incentives include:

- frequent flyer points;
- club membership, football jerseys or other associated sporting merchandise;
- vouchers for non-energy products such as restaurants or cinemas;
- gift cards; and

- magazine subscriptions.

Figure 3.2 provides the retailer non-price offers, by state and number of offers.

**Figure 3.2 Example of non-price offers, by jurisdiction and percentage of active retailers offering products**



### 3.2.4 Emerging retailer products and services

Retailers and other service providers are considering different options for product and service offerings. The retail energy market is evolving, in part as a consequence of increased consumer participation and the use of innovative technologies such as smart meters and smart appliances.<sup>90</sup>

Generally retail energy services are emerging to include not only sale and supply of electricity, but the provision of information, for example web portals on consumption information and related services for management of energy use.<sup>91</sup> Some of the other products which are being provided to consumers include on-line sign-up, monthly billing options, bill smoothing and regular true-ups and pay/purchase in advance.<sup>92</sup> Further, Electric vehicle charging<sup>93</sup> and on-bill finance<sup>94</sup> are also emerging as additional products.

<sup>90</sup> AEMC 2012, Power of choice review – giving consumers options in the way they use electricity, 30 November 2012.

<sup>91</sup> Ibid.

<sup>92</sup> For example, Click Energy offer such a product.

<sup>93</sup> Origin is offering customers through an alliance with ChargePoint the ability to install an electric vehicle charging unit in their garage. They also have a specific tariff for electric vehicle charging which includes rate freeze options and green energy options.

<sup>94</sup> AGL has announced it is investigating offering on-bill financing more broadly as a product offering to assist consumers with the purchase of appliances such as air conditioning, heating and hot water.

## 4 Queensland

### Box 4.1: Key findings

The main drivers of increases in market offer prices in Queensland are regulated network costs and government environmental policies, specifically cost pressures from the Queensland Solar Bonus scheme.

Overall, market offer prices in Queensland are expected to increase, on average, by 8.6 per cent a year for the three years from 2012/13 to 2015/16.

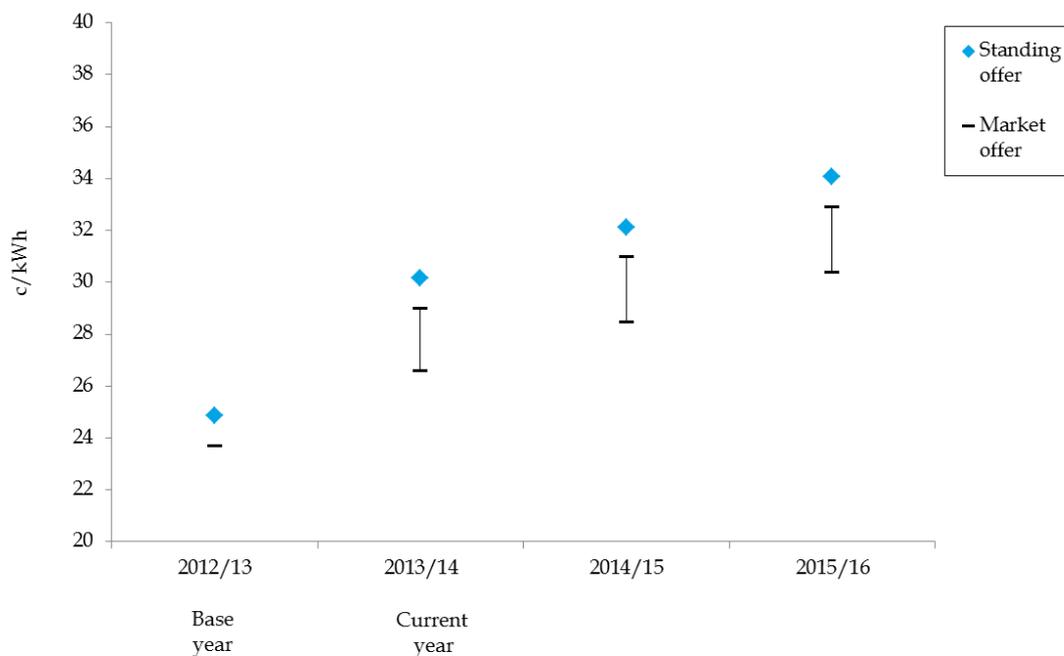
Price increases from 2012/13 to 2013/14 were the result of increases in regulated network costs and the end of the price freeze that applied to the regulated standing offer in 2012/13.

From 2013/14 to 2015/16, cost pressures from the Queensland Solar Bonus scheme will be the key driver of future price increases. This is primarily due to catching up the under recovery of costs from the scheme.

Residential consumers in south-east Queensland are actively participating in the market and are able to choose between a variety of market offers.

Consumers in south east Queensland may have saved around 5 per cent by switching from a standing offer to a market offer in 2012/13. Actual savings may be higher if consumers shop around and seek the best deal from their retailers.

### 4.1 Trends in Queensland market and standing offer prices



As in other jurisdictions, our estimation of the representative market offer price was based on tariffs nominated by retailers. An overview for our approach to estimating representative market offer prices in Queensland is provided in Appendix A.

The 2012/13 and 2013/14 representative standing offers were based on the current government nominated standing offer, known as Tariff 11.<sup>95</sup> For future years, our trends for the representative standing offer are based on the movements in the underlying supply chain cost components.<sup>96</sup>

The market offer and standing offer prices shown here are provided for the south-east Queensland Energex distribution area. Queensland has a uniform tariff policy, which means that consumers pay the same standing offer price, regardless of their location within the state. To achieve the uniform tariff policy, the Queensland government currently subsidises Ergon Energy. For 2013/14, this subsidy has been budgeted at \$620 million.<sup>97</sup>

#### *Key findings*

- The main drivers of increases in residential prices in Queensland are regulated network costs and government environmental policies, specifically cost pressures from the Queensland Solar Bonus scheme.
- Market offer prices increased by 12.2 per cent from 2012/13 to 2013/14, reflecting increases in network costs and the conclusion of the price freeze that was applied to the standing offer in 2012/13.<sup>98</sup> Distribution network costs increased by 19.4 per cent and transmission network costs increased by 15.5 per cent across this period.
- Market offer prices are then expected to increase, on average, by 6.9 per cent a year for the two years from 2013/14 to 2015/16. This increase mainly reflects network businesses recouping costs of the Queensland Solar Bonus scheme that were under-recovered in earlier years. On average, the total costs associated with the Queensland Solar Bonus scheme increase by around 104 per cent a year for the three years from 2012/13 to 2015/16.<sup>99</sup>

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<sup>95</sup> Tariff 11 is the residential flat tariff. This tariff is regulated by the Queensland Competition Authority.

<sup>96</sup> We note that the QCA is scheduled to publish its draft determination of the regulated standing offer for 2014/15 on 13 December 2013. As this information was not available at the time of publication, our reported 2014/15 standing offer price is based movements in the underlying cost components.

<sup>97</sup> Queensland Department of Energy and Water Supply, *The 30-year electricity strategy: Discussion paper*, DEWS, 2013, p.10.

<sup>98</sup> In July 2012, the Queensland government froze its standing offer tariff 11 for one year. While the QCA acknowledges that the conclusion of the price freeze contributed to the increase in the standing offer tariff from 2012/13 to 2013/14, it advises that the larger portion of the increase in standing offer tariff from 2012/13 to 2013/14 was in fact due to increases in underlying costs. More information is available at: Queensland Competition Authority, *Regulated Retail Electricity Prices 2013/14: Final Determination*, QCA, May 2013, p.ix.

<sup>99</sup> This increase in Solar Bonus scheme costs is based on the QCA's assumption that the Queensland network businesses will seek to catch up on all under-recovered costs of the Solar Bonus scheme incurred in 2013/14 and 2014/15 over the first two years of the next regulatory period, being 2015/16 and 2016/17. It is possible that these under-recovered costs will be recovered over a longer time period. Regardless of how the costs of this scheme are recovered, they will continue to place upwards pressure on residential electricity prices out to 2028.

- Based on an annual household consumption of 5,370 kWh, these trends would result in an increase of around \$100 in the annual cost of electricity in 2014/15, compared to the annual cost in 2013/14. Consumers can save by switching to a market offer, with savings of around 5 per cent if they switched in 2012/13.

*Effect of different household consumption*

For the representative market offer identified above, we applied a sample household consumption value of 5,370 kWh.<sup>100</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>101</sup> The results of this analysis are included in table 4.1.

**Table 4.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average market offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (4,030 kWh)	24.67	\$994
Medium (5,370 kWh)	23.71	\$1,273
High (9,391 kWh)	22.49	\$2,112

These results show how as total consumption increases, the average unit cost of electricity declines. This reflects the structure of most of the Queensland market offer tariffs that formed the basis of the representative market offer tariff. These tariffs had both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>102</sup>

The QCA considers that in the current standing tariff the fixed charge is too low for cost reflectivity while the variable charge is too high. The QCA has advised that it intends to re-balance these components of the standing offer tariff.<sup>103</sup>

<sup>100</sup> As outlined in Chapter one, this assumed consumption was based on information provided by the Queensland Department of Energy and Water Supply. Originally, the consumption values provided to the AEMC declined over the years of our reporting period. We have elected to use the 2012/13 consumption value as the basis of our analysis. This means that our approach to the analysis of cost drivers and price trends is consistent across jurisdictions and across years of the reporting period.

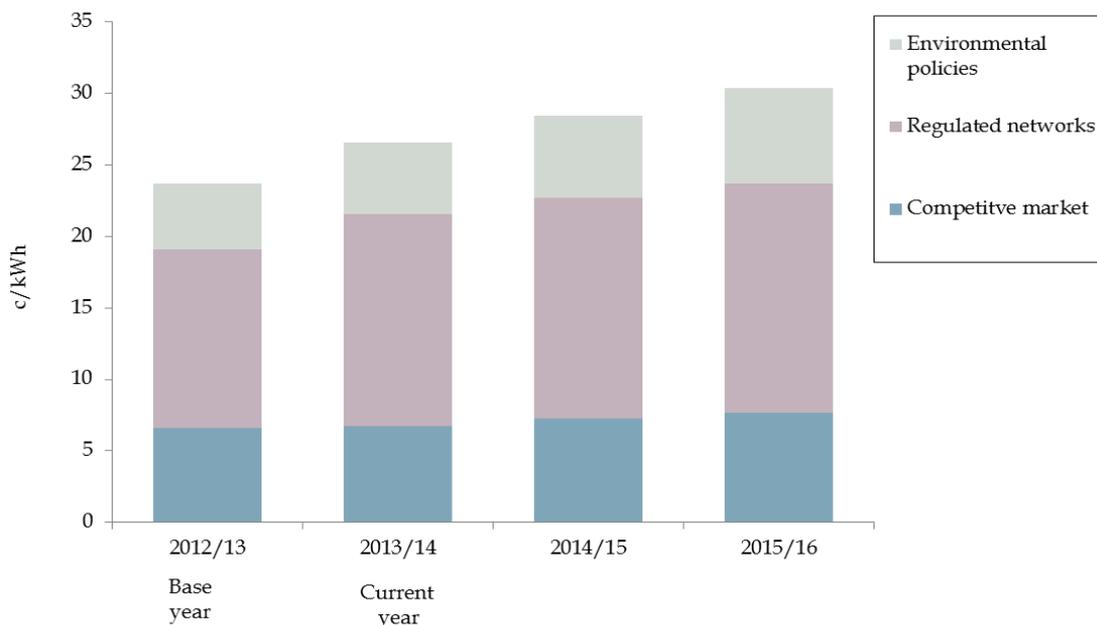
<sup>101</sup> Chapter one provides more information on our approach to determining different household consumption.

<sup>102</sup> More information about different pricing structures is provided in Appendix D.

<sup>103</sup> Queensland Competition Authority, *Interim Consultation Paper: Regulated Retail Electricity Prices for 2014-15*, QCA, July 2013, p.28.

The QCA's re-balancing of the standing offer tariff may affect the tariff design of future market offers.

## 4.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>4.65</b>	<b>5.05</b>	<b>5.81</b>	<b>6.68</b>
Carbon	c/kWh	2.55	2.66	2.72	0.65
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
Solar Bonus Scheme	c/kWh	0.62	1.24	2.19	5.14
Queensland Gas Scheme	c/kWh	0.09	0.03	0.00	0.00
<b>Regulated networks</b>	<b>c/kWh</b>	<b>12.46</b>	<b>14.80</b>	<b>15.42</b>	<b>16.05</b>
Transmission	c/kWh	1.95	2.25	2.38	2.53
Distribution	c/kWh	10.51	12.55	13.04	13.52
<b>Competitive market</b>	<b>c/kWh</b>	<b>6.61</b>	<b>6.75</b>	<b>7.25</b>	<b>7.64</b>
Wholesale and retail					
<b>Total</b>	<b>c/kWh</b>	<b>23.71</b>	<b>26.59</b>	<b>28.48</b>	<b>30.37</b>

#### 4.2.1 Competitive wholesale and retail markets

Competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. Our wholesale energy purchase cost for Queensland is based on modelling undertaken for the report.<sup>104</sup>

We did not explicitly estimate the retail component. The retail component reflects the residual difference between the total of all the supply chain cost components (wholesale, network, and environmental policies) and the representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

Retailers have different wholesale energy purchase costs. Such costs vary and will be dependent on their specific hedging strategy which will be influenced by their individual risk appetite and expectations of future price volatility.<sup>105</sup>

Given this, we have presented a range for competitive wholesale and retail market costs. This range provides an indicative upper and lower bound for the wholesale component based on two alternative methods of calculating wholesale energy purchase costs and a corresponding upper and lower bound for the “residual” used to calculate the retail component.<sup>106</sup> In some cases, the upper bound of wholesale energy purchase costs results in the lower bound of the retail component being negative for some years of the reporting period.<sup>107</sup>

**Table 4.2 Range of the wholesale and retail components - Queensland**

Cost components	2012/13 (c/kWh)	2013/14 (c/kWh)	2014/15 (c/kWh)	2015/16 (c/kWh)
Wholesale component (excluding carbon)	4.07 to 8.49	4.15 to 8.52	4.58 to 8.52	4.91 to 8.52
Retail component	-1.88 to 2.54	-1.77 to 2.60	-1.27 to 2.67	-0.88 to 2.73

In 2012/2013, the competitive wholesale and retail market component made up around 28 per cent of the representative market offer price. By 2015/16, this cost component is expected to decrease to around 25 per cent of the representative market offer price.

<sup>104</sup> The modelling undertaken for the report can be found in NERA Economic Consulting Final Report *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>105</sup> For example, some retailers may rely on a combination of longer term power purchase agreements, investment in physical generation assets and shorter-term hedges. Other retailers may rely on tailored over-the-counter hedging contracts

<sup>106</sup> As highlighted in Chapter 1, the range for wholesale energy purchase costs has been based on modelling undertaken for the report.

<sup>107</sup> This result also occurs for New South Wales and South Australia.

Competitive market costs are expected to, on average, increase by 5 per cent a year over the next three years, from 2012/13 to 2015/16.

Average demand in Queensland has decreased in recent years; over the years 2008/9 to 2012/13, average demand fell by around 0.1 per cent annually. Reasons for this include increased energy efficiency and penetration of rooftop solar generation.<sup>108</sup> Under AEMO's medium growth planning scenario, average demand in Queensland is expected to grow over the next decade, with annual growth of around 3.1 per cent.<sup>109</sup> The main driver of this forecast increase in average demand is the increase in industrial load associated with the liquefied natural gas export facilities near Gladstone.

There has been retail competition in south-east Queensland since 2007. Consumers in this region can either accept a market offer or remain on the standing offer. The QCA is responsible for setting residential electricity prices for standing offers.<sup>110</sup>

In 2012/13, the Queensland government announced that the QCA would not make a determination for residential electricity prices for that year. Rather, the government froze the residential prices that applied at the time.<sup>111</sup> The QCA has since released a determination for standing offer prices for 2013/14. These standing offer prices have increased, mainly reflecting increases in underlying network costs as well as the conclusion of the 2012/13 price freeze. The QCA is scheduled to publish its draft determination of the regulated standing offer for 2014/15 on 13 December 2013. As this information was not available at the time of publication, our reported 2014/15 standing offer price is based movements in the underlying cost components.

The Queensland Interdepartmental Committee on Electricity Sector Reform has published a report on Electricity Sector Reform in Queensland. Amongst the recommendations made in this report, the Committee recommended the removal of retail price regulation in South East Queensland.<sup>112</sup>

As part of its broader package of reforms included in the 30-year Electricity Strategy, the Queensland Government has accepted this recommendation and has announced that it intends to remove retail price controls in South East Queensland by 1 July 2015, providing it can be demonstrated that customers can benefit and adequate customer protections are in place.<sup>113</sup> Following any removal of price regulation, the QCA will have a role in price monitoring. The Queensland Government is consulting with

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108 Australian Energy Market Operator, *National Electricity Forecast Report 2013*, AEMO, June 2013, p 3-1.

109 Ibid.

110 Residential customers in regional Queensland are able to move to a market offer. However, in practice, this is generally limited to residential customers in south-east Queensland. Generally speaking, retailers will not offer residential market offer contracts in regional Queensland due to the Queensland Government's Uniform Tariff Policy that benchmarks regulated prices to south-east Queensland's costs.

111 An adjustment was made to reflect the introduction of the carbon price. For more information see: Queensland Competition Authority, *Final Determination: Regulated Retail Electricity Prices 2013-14*, QCA, May 2013, p. 83.

112 Interdepartmental Committee on Electricity Sector Reform, *Report to Government*, May 2013, p.10.

113 Queensland Government, *Queensland Government response to the Interdepartmental Committee on Electricity Sector Reform*, June 2013, p.9.

stakeholders over the preconditions and regulatory framework for the QCA's price monitoring role.<sup>114</sup>

The Queensland Government is also examining the potential options for introducing more competition outside south-east Queensland.<sup>115</sup>

#### **4.2.2 Regulated networks**

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is based on information provided by the AER, sourced from existing regulatory determinations. Where no regulatory determination exists, we have escalated the cost of regulated networks between years by the assumed rate of inflation.

In 2012/2013, regulated network costs made up around 52 per cent of the representative market offer price. Of this, transmission network costs made up around 8 per cent, while distribution costs made up around 44 per cent. By 2015/16, both distribution and transmission network costs make up the same proportion of the representative market offer price. The reasons for these movements are discussed below.

As discussed above, the representative standing offer price did not change between 2011/12 and 2012/13, aside for adjustments for the introduction of the carbon pricing mechanism. This was achieved by the Queensland Government directing the Queensland network businesses to lower their network charges in 2012/13. The Queensland Government then compensated the network businesses for the difference.<sup>116</sup> The Queensland network businesses have now returned their residential network charges to cost reflective levels.<sup>117</sup>

This return to cost reflectivity in network tariffs is reflected in an increase of 15.5 per cent in transmission costs and 19.4 per cent in distribution costs from 2012/13 to 2013/14.

##### *Transmission*

Transmission is provided in Queensland by Powerlink, a government owned corporation. Like other transmission businesses, the revenue of Powerlink is regulated by the AER.

The most recent network regulatory determination for Powerlink was made in 2012. The regulatory period covered the period from 1 July 2012 to 30 June 2017. The allowed revenue in this regulatory determination is 49 per cent higher than what was allowed

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<sup>114</sup> Queensland Department of Energy and Water Supply, *The 30-year electricity strategy: Discussion paper*, 2013, p. 9.

<sup>115</sup> *Ibid.*, p. 10.

<sup>116</sup> Queensland Competition Authority, *Final Determination: Regulated Retail Electricity Prices 2013-14*, QCA, May 2013, p. 80.

<sup>117</sup> *Ibid.*, p. 83.

in the previous regulatory determination. The AER advised that this increase in revenue was provided to allow Powerlink to meet and manage expected demand as well as comply with existing regulatory obligations and requirements.<sup>118</sup>

As discussed above, transmission network costs increase by 15.5 per cent between 2012/13 and 2013/14. They are then expected to increase, on average, by 6.1 per cent a year from 2013/14 to 2015/16.

#### *Distribution*

Distribution services in Queensland are provided by two government owned businesses, Energex and Ergon Energy. The current regulatory determination period for these businesses runs from July 2010 to June 2015.

In this determination the AER allowed an increase in revenue for these businesses, relative to the previous regulatory determination period. This increase covered capital expenditure made in the previous regulatory period, which began in 2005 and concluded in 2010. Additional capital expenditure was also allowed to meet expectations of growth in peak and average demand from 2010 to 2015.<sup>119</sup> The AER identified that peak demand was expected to grow at a faster rate than average demand, necessitating further expansion of the Queensland electricity distribution networks.<sup>120</sup>

As discussed above, distribution network costs are expected to increase by 19.4 per cent from 2012/13 to 2013/14. They are then expected to increase by 3.9 per cent from 2013/14 to 2014/15. As the current regulatory period concludes in June 2015, distribution costs for 2015/16 are escalated at the assumed rate of inflation.

### **4.2.3 Environmental policies**

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target, feed in tariff schemes and the Queensland gas scheme.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale purchase cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The costs of the renewable energy target and energy efficiency schemes are recovered through retail costs.

In 2012/13, environmental policies make up around 20 per cent of the representative market offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 11 per cent of the representative market offer price. This falls to 2 per cent in 2015/16,

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<sup>118</sup> Australian Energy Regulator, *Powerlink Transmission determination 2012–13 to 2016–17*, AER, 2012, p. iv.

<sup>119</sup> Australian Energy Regulator, *Final decision: Queensland distribution determination 2010–11 to 2014–15*, AER, May 2010, p. vi.

<sup>120</sup> *Ibid.*

with the bulk of this decrease reflecting the movement from a fixed carbon price to a floating price under the existing legislation.

- In 2012/13, renewable energy target costs made up around 6 per cent of the representative market offer price. This cost decreases across the reporting period, making up around 3 per cent of the representative market offer price in 2015/16.
- In 2012/13, the cost of the Queensland Solar Bonus scheme made up around 3 per cent of the representative market offer price. This increases to approximately 17 per cent of the representative market offer price in 2015/16, based on the assumption that the Queensland network businesses catch up on all under-recovered feed in tariff scheme costs over the years 2015/16 and 2016/17.
- In 2012/13, the cost of the Queensland Gas scheme makes up less than 0.5 per cent of representative market offer price. This scheme will be discontinued at the end of 2013.

### *Carbon*

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon.<sup>121</sup>

In Queensland the cost of the carbon pricing mechanism increases slightly between 2012/13 and 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls sharply in 2015/16, reflecting the move from a fixed carbon price to a floating price under the existing legislation. This sharp reduction in the cost of carbon is a key driver of the reduction in Queensland residential retail prices identified in 2015/16.

We note that the Australian Government has introduced legislation to remove the carbon price mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

### *Renewable energy target*

As discussed in Chapter two, 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 meeting the targets under these policies are recovered by retailers from consumers.<sup>122</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET is expected to increase, on average, by 5.6 per cent a year from 2012/13 to 2015/16.

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<sup>121</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>122</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>123</sup>

The STP in the early years of our reporting period is relatively high and falls sharply throughout the reporting period.<sup>124</sup> The cost of the SRES in Queensland is expected to decrease, on average, by 34 per cent a year from 2012/13 to 2015/16.

#### *Queensland Solar Bonus scheme*

The Queensland Solar Bonus scheme applies to all solar systems of less than 5 kW capacity which have been installed since July 2008. Systems installed before July 2012 are eligible for a feed in tariff of 44c/kWh. This tariff will continue to be paid until 2028 to consumers that continue to meet eligibility requirements.

Systems installed after this date out to 30 June 2014 are eligible for a feed in tariff of 8c/kWh. The costs of funding these payments are recovered from consumers through distribution network charges.

The Solar Bonus scheme led to the introduction of solar capacity far in excess to that originally anticipated. The capacity installed under this scheme is forecast to reach capacity of 1,098 MW in 2013, following high levels of uptake in 2012/13 to 2013/14. Put in context, this level of installed capacity is 130 times the level of the capacity trigger for the scheme to be reviewed, as included in the original scheme design.<sup>125</sup> Other factors relevant to the cost of the Solar Bonus scheme include the period of eligibility for consumers to join the scheme, the level of the tariff and the time over which eligible consumers will be paid the scheme tariff. These issues are discussed in further detail in Chapter two.

We have reproduced the cost estimate produced by the QCA as the basis of our estimates of Queensland Solar Bonus scheme costs.<sup>126</sup> On average, this cost component is expected to increase by around 104 per cent a year from 2012/13 to 2015/16. This represents a key driver of price increases for residential consumers, particularly in 2014/15 and 2015/16.

In estimating the total cost of the Solar Bonus scheme in future years, the QCA assumed a catch up of the under-recovered Solar Bonus scheme costs incurred by the Queensland network businesses in 2013/14 and 2014/15. These costs were not recovered as they were not included in the AER's original regulatory determinations that applied to those businesses. The QCA assumed that the Queensland network

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<sup>123</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>124</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

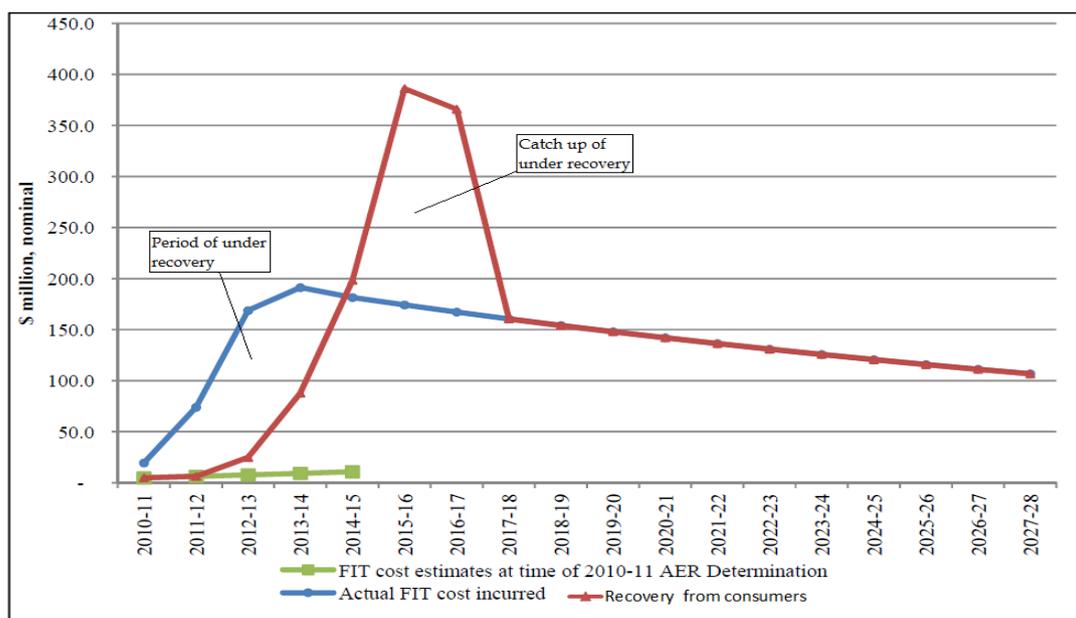
<sup>125</sup> Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland: Final Report*, QCA, March 2013, p. 56.

<sup>126</sup> See Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland: Final Report*, March 2013, p. 64. The QCA estimates the impact of the Solar Bonus on future prices for a consumer paying the standing offer. We have converted these estimates to c/kWh format with reference to the typical consumption profile.

businesses will seek a catch-up of all of these under-recovered costs over the first two years of the next network regulatory determination period, from 2015/16 to 2016/17.

The assumed cost of the Solar Bonus scheme is illustrated in figure 4.1 below. The green line shows the cost of the Solar Bonus scheme that was assumed and included as allowed revenue by the AER in the relevant 2010/11 regulatory determination. Energex's cost recovery (the red line) has, so far, been below actual costs incurred (the blue line). The catch-up occurs between 2015/16 and 2016/17, before returning to an assumed smooth cost recovery in 2017/18.

**Figure 4.1 Cost and recovery of Solar Bonus scheme to Energex**



Source: QCA, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland: Final Report*, March 2013, p. 60.

The QCA has acknowledged that the National Electricity Rules (NER) may provide some flexibility to allow this catch-up of under recovered revenue to be spread over a longer period of years. The QCA also identified that Energex is considering applying to the AER to smooth the recovery of expected catch-up / pass-through amounts over the next five-year regulatory control period.<sup>127</sup>

However, as any potential smoothing of cost pass-through amounts is yet to be considered or confirmed by the AER, the QCA advised that it would "proceed on the basis of usual practice to date" and assume recovery of these costs in 2015-16 and 2016-17.<sup>128</sup> Any such smoothing would reduce the extent of the increases in the Solar Bonus scheme costs that we have included in this report, although recovery of the costs of the scheme will still result in increased residential electricity prices

#### *Queensland Gas scheme*

The Queensland Gas scheme was introduced in 2005 to encourage the development of the gas industry in the state. Retailers and other liable parties are required to source a

<sup>127</sup> Queensland Competition Authority, *Estimating a Fair and Reasonable Solar Feed-in Tariff for Queensland*, QCA, March 2013, p.59.

<sup>128</sup> Ibid.

prescribed percentage of their electricity from gas-fired generation, or purchase tradable certificates to meet their requirements. In 2012/13, the cost of this scheme made up less than 0.5 per cent of the representative market offer price.

The Queensland government has announced that this scheme will end on 31 December 2013. Retailers will still be able to trade certificates until July 2014 so that they have enough supply to meet their requirements in this current financial year.<sup>129</sup>

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<sup>129</sup> Queensland Government, *Queensland Gas scheme*, <http://www.business.qld.gov.au/industry/energy/gas/queensland-gas-scheme>, version current as of 1 October 2013.

## 5 New South Wales

### Box 5.1: Key findings

Market offer prices in New South Wales are expected to decrease, on average, by around 0.7 per cent a year for the three years from 2012/13 to 2015/16. This reflects small increases in competitive market costs, offset by reductions in environmental policy costs in 2015/16.

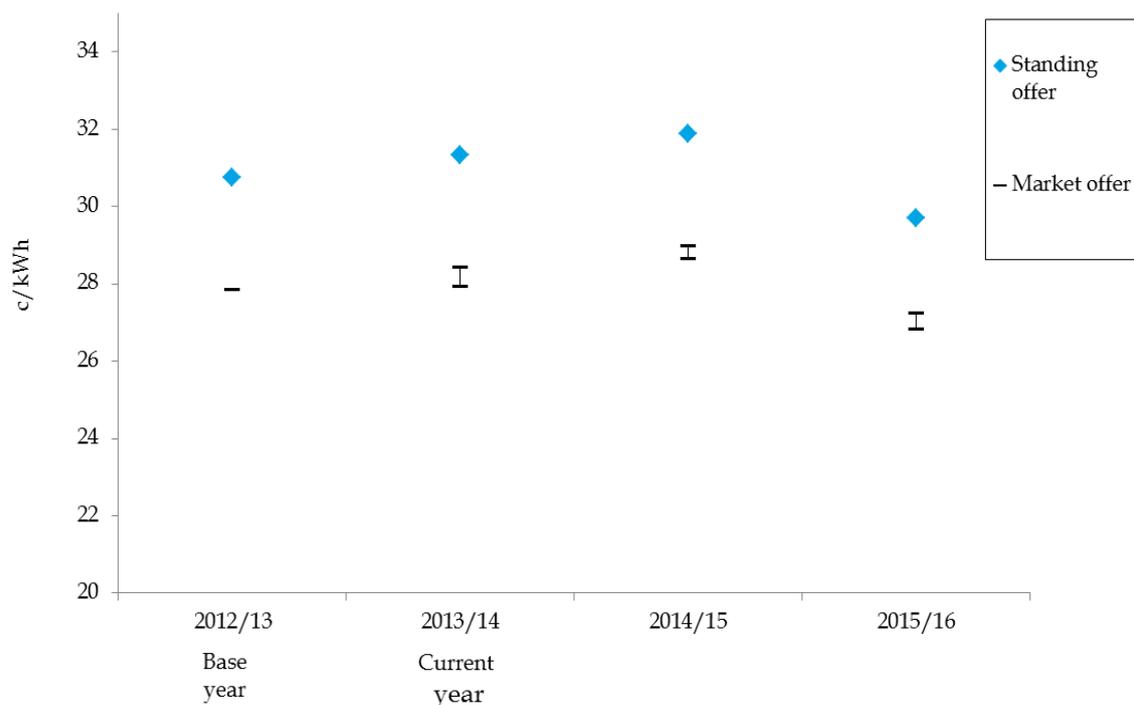
Market offer prices increase, on average, by 1.4 per cent a year for the two years from 2012/13 to 2014/15. This increase, which is less than the expected level of inflation, reflects small increases in wholesale energy purchase costs and transmission network costs.

Prices are then expected to decrease by 5 per cent from 2014/15 to 2015/16. This primarily reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

Residential consumers in New South Wales are actively participating in the market and are able to choose between a variety of market offers.

Consumers in New South Wales may have saved around 9 per cent by switching from a standing offer to a market offer in 2012/13. Actual savings may be higher if consumers shop around and seek the best deal from retailers.

### 5.1 Trends in New South Wales market and standing offer prices



As in other jurisdictions, our estimation of the representative market offer price was based on tariffs nominated by retailers. An overview of our approach for estimating the representative market offer is provided in Appendix A.

For 2012/13 and 2013/14, the representative standing offer price is based on the weighted average of the regulated offers supplied to IPART by the standard retailers.<sup>130</sup> From 2014/15, we have assumed that the regulated standing offer price follows the indicative price path published in the 2013 IPART review of regulated prices.<sup>131</sup>

The standing offer and market offer prices shown above are determined from a population weighted average of the prices across all three distribution regions. It is important to note that prices differ between distribution regions.

#### *Key findings*

- Market offer prices in New South Wales are expected to decrease, on average, by around 0.7 per cent a year for the three years from 2012/13 to 2015/16. This reflects small increases in competitive market costs, offset by reductions in environmental policy costs in 2015/16.
- Market offer prices are expected to increase, on average, by 1.4 per cent a year for the two years from 2012/13 to 2014/15.<sup>132</sup> This increase, which is less than the expected level of inflation, reflects small increases in wholesale costs and transmission network costs, partially offset by decreases in environmental policy costs. Wholesale costs and transmission costs increase, on average, by 5 and 6 per cent a year respectively, for the two years from 2012/13 to 2014/15. Environmental policy costs decrease, on average, by around 1 per cent a year across the same period.
- Based on an annual household consumption of 6,500 kWh, this would result in an increase of around \$47 in annual household electricity expenditure in 2014/15, compared to 2013/14. Consumers may have saved by switching to a market offer, with savings of around 9 per cent if they switched in 2012/13.

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<sup>130</sup> In NSW there is a distinction between standing offers and the regulated offer. While the terms and conditions of the standing offer contract are set out in the National Energy Retail Rules, standing offer prices are set by individual retailers. In contrast, regulated offer contracts have terms and conditions set out in the National Energy Retail Rules with prices regulated by IPART. For NSW, this report considers only these regulated offer prices. For consistency, the term 'standing offer prices' has been used to describe these offers. The standard retailer in the Ausgrid distribution region is Energy Australia. The standard retailer in the Essential and Endeavour distribution regions is Origin Energy. To determine the representative standing offer in NSW, the regulated offer tariffs supplied by each of these standard retailers have been weighted by the relative share of total customers in each distribution region. More detail regarding the calculation of the standing offer for NSW is included in Appendix A.

<sup>131</sup> Independent Pricing and Regulatory Tribunal, *Review of Regulated Retail Prices for Electricity*, IPART, 2013, p.3.

<sup>132</sup> As described in Chapter 1, a sample household is defined as a residential household with a single rate tariff with an annual consumption of 6,500 kWh in 2012/13.

- Market offer prices are expected to decrease by approximately 5 per cent in 2015/16. This decrease reflects the move from a fixed carbon price to a floating price under existing legislation.

*Effect of different household consumption*

For the representative market offer identified above, we applied a sample household consumption value of 6,500 kWh per annum.<sup>133</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>134</sup> The results of this analysis are included in table 5.1 below.

**Table 5.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average market offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (5,163 kWh)	28.78	\$1,486
Medium (6,500 kWh)	27.86	\$1,811
High (10,512 kWh)	27.48	\$2,889

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of most of the New South Wales market offer tariffs which formed the basis of the representative market offer tariff. These tariffs had both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>135</sup>

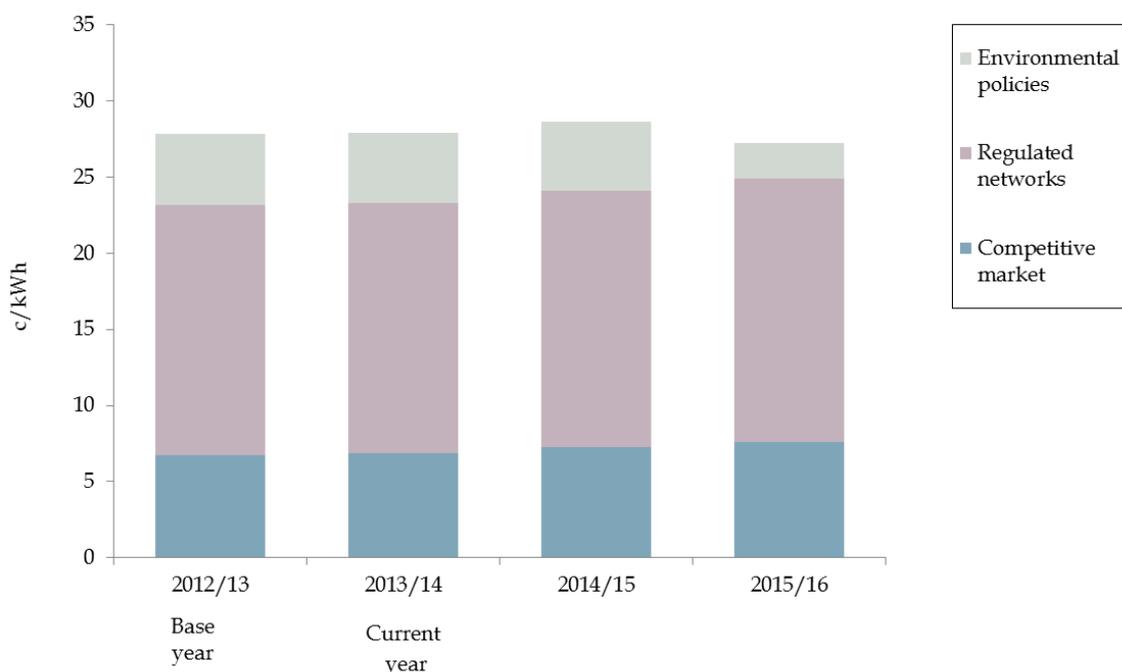
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133 As discussed in Chapter three, this assumed consumption was based on information provided to us by the Department of Trade and Investment in New South Wales.

134 Chapter three provides more information on our approach to determining different household consumption.

135 More information about different pricing structures is provided in Appendix D.

## 5.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>4.67</b>	<b>4.63</b>	<b>4.53</b>	<b>2.32</b>
Carbon	c/kWh	2.68	2.81	2.93	0.73
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
Climate Change fund	c/kWh	0.44	0.51	0.51	0.51
Energy savings scheme	c/kWh	0.15	0.18	0.19	0.19
<b>Regulated networks</b>	<b>c/kWh</b>	<b>16.45</b>	<b>16.44</b>	<b>16.86</b>	<b>17.30</b>
Transmission	c/kWh	3.46	3.77	3.87	3.96
Distribution	c/kWh	13.00	12.67	13.00	13.33
<b>Competitive market</b>	<b>c/kWh</b>	<b>6.74</b>	<b>6.87</b>	<b>7.27</b>	<b>7.61</b>
Wholesale and retail					
<b>Total</b>	<b>c/kWh</b>	<b>27.86</b>	<b>27.94</b>	<b>28.66</b>	<b>27.23</b>

### 5.2.1 Competitive wholesale and retail markets

Competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. Our wholesale energy purchase cost for New South Wales is based on modelling undertaken for the report.<sup>136</sup>

We did not explicitly estimate the retail component of competitive market costs. The retail component reflects the residual difference between the total of all the supply

<sup>136</sup> The modelling undertaken for the report can be found in NERA Economic Consulting Final Report *Projections of Wholesale Energy Costs*, NERA, September 2013.

chain cost components (wholesale, network, and environmental policies) and the representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

Retailers have different wholesale energy purchase costs. Such costs vary and will be dependent on their specific hedging strategy which will be influenced by their individual risk appetite and expectations of future price volatility.<sup>137</sup>

Given this, we have presented a range for competitive wholesale and retail market costs. This range provides an indicative upper and lower bound for the wholesale component based on two alternative methods of calculating wholesale energy purchase costs and a corresponding upper and lower bound for the “residual” used to calculate the retail component.<sup>138</sup> In some cases, the upper bound of wholesale energy purchase costs results in a lower bound of the retail component being negative for some years of the reporting period.<sup>139</sup>

**Table 5.2 Range of the wholesale and retail components - New South Wales**

<b>Cost components</b>	<b>2012/13 (c/kWh)</b>	<b>2013/14 (c/kWh)</b>	<b>2014/15 (c/kWh)</b>	<b>2015/16 (c/kWh)</b>
Wholesale component (excluding carbon)	4.11 to 8.49	4.17 to 8.51	4.50 to 8.51	4.77 to 8.51
Retail component	-1.75 to 2.64	-1.64 to 2.70	-1.25 to 2.77	-0.9 to 2.84

In 2012/13, competitive market costs make up around 24 per cent of the average market offer price. By 2015/16, this cost component is expected to increase to 28 per cent of the average market offer price. Competitive market costs are expected to, on average, increase by 4.1 per cent a year over the next three years, from 2012/13 to 2015/16.

Over the three years from 2008/09 to 2012/13, average demand fell by around 2.1 per cent annually in New South Wales.<sup>140</sup> Under AEMO's medium growth planning scenario, average demand in New South Wales is expected to show stable growth over the next decade, with annual growth of around 0.6 per cent.<sup>141</sup>

<sup>137</sup> For example, some retailers may rely on a combination of longer term power purchase agreements, investment in physical generation assets and shorter-term hedges. Other retailers may rely on tailored over-the-counter hedging contracts

<sup>138</sup> As highlighted in Chapter 1, the range for wholesale energy purchase costs has been based on modelling undertaken for the report.

<sup>139</sup> This result also occurs for Queensland and South Australia.

<sup>140</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, AEMO, 2013, p.4-1.

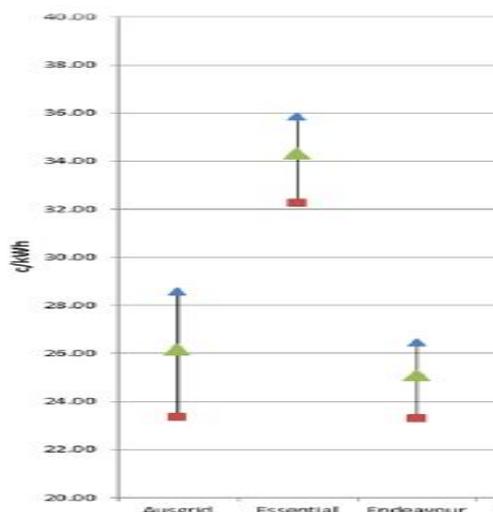
<sup>141</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, AEMO, 2013, p. 4-1.

Residential consumers in New South Wales have been able to enter market contracts with the retailer of their choice since 2002. Approximately 60 per cent of residential consumers are currently on a market contract.<sup>142</sup> The remainder of consumers are on a standing offer tariff.

IPART is responsible for determining the regulated standing offer in NSW. In July 2013, IPART published a regulated retail price determination which covers the period July 2013 to June 2016.<sup>143</sup> In this document, IPART developed an indicative price path for the regulated standing offer out to 2015/16. IPART will review the regulated standing offer annually, to take into account information that may become available in the future.

Chapter three outlined that retailers use different strategies for consumer acquisition and retention. This includes the range of market offers provided and discounts applied. We note that in February this year, there was significant discounting occurring across the NSW market. This is demonstrated in figure 5.1, which is based on the 1 February 2013 market offers that we used as the basis of estimating market offers for this report. This graph provides an example of the range between the highest, lowest and average market offer prices after discounting, by distribution area, in New South Wales as at 1 February 2013.

**Figure 5.1 Highest, lowest and average prices, after discounting, by DNSP, 1 February 2013, c/kWh**



Since February 2013, there have been changes in the level of discounts being offered by retailers. The effect of these changes in retailer activity in New South is highlighted in table 5.2, which compares market offer prices and retail components based on market offers that were available as at February and September 2013. The analysis shows very small ranges for the retail component which may suggest that the discounting by retailers may not have been sustainable during the first half of 2013, and from the negative values, may not have been recovering, at a minimum their operating costs.

<sup>142</sup> Independent Pricing and Regulatory Tribunal, *Review of Regulated Retail Prices for Electricity*, IPART, 2013, p.28.

<sup>143</sup> Ibid.

The September results show a small increase in market offer prices, with a corresponding increase in apparent retail component.

**Table 5.3 Timeframe for market offers (February 2013 versus September 2013)**

		Victoria	New South Wales	South Australia	Queensland
<i>February market offers trended forward 2013/14 (c/kWh)</i>	Representative average market offer price (c/kWh)	28.83	27.94	31.03	26.59
	Retail component (c/kWh)	3.39 to 7.80	-1.64 to 2.70	-0.31 to 3.04	-1.88 to 2.54
<i>September market offers 2013/14 (c/kWh)</i>	Representative average market offer price (c/kWh)	28.17	28.01	32.81	28.32
	Retail component (c/kWh)	2.73 to 7.14	-1.57 to 2.77	1.47 to 4.82	-0.15 to 4.27

The AEMC has recently completed a review of competition in the retail electricity and gas markets in New South Wales. The Commission found that there is robust competition in electricity retailing and consequently recommended that price regulation be removed. The AEMC considered that removing price regulation could lead to more innovation and competitive pricing.<sup>144</sup>

In March 2011, the New South Wales government privatised the trading rights for the Delta West and Eraring Generators. Under these gentrader agreements most of the trading rights to the state owned Eraring generators were sold to Origin Energy, while EnergyAustralia (then TRUenergy) purchased the trading rights to the Delta West generators. While the trading rights were privatised, the government maintained ownership of the physical power plants. In 2013, Origin and EnergyAustralia fully purchased these generators. The government maintains ownership of both the trading rights and the physical assets of Macquarie Generation and Delta Coastal but has committed to selling these generation assets. It is uncertain what effect, if any, a change in ownership of generators may have on the wholesale cost.

### 5.2.2 Regulated networks

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across

<sup>144</sup> Australian Energy Market Commission, *Review of Competition in the Retail Electricity and Natural Gas Markets in New South Wales*, Final Report, AEMC, 3 October 2013, Sydney.

long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is based on information provided by the AER, sourced from existing regulatory determinations. Where no regulatory determination exists, we have escalated the cost of regulated networks by the assumed rate of inflation.

In 2012/2013, regulated network costs made up around 59 per cent of the cost of the representative market offer. Of this, transmission network costs made up around 12 per cent, while distribution makes up around 47 per cent. In 2015/16 both of these costs are expected to increase, with transmission network costs making up approximately 15 per cent, while distribution network costs make up around 49 per cent. The reasons for these movements are discussed in further detail below.

#### *Transmission*

Transmission infrastructure is provided by TransGrid, a government owned corporation. Like other transmission businesses, the revenue of TransGrid is regulated by the AER.

The current regulatory determination for TransGrid runs from July 2009 to June 2014.<sup>145</sup> Relative to the previous regulatory period, additional revenue was allowed for augmentation of the network to meet expected increases in demand, replace ageing assets and improve reliability.<sup>146</sup>

TransGrid has announced that "[f]or at least the next five years, consumers can expect TransGrid to keep revenue increases to no more than CPI."<sup>147</sup> As the current regulatory period concludes in June 2014, transmission costs for 2014/15 to 2015/16 have been escalated by CPI (equivalent to our assumed rate of inflation of 2.5 per cent).

#### *Distribution*

Distribution network services are provided by three government owned network businesses; Ausgrid, Endeavour Energy and Essential Energy. In 2012, the New South Wales government merged all three of these businesses into a corporate structure called Networks NSW. This action was designed to reduce costs by removing duplication and creating economies of scale.<sup>148</sup>

The current regulatory period for these networks runs from July 2009 to June 2014. In making its final determination in 2009, the AER approved a higher level of expenditure relative to the previous regulatory period. This higher allowed revenue was to allow for "increases in capital works ... needed to augment the networks to accommodate the

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<sup>145</sup> In the 2012 Price Trends Report, the AEMC's modelled trends in transmission costs were heavily influenced by a change Ausgrid's pricing strategy in 2013/13 (see Australian Energy Market Commission, *Possible future retail electricity price movements: 1 July 2012 to 30 June 2015*, AEMC, March 2013, Box 3.4, p. 44.). The entirety of this year's report occurs under the pricing strategy that was introduced in 2012/13 and this is reflected in the results of this year's report.

<sup>146</sup> Australian Energy Regulator, *TransGrid transmission determination 2009/10-2013/14, Final decision*, AER, 28 April 2009. See also TransGrid, *Revised revenue proposal 1 July 2009-30 June 2014*, January 2009, p.12.

<sup>147</sup> TransGrid, *TransGrid announces revenue freeze for 2013*, TransGrid, 7 December 2012.

<sup>148</sup> NSW Government, *NSW Electricity Network Reforms*, available at: <http://www.energy.nsw.gov.au/electricity/networks/reforms>, page viewed 19 September 2013.

growth in maximum demand for energy, to replace ageing assets and to improve network security and reliability."<sup>149</sup>

Between 2012/13 and 2013/14 there was a small decrease in distribution network costs of around 3 per cent. This reflects a small decrease in the allowed revenue for Essential Energy during this period. As the current regulatory period concludes in June 2014, distribution network costs for 2014/15 to 2015/16 have been escalated by the assumed rate of inflation.

### 5.2.3 Environmental policies

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target, feed in tariff schemes and energy efficiency schemes.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The costs of the renewable energy target and energy efficiency schemes are recovered through retail costs.

In 2012/13, environmental policies make up around 17 per cent of the representative market offer price.

- In 2012/13 the cost of the carbon pricing mechanism made up around 10 per cent of the representative market offer price. This falls to 3 per cent in 2015/16, with the bulk of this decrease reflecting the movement from a fixed carbon price to a floating price under existing legislation.
- In 2012/13, renewable energy target costs made up around 5 per cent of the representative market offer price. This decreases across the reporting period, making up around 3 per cent in 2015/16.
- In 2012/13, the cost of the Climate Change fund made up around 2 per cent of the representative market offer price. This does not change across the reporting period.
- In 2012/13, the cost of the Energy Savings scheme makes up around 1 per cent of the representative market offer price. This does not change across the reporting period.

#### *Carbon*

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>150</sup>

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<sup>149</sup> Australian Energy Regulator, *Final Decision: New South Wales distribution determination 2009–10 to 2013–14*, AER, April 2009, pp.ix-x.

<sup>150</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More

For New South Wales, the cost of the carbon pricing mechanism increases slightly from 2012/13 to 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls sharply in 2015/16, reflecting the move from a fixed carbon price to a floating price under the existing legislation. This sharp reduction in the cost of the carbon pricing mechanism is a key driver of the reduction in New South Wales residential retail prices identified in 2015/16.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

#### *Renewable energy target*

As discussed in Chapter two, 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 policies are recovered by retailers from consumers.<sup>151</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET increases, on average, by 5.6 per cent a year between 2012/13 and 2015/16.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>152</sup>

The STP in the early years of our reporting period is relatively high and falls sharply throughout the reporting period.<sup>153</sup> This means that the cost of the SRES in New South Wales decreases, on average, by 34 per cent a year from 2012/13 to 2015/16.

#### *Climate Change fund*

The Climate Change fund was created by the NSW government to improve awareness of climate change as well as funding energy and water savings initiatives. The main sources of funding are the electricity distribution businesses and Sydney Water, with additional funding supplied by the NSW government. The network businesses recover the costs associated with the Climate Change fund through distribution network charges.

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information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>151</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>152</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>153</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

Funding the now closed Solar Bonus scheme is the largest obligation on the Climate Change fund. This scheme included two separate tariffs:

- a 60 c/kWh premium tariff, continuing until 31 December 2016, for all systems installed before 18 November 2010; and
- a 20 c/kWh premium tariff, continuing until 31 December 2016, for all systems installed after 18 November 2010 and before the conclusion of the scheme in April 2011.

In 2012, IPART noted that the estimates of the total costs of the Solar Bonus Scheme are likely to range from \$1.05 to 1.83 billion.<sup>154</sup> This value has since been revised by the NSW Government in its budget estimates.

Since July 2012, retailers have had to make a mandatory contribution, set by IPART, for each kWh generated by any of their consumers who receive the solar bonus.

This cost 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 white certificate trading scheme where retailers are required to fund energy efficiency through the purchase of certificates. This cost of this scheme is expected to remain constant for the reporting period.

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<sup>154</sup> Independent Pricing and Regulatory Tribunal, *Solar feed in tariffs: final report*, IPART, March 2012, p.103.

## 6 Australian Capital Territory

### Box 6.1: Key findings

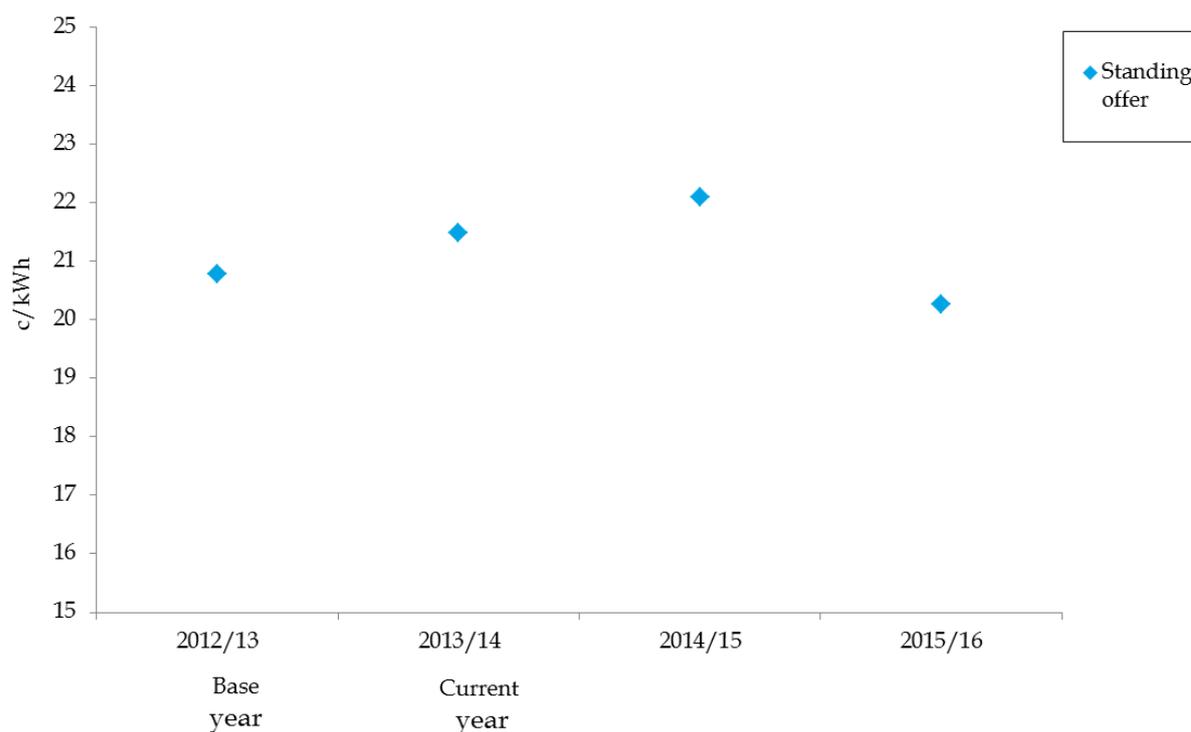
Standing offer prices are expected to decrease, on average, by 0.7 percent a year for the three years from 2012/13 to 2015/16. This reflects increases in regulated network costs, offset by decreases in environmental policy costs in 2015/16.

Standing offer price increase, on average, by 3.1 per cent a year for the two years from 2012/13 to 2014/15. A major driver of this increase is a 10 per cent increase in distribution network costs in 2013/14.

Standing offer prices are then expected to decrease by 8.3 per cent in 2015/16. This decrease primarily reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

Residential consumers in the Australian Capital Territory can choose to take up a market offer. We note that the majority of consumers have chosen to remain with the standard retailer ActewAGL.

### 6.1 Trends in Australian Capital Territory standing offer prices



The 2012/13 and 2013/14 representative standing offer prices were based on the ActewAGL standing offer for those years.<sup>155</sup> For future years, our trends for

<sup>155</sup> This standing offer used is the "home plan". More information is available at: [www.actewagl.com.au/Product-and-services/Offers-and-prices/Prices/Residential/ACT/Electricity-prices.aspx](http://www.actewagl.com.au/Product-and-services/Offers-and-prices/Prices/Residential/ACT/Electricity-prices.aspx)

representative standing offer prices are based on the movements in the underlying supply chain cost components.<sup>156</sup>

*Key findings:*

- The representative standing offer price is expected to increase, on average, by 3.1 per cent a year for the two years from 2012/13 to 2014/15.
- This increase in prices reflects the interaction of increases in distribution network costs and environmental policy costs, partially offset by decreases in transmission network costs. There is a 10 per cent increase in distribution network costs from 2012/13 to 2013/14. Environmental policy costs increase, on average, by 3 per cent for the two years from 2012/13 to 2014/15, while transmission costs decrease, on average, by 6 per cent a year across the same period.
- Based on an annual household consumption of 7,670 kWh, this means an increase of around \$48 in annual household electricity expenditure in 2014/15 compared to 2013/14.<sup>157</sup>
- The representative standing offer price is expected to decrease by around 8.3 per cent from 2014/15 to 2015/16, reflecting the move from a fixed to a floating carbon price under existing legislation.

*Effect of different household consumption*

For the representative standard offer price, we applied a sample household consumption value of 7,670 kWh per annum.<sup>158</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative standing offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>159</sup> The results of this analysis are included in table 6.1 below.

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156 Residential consumers are able to choose a market offer in the ACT. However, the penetration of market offers in the residential sector is very low, with around 82 per cent of customers remaining on the standing offer. In addition, over 90 per cent of residential customers in the ACT have elected to remain with ActewAGL. Given these factors, we have not developed a representative market offer in the ACT.

157 As described in Chapter one, a "typical consumer" is defined as a residential household with a single rate tariff, with an annual consumption of 7,670 kWh in 2012/13. A more detailed explanation of how annual consumption was derived is included in Appendix A.

158 As discussed in Chapter three, this sample consumption value was based on information provided to the AEMC by the Environment and Sustainable Development Directorate of the Australian Capital Territory.

159 Chapter three provides more information on our approach to determining different household consumption.

**Table 6.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average standing offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (6,067 kWh)	21.54	\$ 1,307
Medium (7,670 kWh)	20.78	\$ 1,594
High (12,480 kWh)	19.67	\$ 2,455

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of the standing offer tariff which has both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.

## 6.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>4.67</b>	<b>4.81</b>	<b>4.98</b>	<b>2.64</b>
Carbon	c/kWh	2.70	2.83	2.95	0.73
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
Feed in Tariffs	c/kWh	0.47	0.48	0.71	0.81
Energy Efficiency Improvements Scheme	c/kWh	0.11	0.38	0.42	0.21
<b>Regulated networks</b>	<b>c/kWh</b>	<b>8.25</b>	<b>8.71</b>	<b>8.92</b>	<b>9.15</b>
Transmission	c/kWh	1.65	1.42	1.46	1.49
Distribution	c/kWh	6.60	7.29	7.47	7.65
<b>Wholesale and retail</b>	<b>c/kWh</b>	<b>7.86</b>	<b>7.97</b>	<b>8.20</b>	<b>8.48</b>
Wholesale	c/kWh	4.77	4.53	4.68	4.87
Retail	c/kWh	3.08	3.43	3.52	3.61
<b>Total</b>	<b>c/kWh</b>	<b>20.78</b>	<b>21.48</b>	<b>22.10</b>	<b>20.27</b>

### 6.2.1 Retail and wholesale

In the ACT, the Independent Competition and Regulatory Commission (ICRC) is responsible for setting the regulated standing offer price. As part of its process of the regulated standing offer price, the ICRC develops a wholesale purchase cost allowance.

We have sought to replicate the ICRC's approach when developing our assessment of wholesale energy purchase costs for the ACT:

- for 2012/13 to 2013/14, the wholesale energy purchase cost is based on the actual wholesale purchase cost allowance determined by the ICRC in the relevant regulated standing offer price determinations; and
- for 2014/15 to 2015/16, the wholesale energy purchase cost is based on modelling undertaken by NERA which replicates the methodology used by the ICRC for determining its wholesale purchase cost allowance.

The retail component has not been directly estimated. The retail component is the residual difference between the total of all the supply chain cost components (wholesale, network, and environmental policies) and the representative standing offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

In 2012/13, retail and wholesale costs made up around 38 per cent of the standing offer price. By 2015/16, these costs are expected to increase to around 42 per cent of the standing offer price.

In the Australian Capital Territory, the ICRC is responsible for setting the standing offer price. ActewAGL must offer this tariff to all residential consumers. ActewAGL retail is 50 per cent owned by the ACT government through the Actew group and 50 per cent owned by AGL.<sup>160</sup>

While there is a standing offer price, consumers in the Australian Capital Territory have the option of taking up market offers. Currently over 90 per cent of consumers have chosen to stay with ActewAGL.<sup>161</sup>

Consumers in the Australian Capital Territory may realise savings in their annual cost of electricity by taking up a market offer. For example, retailers active in the Australian Capital Territory provide a range of market offers which include discounts from the regulated rate as well as rebates and welcome credits. Analysis of these market offers by the St Vincent De Paul Society shows that residential consumers may save around \$100 per annum by switching to a market offer with a pay on time discount.<sup>162</sup>

In addition, residential consumers in the Australian Capital Territory are able to select from a range of bundled market offer products. For example, ActewAGL has partnered with the telecommunications company TransACT in order to provide a range of bundled products and services. These include the bundled sale of gas, internet and Pay-TV with electricity supply.<sup>163</sup> Analysis of these offers by the St Vincent De Paul

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<sup>160</sup> More information is available at: <http://www.actewagl.com.au/About-us/Who-is-ActewAGL.aspx>, page viewed 14 October 2013.

<sup>161</sup> Australian Energy Regulator, *Retail energy market update performance: January to March 2013*, AER, 3 July 2013, p. 5.

<sup>162</sup> St Vincent De Paul Society, *Australian Capital Territory Energy Prices July 2009 - July 2013*, St Vincent de Paul, September 2013, p.7.

<sup>163</sup> More information is available at: <http://www.actewagl.com.au/Product-and-services/Offers-and-prices/Promotional-offers/Bundle.aspx>, page viewed 8 October 2013.

Society have shown residential consumers may save around \$200 a year from bundling multiple services with their electricity contract.<sup>164</sup>

As discussed above, the ICRC develops a wholesale energy purchase cost allowance as part of its determination of the regulated standing offer price. We have used this information for estimating the wholesale energy purchase cost allowance 2012/13 and 2013/14.<sup>165</sup> As part of their modelling, NERA also developed estimates of the wholesale energy purchase cost allowance for 2014/15 and 2015/16.

As per the ICRC's published regulated standing offer price determinations, wholesale energy purchase costs decrease by approximately 5 per cent from 2012/13 to 2013/14.

NERA's modelling indicates that wholesale energy purchase costs are then estimated to increase, on average, by 4 per cent a year from 2013/14 to 2015/16.

### **6.2.2 Regulated networks**

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is based on information provided by the AER, sourced from existing regulatory determinations. Where no regulatory determination exists, we have escalated the cost of regulated networks between years by the assumed rate of inflation.

In 2012/2013, regulated network costs made up around 40 per cent of standing offer prices. Of this, transmission network costs made up around 8 per cent of the representative standing offer price, while distribution makes up around 32 per cent. By 2015/16 transmission network costs will make up approximately 7 per cent of the representative standing offer price, while distribution network costs will make up 38 per cent. The reasons for these movements are discussed in further detail below.

#### *Transmission*

Transmission infrastructure is provided to the Australian Capital Territory by TransGrid, a New South Wales government owned corporation. As noted, TransGrid is regulated by the AER. The transmission service of the Australian Capital Territory is part of TransGrid's regulated activities. The costs to service the Australian Capital Territory is included in the same regulatory process which is undertaken for the New South Wales sections of TransGrid's network.

Transmission charges are recovered from consumers by ActewAGL on behalf of TransGrid. For the years 2011/12 and 2012/13 there was an over-recovery of revenue for the purposes of meeting the costs of transmission.<sup>166</sup> To correct this over-recovery,

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<sup>164</sup> St Vincent De Paul Society, *Australian Capital Territory Energy Prices July 2009 - July 2013*, St Vincent de Paul, September 2013, p.7.

<sup>165</sup> Independent Competition and Regulatory Commission, *Final Decision Retail Price Adjustment for Franchise Electricity Customers 2013-14*, ICRC, June 2013, p. 9

<sup>166</sup> ActewAGL, *ActewAGL Distribution 2013/14 Network Pricing Proposal*, ActewAGL, May 2013, p. 29.

there was a decrease in the transmission cost component of 14 per cent between 2012/13 and 2013/14.

As in NSW, the current regulatory determination for TransGrid began in July 2009 and continues to June 2014. TransGrid has announced that "[f]or at least the next five years, consumers can expect TransGrid to keep revenue increases to no more than CPI."<sup>167</sup> As the current regulatory period concludes in June 2014, transmission costs for 2014/15 to 2015/16 are escalated by CPI (equivalent to our assumed rate of inflation of 2.5 per cent).

#### *Distribution*

Distribution infrastructure is provided by ActewAGL distribution. ActewAGL distribution is 50 per cent owned by the ACT government through the Actew group and 50 per cent owned by Jemena.<sup>168</sup>

The current regulatory determination for ActewAGL distribution covers the period from July 2009 to June 2014. The allowed revenue over this regulatory period is 34 per cent higher than that allowed in the previous regulatory period (in real terms).<sup>169</sup> This reflects several large augmentations made to the network to maintain reliability of supply and to replace ageing assets.<sup>170</sup>

Distribution network costs increase by 10 per cent from 2012/13 to 2013/14. As the current regulatory period concludes in June 2014, distribution costs for 2014/15 to 2015/16 have been escalated by the assumed rate of inflation.

### **6.2.3 Environmental policies**

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target, feed in tariff schemes and energy efficiency schemes.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, the cost of the carbon pricing mechanism are recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The cost of the renewable energy target and energy efficiency schemes are recovered through retail costs.

In 2012/13, environmental policies make up around 22 per cent of the representative standing offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 13 per cent of the representative standing offer price. This falls to 4 per cent in 2015/16, with the bulk of this decrease reflecting the fixed carbon price moving to a floating carbon price under existing legislation.

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<sup>167</sup> TransGrid, *TransGrid announces revenue freeze for 2013*, 7 December 2012.

<sup>168</sup> ActewAGL, *About our business*, <http://www.actewagl.com.au/About-us/Who-is-ActewAGL.aspx>, page viewed 14 October 2013.

<sup>169</sup> Australian Energy Regulator, *2012 State of the Energy Market*, AER, 2012, p.9.

<sup>170</sup> Australian Energy Regulator, *Australian Capital Territory distribution determination*, AER, April 2009.

- In 2012/13, renewable energy target costs made up around 7 per cent of the standing offer price. This falls across the reporting period, making up around 4 per cent in 2015/16.
- In 2012/13, Feed in Tariff scheme costs made up around 2 per cent of the standing offer price. This increases to about 4 per cent in 2015/16.
- In 2013/14, the Energy Efficiency Improvement scheme commences operation and makes up around 2 per cent of the representative standing offer price in that year. It will remain at this level to the end of December 2015, when the scheme is scheduled to conclude.

### *Carbon*

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>171</sup>

The Australian Capital Territory's carbon cost increases slightly between 2012/13 and 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls sharply in 2015/16, reflecting the move from a fixed carbon price to a floating price under the existing legislation. This sharp reduction in the carbon cost is a key driver of the reduction in Australian Capital Territory's residential retail prices identified in 2015/16.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

### *Renewable energy target*

As discussed in Chapter two, 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 meeting the targets under these policies are recovered by retailers from consumers.<sup>172</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET decreases, on average, by 5.6 per cent a year from 2012/13 to 2015/16.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates

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<sup>171</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>172</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

(STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>173</sup>

The STP in the early years of our reporting period is relatively high and falls sharply throughout the reporting period.<sup>174</sup> This means that the cost of the SRES in the Australian Capital Territory decreases, on average, by 34 per cent a year from 2012/13 to 2015/16.

#### *Feed in tariff schemes*

There have been a number of separate feed in tariff schemes introduced in the Australian Capital Territory. These schemes have been introduced to encourage installation of different sized renewable energy systems. These schemes, which are all now closed to new entrants, include:

- The micro feed in tariff for systems below 30kW of capacity. Systems registered between 1 March 2009 and 30 June 2010 receive a 55.05c/kWh rate for 20 years. Systems installed between 1 July 2010 and 31 May 2011 receive a feed in tariff of 45.7c/kWh.
- The medium feed in tariff for systems between 30kW and 200kW capacity. This was a feed in tariff of 34.37c/kWh, for systems registered in the period 7 March 2011 and 11 July 2011.
- The merged micro and medium feed in tariff was offered to new applicants from 12 July 2011. The feed in tariff was set at 30.16c/kWh with the total scheme capacity capped at 30MW. This cap was reached within two days and the scheme closed to new entrants on 14 July 2011.

The cost of the above schemes are mainly recovered through distribution network charges. Retailers are also required to make a contribution to offset their foregone wholesale costs. Although the above schemes are now closed, their costs will continue to have some impact on residential electricity prices up until 2031.<sup>175</sup>

The government has now introduced a large scale feed in tariff scheme for projects of a capacity more than 200kW. The solar generators in this scheme receive the wholesale price as well a feed in tariff for their generation for the next 20 years. The cost of this scheme is to be recovered by ActewAGL through distribution charges. The generators that are receiving funding are expected to be operational by the end of 2015.<sup>176</sup>

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<sup>173</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>174</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

<sup>175</sup> These tariff schemes maintain payments for a period of 20 years following installation of the rooftop solar generator. Assuming a close to all applications as at July 2011, payments under the schemes will continue until July 2031. Information on these schemes based on information supplied by the Environment and Sustainable Development Directorate of the Australian Capital Territory.

<sup>176</sup> See Corbell, S (Minister for the Environment and Sustainable Development), *Canberra's renewable energy future: New solar farms announced*, Media Release, Canberra, ACT, 19 August 2013. The projects being funded by this scheme are the FRV Royalla Solar Farm (20 MW), the Mugga Lane Solar Park (13 MW) and the OneSun Capital Solar Farm (7 MW).

Feed in tariff costs are not expected to change between 2012/13 and 2013/14. They are then expected to show an average annual increase of 31 per cent from 2013/14 to 2015/16, as payments commence for large scale projects.<sup>177</sup>

*Energy Efficiency Improvement scheme*

The Energy Efficiency Improvement scheme is a non-certificate based energy savings scheme that requires retailers to meet an energy savings target in households or small to medium sized businesses.

This scheme commenced on 1 January 2013 and will run until 31 December 2015. We expect the cost of the scheme to be relatively constant throughout the period it is operational.<sup>178</sup> As we report on a financial year basis, the reported costs appear lower in 2012/13 and 2015/16.

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<sup>177</sup> Note that the total costs of all the feed in tariffs in 2015/16 is around 0.81c/kWh. This is approximately \$62 per year for the average residential consumer's bill.

<sup>178</sup> Based on information supplied by the Environment and Sustainable Development Directorate of the Australian Capital Territory.

## 7 South Australia

### Box 7.1: Key findings

Market offer prices in South Australia are expected to decrease, on average, by 0.9 per cent a year for the three years from 2012/13 to 2015/16. This reflects increases in regulated network costs, offset by reductions in competitive market costs and environmental policy costs across this period.

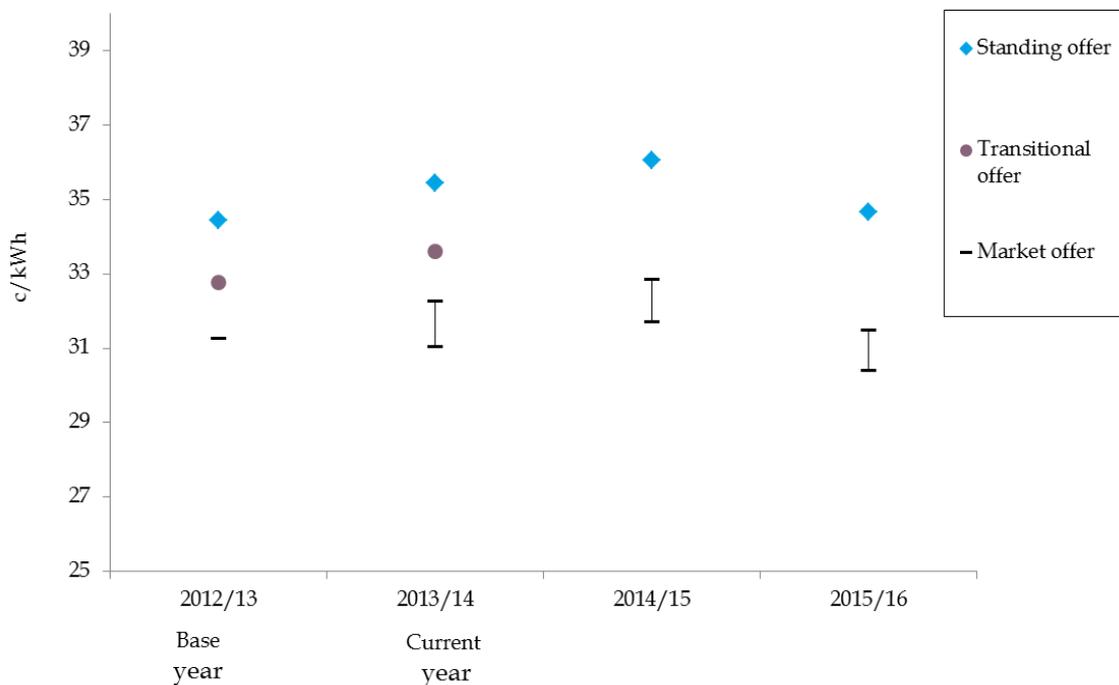
For the next two years from 2012/13 to 2014/15 market offer prices are expected to increase, on average, by 0.7 per cent a year. This reflects moderate increases in distribution network costs, partially offset by decreases in wholesale and environmental policy costs.

Market offer prices are then expected to decrease by 4.1 per cent in 2015/16, reflecting the move from a fixed to a floating carbon price under existing legislation, as well as a continued decrease in wholesale costs.

Residential consumers in South Australia are actively participating in the market and are able to choose between a variety of market offers.

Consumers in South Australia may have saved around 9 per cent by switching from a standing offer to a market offer in 2012/13. Actual savings may be higher if consumers shop around and seek the best deal from retailers.

### 7.1 Trends in South Australian market and standing offer prices



As in other jurisdictions, our estimation of the representative market offer price was based on tariffs nominated by retailers. An overview of our approach to the estimation of the representative market offer price in South Australia is provided in Appendix A.

The representative standing offer was based on two different standing offers from AGL: the original standing offer (which we refer to as the "standing offer") and the transitional standing offer. The transitional standing offer was made available to consumers on the original standing offer as at 31 January 2013, as part of the removal of formal price regulation.

The specific approach we have used to estimate these representative standing offers is as follows:<sup>179</sup>

- In 2012/13, the "standing offer" represents AGL's standing offer available as at 1 February 2013. For 2013/14, we used AGL's adjusted standing offer, which was available from 1 August 2013. For 2014/15 and 2015/16, the standing offer moves according to trends in the underlying cost components.
- In 2012/13, the "transitional offer" represents AGL's transitional standing offer. This offer, which includes a 9.1 per cent discount, was made available to those consumers that were already on the standing offer as at 31 January 2013. For 2013/14, we used AGL's updated transitional standing offer as at 1 August 2013. The transitional standing offer is only available to eligible consumers until 31 December 2014. In January 2015, those consumers on the transitional standing offer will revert to the normal standing offer, which is the standing offer available to all new consumers.

#### *Key findings*

- Market offer prices in South Australia are expected to decrease, on average, by 0.9 per cent a year for the three years from 2012/13 to 2015/16. This decrease, which is less than the expected level of inflation, reflects increases in regulated network costs, offset by reductions in competitive market costs and environmental policy costs across this period.
- Market offer prices are expected to increase, on average, by 0.7 per cent a year for the two years from 2012/13 to 2014/15.
- Distribution network costs are expected to increase, on average, by 10.5 per cent a year for the two years from 2012/13 to 2014/15.<sup>180</sup> These increases reflect the revenues allowed in current regulatory determinations.
- Both wholesale costs and environmental policy costs decrease, on average, by 8 per cent for the two years from 2012/13 to 2014/15. Decreases in wholesale cost reflect assumptions regarding the increased availability of existing generation.
- Based on an annual household consumption of 5,000kWh, this would mean an increase of around \$34 in the annual cost of electricity in 2014/15, compared to

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<sup>179</sup> Under the NECF, all retailers are required to provide a standard offer under specific circumstances. For the sake of simplicity, we have focussed on AGL's standing offer in South Australia. AGL was the regulated retailer prior to deregulation and we consider that many consumers who remain on the standing offer are likely to be on the standing offer provided by AGL.

<sup>180</sup> All changes in cost components are expressed as the averaged annual change in costs. For distribution costs, only the averaged annual changes for the period 2012/13 to 2014/15 are described here, as the relevant network regulatory period concludes in 2014/15. Distribution network costs in 2015/16 are escalated by the assumed rate of inflation.

costs in 2013/14. Consumers can save by switching to a market offer, with savings of around 9 per cent if they switched in 2012/13.

- Market offer prices are expected to decrease by approximately 4.1 per cent in 2015/16. This decrease can be partly attributed to the move from a fixed carbon price to a floating price under existing legislation, as well as continued decreases in wholesale energy purchase costs.

*Effect of different household consumption*

For the representative market offer identified above, we applied a sample household consumption value of 5,000 kWh per annum.<sup>181</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>182</sup> The results of this analysis are included in table 7.1 below.

**Table 7.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average market offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (4,038 kWh)	31.96	\$1,290
Medium (5,000 kWh)	31.27	\$1,569
High (7,887 kWh)	30.74	\$2,435

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of most of the South Australian market offer tariffs which formed the basis of the representative market offer tariff. These tariffs had both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>183</sup>

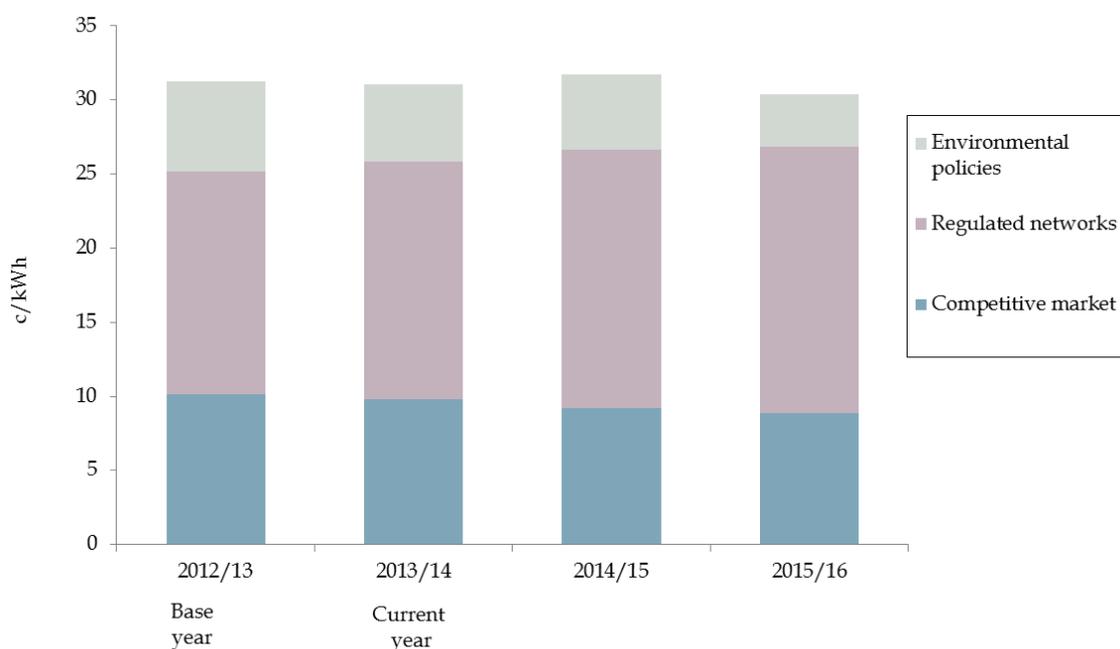
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181 As discussed in Chapter three, this sample household consumption was based on information provided to the AEMC by the South Australian Department of Manufacturing, Innovation, Trade, Resources and Energy.

182 Chapter three provides more information on our approach to determining different household consumption.

183 More information about different pricing structures is provided in Appendix D.

## 7.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>6.10</b>	<b>5.22</b>	<b>5.10</b>	<b>3.56</b>
Carbon	c/kWh	2.21	2.00	2.10	0.57
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
Feed in tariff	c/kWh	2.20	1.80	1.80	1.80
Energy Efficiency Scheme	c/kWh	0.30	0.30	0.30	0.30
<b>Regulated networks</b>	<b>c/kWh</b>	<b>15.03</b>	<b>16.02</b>	<b>17.42</b>	<b>17.98</b>
Transmission	c/kWh	3.18	2.80	2.95	3.10
Distribution	c/kWh	11.85	13.22	14.47	14.88
<b>Competitive market</b>	<b>c/kWh</b>	<b>10.14</b>	<b>9.79</b>	<b>9.20</b>	<b>8.88</b>
Wholesale and retail					
<b>Total</b>	<b>c/kWh</b>	<b>31.27</b>	<b>31.03</b>	<b>31.71</b>	<b>30.41</b>

### 7.2.1 Competitive wholesale and retail markets

Competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. Our wholesale energy purchase cost for South Australia is based on modelling undertaken for the report.<sup>184</sup>

We did not explicitly estimate the retail component of competitive market costs. The retail component reflects the residual difference between the total of all the supply chain cost components (wholesale, network, and environmental policies) and the

<sup>184</sup> The modelling undertaken for the report can be found in NERA Economic Consulting Final Report *Projections of Wholesale Energy Costs*, NERA, September 2013.

representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

Retailers have different wholesale energy purchase costs. Such costs vary and will be dependent on their specific hedging strategy which will be influenced by their individual risk appetite and expectations of future price volatility.<sup>185</sup>

Given this, we have presented a range for competitive wholesale and retail market costs. This range provides an indicative upper and lower bound for the wholesale component based on two alternative methods of calculating wholesale energy purchase costs and a corresponding upper and lower bound for the “residual” used to calculate the retail component.<sup>186</sup> In some cases, the upper bound of wholesale energy purchase costs results in the lower bound of the retail component being negative for some years of the reporting period.<sup>187</sup>

**Table 7.2 Range of the wholesale and retail components - South Australia**

<b>Cost components</b>	<b>2012/13 (c/kWh)</b>	<b>2013/14 (c/kWh)</b>	<b>2014/15 (c/kWh)</b>	<b>2015/16 (c/kWh)</b>
Wholesale component (excluding carbon)	7.17 to 10.11	6.75 to 10.10	6.08 to 10.10	5.68 to 10.10
Retail component	0.04 to 2.97	-0.31 to 3.04	-0.9 to 3.12	-1.22 to 3.19

In 2012/2013, competitive market costs made up around 32 per cent of the representative market offer price. By 2015/16, this cost component is expected to decrease to 29 per cent of the representative market offer price. Competitive market costs are expected to, on average, decrease by 4.3 per cent year over the next three years, from 2012/13 to 2015/16.

Average demand in South Australia has decreased; over the years 2008/09 to 2012/13, by around 1 per cent annually.<sup>188</sup> Under AEMO's medium growth planning scenario, this decrease is expected to continue, with average demand decreasing annually by around 0.1 per cent to 2022/23.<sup>189</sup>

On the supply side, South Australia has a relatively high penetration of wind generation. Wind generation produces around 27 per cent of electricity generated in

<sup>185</sup> For example, some retailers may rely on a combination of longer term power purchase agreements, investment in physical generation assets and shorter-term hedges. Other retailers may rely on tailored over-the-counter hedging contracts

<sup>186</sup> As highlighted in Chapter 1, the range for wholesale energy purchase costs has been based on modelling undertaken for the report.

<sup>187</sup> This result also occurs in for Queensland and New South Wales.

<sup>188</sup> Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013, p.5-1.

<sup>189</sup> Ibid.

South Australia, exceeding coal, which produces around 17 per cent. There are 29 publicly announced new generation developments in South Australia, with a total nameplate capacity of 4900MW. Of this new capacity, around 61 per cent will be wind powered.<sup>190</sup>

As discussed in Chapter 2, large volumes of wind generation tend to depress wholesale prices in a region. This effect may be exacerbated when coupled with low levels of demand.

These factors have likely contributed to low average wholesale prices in South Australia in recent years. Volume weighted spot market prices reached \$32/MWh in 2011/12, which is the lowest spot market price in South Australia since the market began in 1998.<sup>191</sup>

The low South Australian wholesale prices seen in 2010/11 and 2011/12 contributed to changes in the operation of specific South Australian generators. In April 2012, Alinta Energy announced that Northern power station's operation schedule would be reduced so that it operated only between October and March. Alinta Energy advised that this was due to market conditions not delivering adequate returns to justify continued operation of the station.<sup>192</sup>

While other factors (such as ordinary seasonal variation) also certainly had an effect, quarterly volume weighted spot prices in South Australia show a gradual increase following Alinta's announced change to the operation schedule of Northern power station.<sup>193</sup>

Alinta Energy has since announced that Northern power station will return to full service, in a staged approach.<sup>194</sup> AEMO's planning scenario forecast assumes that Northern power station will return to full service by October 2014.<sup>195</sup>

This forecast increase in supply capacity in South Australia results in a moderation in wholesale prices in the later years of our reporting period.

On 1 February 2013, the Essential Services Commission of South Australia (ESCOSA) changed from regulating residential electricity prices to a price monitoring and market oversight role. Retailers are required to provide consumers with a standing offer, as

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190 Australian Energy Market Operator, *2013 South Australian Electricity Report*, AEMO, 2013, p.4-2.

191 Data on wholesale spot market prices sourced from: <http://www.aer.gov.au/Industry-information/industry-statistics>

192 More information can be found at: <http://alintaenergy.com.au/Everything-Alinta-Energy/News/Archived-News/Alinta-Energy-clarifies-market-reports>.

193 Quarterly volume weighted spot prices were \$28/MWh for the quarter ending March 2012. In the December 2012 quarter, prices had increased to \$37/MWh (excluding carbon). In the June 2013 quarter, prices were \$83/MWh (excluding carbon).

194 More information can be found at: <http://alintaenergy.com.au/Everything-Alinta-Energy/News/Archived-News/Northern-Power-Station-return-to-service>

195 Based on information included in AEMO's plant operating schedules, viewed at September 2013. Available at: <http://www.aemo.com.au/Electricity/Planning/Related-Information/Generation-Information>

required by the National Electricity Customer Framework (NECF), however the prices of these standing offers are determined by the retailer.<sup>196</sup>

Around 81 per cent of South Australian residential consumers have switched from the standing offer to a market offer.<sup>197</sup> Consumers may receive a discount of around 9 per cent, if they switched from the standing offer price to a market offer as at 1 February 2013.<sup>198</sup> It is likely that further discounts are available to consumers who shop around and look for the best available offer.<sup>199</sup>

Part of the process of deregulation involved AGL, the former regulated retailer, providing residential consumers with a transitional standing offer. This offer included a discount of 9.1 per cent off the AGL standing offer price that applied at 31 December 2012. The transitional offer was available only to those consumers who were already on AGL's standing contract as at 31 January 2013.<sup>200</sup>

AGL has committed to maintaining the transitional standing offer for a period of two years until December 2014, but may pass through any changes in cost components including changes in network costs or environmental policy costs.<sup>201</sup> On 1 August 2013, the transitional standing offer was adjusted to allow for increases in regulated network and environmental policy costs.<sup>202</sup>

The transitional standing offer will conclude on 31 December 2014. Any consumer remaining on the transitional tariff at that time will move to AGL's normal standing offer contract.

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196 More information can be found at:  
[http://www.hawkerbritton.com/images/data/Energy%20Market%20Deregulation%2019\\_12\\_12.pdf](http://www.hawkerbritton.com/images/data/Energy%20Market%20Deregulation%2019_12_12.pdf)

197 From information provided by the South Australian Department of Manufacturing, Innovation, Trade and Energy.

198 When measured against AGL's standing offer available to new consumers at 1 February 2013.

199 The AEMC notes ESCOSA's Ministerial pricing Report (Essential Services Commission of South Australia, 2013 *Ministerial Pricing Report*, ESCOSA, 2013) which examines trends in South Australian market offer prices between July 2012 and August 2013. There are a number of differences in methodological approach between ESCOSA's report and ours. Our report is also forward looking, while ESCOSA's is retrospective. Accordingly, we have not included any direct comparison between the findings of ESCOSA's report and our report.

200 Prior to deregulation, AGL was required to offer a "standard contract price" to all consumers in South Australia. This standard contract price was regulated by ESCOSA. Following deregulation, AGL and all other retailers must make a standing offer available to certain consumers. Essential Services Commission of South Australia, *Energy Retail Prices in South Australia*, ESCOSA, August 2013.

201 More information is available at: <http://www.agl.com.au/residential/energy-plans/electricity-and-gas-plans/price-and-contract-information/information-about-sa-retail-electricity-standing-offer>.

202 More information is available at:  
<http://www.agl.com.au/~media/AGL/Residential/Documents/Plans%20and%20Pricing/2013/August/AGL%20SA%20Transitional%20SRC%20Electricity%20Prices%20as%20at%201Aug13.pdf>

## 7.2.2 Regulated networks

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is based on information provided by the AER, sourced from existing regulatory determinations. Where no regulatory determination exists, we have escalated the cost of regulated networks by the assumed rate of inflation.

In 2012/2013, regulated network costs made up around 48 per cent of the final residential electricity price. Of this, transmission network costs made up around 10 per cent, while distribution cost made up around 38 per cent of the representative market offer price. By 2015/16, transmission network costs will make up around 10 per cent, while distribution network costs increase, making up around 49 per cent of the representative market offer price. The reasons for these movements are discussed below.

### *Transmission*

Transmission networks in South Australia are operated by the privately owned ElectraNet. The South Australian transmission network consists of around 5600 kilometres of high voltage lines, with customers including SA Power Networks (the South Australian distribution network company) as well as generators and large consumers.<sup>203</sup>

The current regulatory determination for ElectraNet finishes in June 2018.

The AER's final determination for ElectraNet was published in April 2013. In this determination, the AER allowed a total revenue for ElectraNet which was 15.2 per cent higher (in nominal terms) than the total revenue allowed in the previous regulatory period.<sup>204</sup>

Transmission network costs decrease by around 12 per cent from 2012/13 to 2013/14, reflecting the end of the previous regulatory determination period. They then increase, on average, by 5 per cent a year from 2013/14 to 2015/16.

### *Distribution*

Distribution networks in South Australia are owned and operated by the privately owned SA Power Networks.

The AER's regulatory determination for SA Power Networks (then known as ETSA Utilities) was published in May 2010. It covers the period 1 July 2010 to 30 June 2015.

The AER's determination allowed for distribution charges faced by residential consumers to increase, on average, by 9.5 per cent annually.<sup>205</sup>

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<sup>203</sup> Australian Energy Regulator, *Final Decision ElectraNet Transmission Determination 2013-14 to 2017-18*, AER, April 2013.

<sup>204</sup> Ibid.

<sup>205</sup> Australian Energy Regulator, *Final Decision, South Australia Distribution 2010-11 to 2014-15*, AER, May 2010, p.V

The AER identified that these increases in network expenditure were partly due to increases in peak demand. This increase in peak demand was occurring at the same time as a forecast decrease in total energy demand. This meant that the revenue required by ETSA Utilities to maintain the integrity of the network was applied to a smaller volume of energy sold.<sup>206</sup>

Distribution network costs increase by around 10.5 per cent between 2012/13 and 2014/15. As the current regulatory period concludes in June 2015, distribution network costs for 2015/16 have been escalated by the assumed rate of inflation.

These increases in distribution network costs are the main driver of changes in South Australian residential electricity retail prices between 2012/13 and 2014/15. However, as these network costs are offset by reductions in the wholesale purchase cost of energy, the net effect is that representative market offer prices increase by less than inflation across the reporting period.

### **7.2.3 Environmental policies**

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target, feed in tariff schemes and energy efficiency schemes.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The costs of the renewable energy target and energy efficiency schemes are recovered through retail costs.

In 2012/13, environmental policies make up around 20 per cent of the representative market offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 7 per cent of the representative market offer price. This falls to 2 per cent in 2015/16, with the bulk of this decrease reflecting the move from a fixed carbon price to a floating price under the existing legislation.
- In 2012/13, renewable energy target costs made up around 5 per cent of the representative market offer price. This falls slightly across the reporting period, making up around 3 per cent in 2015/16.
- In 2012/13, feed in tariff scheme costs made up around 7 per cent of the representative market offer price. This remains steady across the reporting period, making up around 6 per cent in 2015/16.
- In 2012/13, the cost of the South Australian Residential Energy Efficiency Scheme makes up around 1 per cent of the representative market offer price. This does not change across the reporting period.

The reasons for these changes are discussed below.

#### *Carbon*

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<sup>206</sup> Ibid

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>207</sup>

In South Australia, the cost of the carbon pricing mechanism remains relatively flat between 2012/13 and 2014/15.<sup>208</sup> It then falls sharply in 2015/16, reflecting the move from a fixed carbon price to a floating price under the existing legislation. This fall in the carbon cost is a key driver of the reduction in South Australian residential retail prices identified in 2015/16.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

#### *Renewable energy target*

As discussed in Chapter two, the renewable energy target consists of two components: the large scale renewable energy target (LRET) and the small scale renewable energy scheme (SRES). The cost of both of these policies are recovered by retailers from consumers.<sup>209</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It also provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET increases, on average, by around 5.6 per cent a year from 2012/13 to 2015/16.

The purpose of the SRES is to encourage entry of small scale generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>210</sup>

The STP in the early years of our reporting period is relatively high but falls throughout the reporting period.<sup>211</sup> The cost of the SRES in South Australia decrease, on average, by 34 per cent a year from 2012/13 to 2015/16.

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<sup>207</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>208</sup> South Australian carbon costs fall by around ten percent between 2012/13 and 2013/14. This reflects an outcome of NERA's modelling where the carbon cost drives additional installation of wind generation. Due to the relatively small size of South Australian load, this additional wind generation results in a lowered wholesale spot prices and therefore a smaller carbon pass through in 2013/14. The carbon price then increases by five per cent between 2013/14 and 2014/15.

<sup>209</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>210</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>211</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

### *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. 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 now closed Solar feed in scheme consisted of two tariffs rates:

- a 44 c/kWh tariff, continuing until 30 June 2028; and
- a 16 c/kWh tariff, continuing until 30 September 2016.

Between January and June 2012, the retailer funded Minimum Retailer Payment scheme consisted of a 7.7 c/kWh tariff. This payment concluded 30 June 2012.

Currently, the retailer funded Minimum Retailer Payment scheme provides a 9.8 c/kWh tariff. This scheme will continue until 31 December 2013. ESCOSA is progressing a review of the Minimum Retailer payment scheme to apply in 2014 and has issued a draft decision setting the tariff that will apply as 1 January 2014 at 7.6 c/kWh.<sup>212</sup>

A key difference between the premium schemes and the retailer funded schemes is the way the cost of the scheme is recovered from consumers. The cost of the premium schemes are recovered through distribution network charges. Retailers face the cost of retailer funded schemes and individual retailers will determine whether and/or how the costs of these schemes are to be recovered from consumers.

Although the premium schemes are now both closed, their cost will continue to flow through into residential consumer electricity prices; the 16 c/kWh tariff continuing until 30 September 2016 and the 44 c/kWh scheme until June 2028.

in 2012/13, Feed in tariff costs make up around 7 per cent of the final cost of electricity for residential consumers. Relative to all jurisdictions other than Queensland, this is a high proportion. It reflects the relatively high penetration of small scale rooftop solar generation installed in South Australia and the relatively low overall total load in South Australia.

After a decrease of 18 per cent between 2012/13 and 2013/14, feed in tariff scheme costs are not expected to change substantially throughout the remainder of the reporting period.

### *South Australian Residential Energy Efficiency scheme*

The South Australian Residential Energy Efficiency scheme (REES) is a South Australian Government scheme which requires larger energy providers to help households to save energy. This includes offering energy audits and undertaking energy efficiency activities.

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<sup>212</sup> Essential Services Commission of South Australia, Retailer Feed in Tariff Draft Price Determination, ESCOSA, October 2013.

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 not expected to change between 2012/13 and 2015/16.

## 8 Victoria

### Box 8.1: Key findings

Market offer prices in Victoria are expected to increase, on average, by 1.3 per cent a year for the three years from 2012/13 to 2015/16. This increase, which is less than the expected level of inflation, reflects increases in regulated network costs, offset by reductions in environmental policy costs in 2015/16.

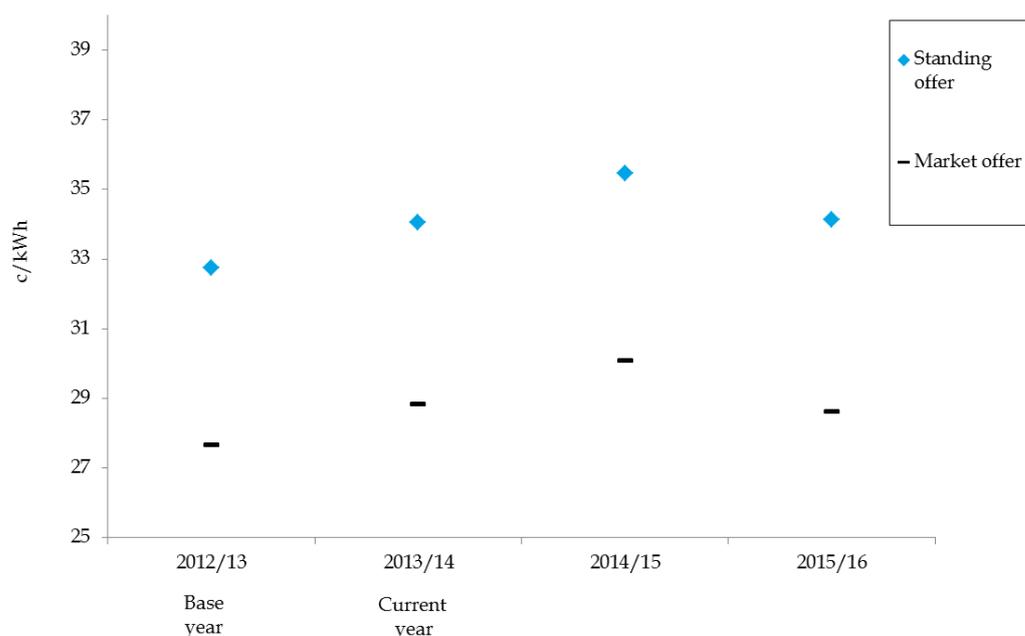
Market offer prices are expected to increase, on average, by 4.3 per cent a year for the two years from 2012/13 to 2014/15. This is mainly due to moderate increases in distribution network costs, reflecting revenue allowances included in current regulatory determinations made prior to the recent network regulation rule changes.

Market offer prices are then expected to decrease by 4.9 per cent in 2015/16. This decrease reflects the move from a fixed carbon price to a floating carbon price under existing legislation.

Residential consumers in Victoria are able to choose from a range of market offers. There are savings and a wide range of products available to customers who switch from a standing offer to a market offer.

Consumers in Victoria may have saved around 16 per cent by switching from a standing offer to a market offer in 2013/13. Actual savings may be higher if consumers shop around and seek the best deal from retailers.

### 8.1 Trends in Victorian market and standing offer prices



As in other jurisdictions, our estimation of the representative market offer price was based on tariffs nominated by retailers. As Victorian network costs are set on a

calendar year basis, we asked retailers to nominate two separate market offers, dated 1 August 2012 and 1 February 2013. We then used a simple average of these two market offers as the basis of our representative market offer. An overview of our approach to the estimation of the representative market offer price in Victoria can be found in Appendix A.

The 2012/13 representative standing offer price was based on the standing offers published by Energy Australia, Origin Energy and AGL. While all retailers in Victoria are required to publish a standing offer, these three retailers combined have around 70 per cent of the residential consumer market in Victoria.<sup>213</sup> Given this, we considered that a simple average of these three retailers' standing offers from 1 August 2012 and 1 February 2013 provided a reasonable basis for estimation of the Victorian representative standing offer price.

To estimate the Victorian representative standing offer price, we took a simple average of these standing offers for each Victorian distribution area. These were then weighted by the relative share of total Victorian consumers in each distribution area. Our approach is discussed in more detail in Appendix A.

As of 1 July 2013, Victorian consumers with a remotely read interval meter (smart meter)<sup>214</sup> have 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.<sup>215</sup> Moving to flexible pricing is voluntary for Victorian residential consumers. 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.

Our terms of reference require us to use 2012/13 as a base year for comparison. Given that flexible pricing was not introduced in Victoria until after this base year, we have not included these tariffs for this report. We note that flexible pricing may need to be considered in future reports.

#### *Key findings*

- Residential market offer prices in Victoria are expected to increase, on average, by 1.3 per cent a year for the three years from 2012/13 to 2015/16. This increase, which is less than the expected level of inflation, reflects increases in regulated network costs, offset by reductions in environmental policy costs in 2015/16.

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<sup>213</sup> Victorian Essential Services Commission, *Energy Retailers Comparative Performance Report - Pricing 2011-12*, ESC, September 2012, p.12.

<sup>214</sup> There are currently a range of different meter types installed in Australia. these include: accumulation meters, which record accumulated consumption data on a periodic basis (typically three month periods to match billing cycles); interval meters, which record consumption on a near real time interval basis (that is, half hourly consumption); and smart meters, which record consumption on a near real time interval basis (that is, half hourly consumption). Smart meters also have communication technology that enables data to be retrieved remotely, provides other smart services (for example, network support such as faults/problems on network or load management, and can link to other devices to enable instant access for the consumer to their electricity use profile.)

<sup>215</sup> More information is available at: <http://www.switchon.vic.gov.au/flexible-pricing/how-flexible-pricing-works>.

- Market offer prices are expected to increase, on average, by 4.3 per cent a year for the two years from 2012/13 to 2014/15. The main driver of this is distribution network cost increases in the current regulatory determinations, which expire on 31 December 2015. These were made prior to the recent network regulation rule changes. The increase included by the AER mainly addressed forecast increases in peak demand, asset replacement and to address new safety related obligations.
- Based on an annual household consumption of 4645 kWh, this means an increase of around \$59 in the annual cost of electricity in 2014/15, compared to the cost in 2013/14.<sup>216</sup> Consumers can save by switching to a market offer, with savings of around 16 per cent if they switched in 2012/13.
- Market offer prices are expected to decrease by around 4.9 per cent from 2014/15 to 2015/16, reflecting the move from a fixed carbon price to a floating price under existing legislation.
- There are differences in the range of the competitive market component for Victoria as compared to other states with market offers. Some differences would be expected reflecting different wholesale energy purchase costs, the costs of operating in each jurisdiction and differences in the consumption levels of the representative residential consumer in each jurisdiction. However, these differences appear to be larger than expected. We intend to consider this issue as part of our 2014 retail competition review, which is expected to commence in January 2014.

#### *Effect of different household consumption*

For the representative market offer identified above, we applied a sample household consumption value of 4,645 kWh per annum.<sup>217</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>218</sup> The results of this analysis are included in table 8.1 below.

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216 As described in Chapter 1, the sample consumption is based on a residential household with a single rate tariff and gas hot water, with an annual consumption of 4,645 kWh in 2012/13. A more detailed explanation of how the sample annual consumption was derived is included in Appendix A.

217 As discussed in Chapter three, this sample consumption value was based on information provided to the AEMC by the Victorian Department of Primary Industries.

218 Chapter three provides more information on our approach to determining different household consumption.

**Table 8.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average market offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (3,763 kWh)	29.20	\$1,099
Medium (4,645 kWh)	27.66	\$1,285
High (7,290 kWh)	25.27	\$1,842

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of most of the Victorian market offer tariffs which formed the basis of the representative market offer tariff. These tariffs had both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>219</sup>

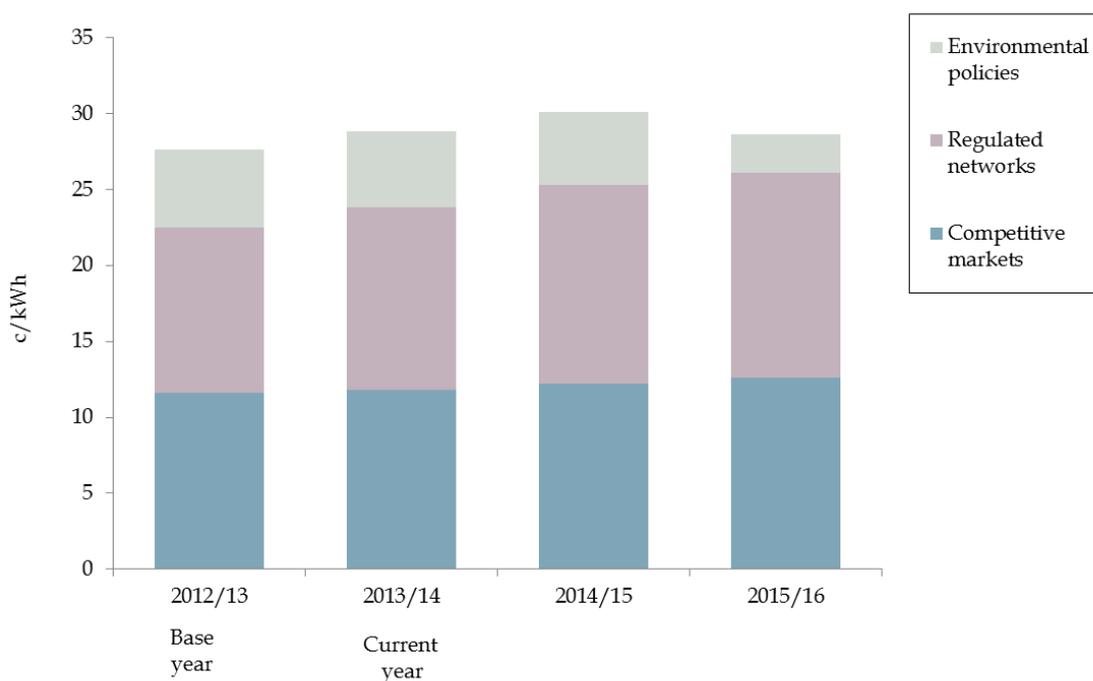
Households are likely to benefit from shopping around to identify the market offer and tariff structure that is best suited to their usage patterns. This has already been highlighted by the St Vincent De Paul Society, which identified that consumers should consider taking up market offers with tariff structures that reflect their personal consumption patterns.<sup>220</sup>

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<sup>219</sup> More information about different pricing structures is provided in Appendix D.

<sup>220</sup> St Vincent De Paul Society, *The National Electricity Market - in a bit of a state?* St Vincent De Paul, November 2012.

## 8.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>5.17</b>	<b>5.03</b>	<b>4.80</b>	<b>2.54</b>
Carbon	c/kWh	2.94	3.04	3.03	0.78
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
Feed in Tariff schemes	c/kWh	0.55	0.61	0.61	0.61
Victorian Energy Efficiency Target	c/kWh	0.29	0.26	0.26	0.26
<b>Regulated networks</b>	<b>c/kWh</b>	<b>10.89</b>	<b>11.98</b>	<b>13.11</b>	<b>13.46</b>
Transmission	c/kWh	1.47	1.52	1.56	1.60
Distribution	c/kWh	9.42	10.46	11.55	11.86
<b>Competitive market</b>	<b>c/kWh</b>	<b>11.60</b>	<b>11.83</b>	<b>12.19</b>	<b>12.64</b>
Wholesale and retail					
<b>Total</b>	<b>c/kWh</b>	<b>27.66</b>	<b>28.84</b>	<b>30.10</b>	<b>28.64</b>

### 8.2.1 Competitive wholesale and retail markets

Competitive market costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. Our wholesale energy purchase cost for Victoria is based on modelling undertaken for the report.<sup>221</sup>

We did not explicitly estimate the retail component of competitive market costs. The retail component reflects the residual difference between the total of all the supply

<sup>221</sup> The modelling undertaken for the report can be found in NERA Economic Consulting Final Report *Projections of Wholesale Energy Costs*, NERA, September 2013.

chain cost components (wholesale, network, and environmental policies) and the representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

Retailers have different wholesale energy purchase costs. Such costs vary and will be dependent on their specific hedging strategy which will be influenced by their individual risk appetite and expectations of future price volatility.<sup>222</sup>

Given this, we have presented a range for competitive wholesale and retail market costs. This range provides an indicative upper and lower bound for the wholesale component based on two alternative methods of calculating wholesale energy purchase costs and a corresponding upper and lower bound for the “residual” used to calculate the retail component.<sup>223</sup>

**Table 8.2 Range of the wholesale and retail components - Victoria**

Cost components	2012/13 (c/kWh)	2013/14 (c/kWh)	2014/15 (c/kWh)	2015/16 (c/kWh)
Wholesale component (excluding carbon)	3.99 to 8.29	4.03 to 8.28	4.20 to 8.28	4.45 to 8.28
Retail component	3.31 to 7.61	3.39 to 7.80	3.48 to 7.99	3.56 to 8.19

In 2012/2013, competitive market costs made up around 42 per cent of the representative market offer price. By 2015/16, this cost component is expected to increase to around 44 per cent of the representative market offer price. Competitive market costs are expected, on average, to increase by 2.9 per cent a year over the three years from 2012/13 to 2015/16.

Average demand in Victoria has decreased in recent years; over the years 2008/9 to 2012/13, average demand fell by around 0.4 per cent annually.<sup>224</sup> Reasons for this decline include lower industrial demand, high installation rates of rooftop solar generators, changed consumer behaviour in response to electricity price increases and the adoption of energy efficiency measures.<sup>225</sup> Under AEMO's medium growth planning scenario, average demand in Victoria is expected to show moderate growth over the next decade, with annual growth of around 1 per cent.<sup>226</sup>

<sup>222</sup> For example, some retailers may rely on a combination of longer term power purchase agreements, investment in physical generation assets and shorter-term hedges. Other retailers may rely on tailored over-the-counter hedging contracts

<sup>223</sup> As highlighted in Chapter 1, the range for wholesale energy purchase costs has been based on modelling undertaken for the report.

<sup>224</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, AEMO, 2013

<sup>225</sup> Australian Energy Market Operator, *2013 Victorian Annual Planning Report*, AEMO, 2013 p.1-3.

<sup>226</sup> Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013. p.6-2.

Retailers are required to publish a standing offer for each distribution area in Victoria however the prices of these standing offers are determined by the retailer.<sup>227</sup>

Around 80 per cent of Victorian residential electricity consumers have switched from the standing offer to a market offer.<sup>228</sup> Consumers may receive a discount of around 14 per cent if they switched from the standing offer to a market offer, as at 1 February 2013.<sup>229</sup> It is likely that further discounts are available to consumers who shop around and look for the best available offer.

The Victorian retail market demonstrates a substantial degree of product innovation and service differentiation. As identified by the St Vincent de Paul Society, retailers offer a wide range of tariff products, with marked differences in terms of the effect on final spend on electricity.<sup>230</sup> The range of market offer products available to residential consumers is likely to increase, following the introduction of flexible pricing on 1 July 2013.

#### Profile and timing of market offers

Our analysis shows a large range for the retail component in Victoria. As noted above, there are a number of factors that can affect the range of the retail component for each jurisdiction. These factors include our approach to estimating the representative market offer price for our base year of the reporting period and external factors that affect retail operating costs in each state or territory.

Retailers' marketing approaches will involve different strategies and campaigns for consumer acquisition and retention. Consequently, the range of market offers which are available to consumers can vary significantly within and across states. As outlined in Chapter three, the market offers provided for Victoria show a large range between the average, cheapest and most expensive market offer. This range is larger than in other states, and suggests that there is significant choice for consumers and that they are able to achieve substantial savings by shopping around.

Two specific factors that can impact the retail component include the timing of market offers used for the analysis and consumption values applied. We asked Victorian retailers for their lowest generally available market offers as at 1 August 2012 and 1 February 2013. These offers were used to determine our representative market offer price for Victoria. During the first half of 2013, there was large discounting being offered by retailers in New South Wales. Since that time, discounts have changed and are now lower than those available in February this year.

For comparison to capture the change in discounts, we have also examined market offers as at 1 September 2013. Using this later date, the Victorian representative market offer decreases while representative market offer prices increase in other states. This

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227 Victorian Essential Services Commission, *Energy Retailers Comparative Performance Report - Pricing 2011-12*, ESC, September 2012, p.10.

228 Wallis Strategic Market and Social Research, *Victorians' Experience of the Electricity Market*, Wallis, 2013, p.25.

229 When measured against the averaged standing offers as published by AGL, Energy Australia and Origin Energy.

230 St Vincent De Paul Society, *The National Electricity Market - in a bit of a state?* St Vincent De Paul, November 2012, p.9.

also has the effect of decreasing the retail component for Victoria, and increasing it in New South Wales, South Australia and Queensland.

**Table 8.3 Timeframe for market offers (February 2013 versus September 2013)**

		Victoria	New South Wales	South Australia	Queensland
<i>February market offers trended forward 2013/14 (c/kWh)</i>	Representative average market offer price (c/kWh)	28.83	27.94	31.03	26.59
	Retail component (c/kWh)	3.39 to 7.80	-1.64 to 2.70	-0.31 to 3.04	-1.88 to 2.54
<i>September market offers 2013/14 (c/kWh)</i>	Representative average market offer price (c/kWh)	28.17	28.01	32.81	28.32
	Retail component (c/kWh)	2.73 to 7.14	-1.57 to 2.77	1.47 to 4.82	-0.15 to 4.27

As discussed in chapter one, we used the consumption values provided by jurisdictions. For Victoria, we used a typical household with gas heating. As Victoria uses a large proportion of gas, the consumption value for Victoria is lower than in most other jurisdictions. We recognise that some Victorian consumers have a controlled load tariff for electric hot water or under floor heating. If these households are taken into account, the average consumption for Victoria may be higher.

To illustrate the impact of different consumption values on the retail component, we have considered the impact of using a common consumption value across Victoria and New South Wales. The common consumption value represents the average between Victoria (4, 645 kWh) and New South Wales (6, 500 kWh) for 2012/13.

**Table 8.4 Example of impact of common consumption on market offer price (2012/13)**

Household consumption		Victoria	New South Wales
Jurisdictional consumption values	Representative average market offer price (c/kWh)	27.66	27.86
	Retail component (c/kWh)	3.31 to 7.61	-1.75 to 2.64
Common consumption value	Representative average market offer	26.65	28.41

(5,573)	price (c/kWh)		
	Retail component (c/kWh)	2.30 to 6.60	-1.20 to 3.19

### Retail operating costs

We understand that retailers may have different operating costs in different jurisdictions. Significant factors affecting retailer operating costs include:

- Consumer churn. Where retail markets are open to competition, the majority of a retailer's direct costs will be the costs of marketing to and acquiring consumers and administering their accounts (billing, call centres etc). In Victoria, the current consumer transfer rate is around 27 per cent. This is in comparison to South Australia where customer churn is approximately 17 per cent, New South Wales is approximately 15 per cent and South East Queensland is around 13 per cent.<sup>231</sup>
- Rollout of smart meters in Victoria. Retailers as part of this rollout have incurred some additional costs. For example, data/technology infrastructure and supporting information to inform consumers about introduction of flexible pricing.
- Differences in administrative costs in complying with energy efficiency schemes. The Victorian Energy Efficiency scheme has a larger target in place than other states with energy efficiency schemes.

### **8.2.2 Regulated networks**

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is based on information provided by the AER, sourced from existing regulatory determinations. Where no regulatory determination exists, we have escalated the cost of regulated networks by the assumed rate of inflation.

In 2012/2013, regulated network costs made up around 39 per cent of the representative market offer price. Of this, transmission network costs made up around 5 per cent, while distribution makes up around 34 per cent. By 2015/16, transmission costs will make up around 6 per cent of the representative market offer price while distribution costs will make up around 41 per cent. The reasons for these movements are discussed below.

#### *Transmission*

Transmission network arrangements in Victoria are different than in other jurisdictions. While the privately owned company SP AusNet owns and operates the

<sup>231</sup> Refer to AEMO Retail Transfer Statistical Data at <http://www.aemo.com.au/Electricity/Data/Metering/Retail-Transfer-Statistical-Data>

Victorian transmission system, planning and management of network augmentation is the responsibility of AEMO.<sup>232</sup>

The Victorian transmission network consists of around 6,500 kilometres of high voltage lines, with consumers including the five Victorian distribution businesses as well as generators and large consumers.

The current regulatory determination for SP AusNet ends in March 2014. The AER has published a draft determination to cover the period 1 April 2014 to 31 March 2017. The AER's draft determination included a decrease of 8.1 per cent (in real terms) on SP AusNet's average annual revenue from the 2008-2014 regulatory period. The AER advised that this decrease is primarily due to the application of a lower allowed weighted average cost of capital.<sup>233</sup>

As the current regulatory period concludes in 2014, transmission network costs in Victoria for 2014/15 and 2015/16 are escalated by the assumed rate of inflation. However, noting that the AER's draft determination for SP AusNet included a substantial decrease in annual average revenue in the current regulatory period, actual changes in network costs may be lower than value.<sup>234</sup>

#### *Distribution*

Distribution networks in Victoria are owned and operated by five privately owned businesses. CitiPower, United Energy and Jemena service consumers in and around the Melbourne metropolitan area, while SP AusNet and Powercor service eastern and western Victoria respectively.

The AER's determination for all five businesses was published in October 2010. It covers the period from January 2011 to December 2015.

Relative to the previous regulatory determination which ran from 2006 until 2010, this determination included higher levels of capital and operating expenditure. The AER advised that this additional expenditure was necessary for asset replacement, meeting consumer peak demand and to address new safety related obligations.<sup>235</sup>

For the 2011-2015 regulatory determination, the AER allowed capital expenditure which was 45 per cent greater, and operational expenditure that was 32 per cent greater, than that allowed in the 2006-2010 regulatory determination.<sup>236</sup> Furthermore, across the different Victorian distribution businesses, the rate of return allowed was between 1 and 1.8 percentage points higher than that allowed in the 2006-2010 regulatory determination.<sup>237</sup>

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232 Australian Energy Regulator, *2012 State of the Energy Market*, AER, 2012, p.60.

233 Ibid, p.16.

234 The SP AusNet final determination is not due to be released until after the conclusion of our report. Accordingly, while we note the lower value of annual revenue included in the draft determination, we have not used these figures as an input into our quantitative analysis.

235 Australian Energy Regulator, *Final Decision, Victorian electricity distribution network service providers, distribution determination 2011-15*, AER, October 2010, p.i)

236 Ibid.,p.ii

237 See Australian Energy Market Commission, *Possible future retail electricity price movements: 1 July 2012 to 30 June 2015*, AEMC, March 2013, p.67.

The Victorian government has mandated the rollout of smart meter infrastructure and two-way communication systems. The rollout commenced in 2009, and is expected to be completed by the end of 2013.

The cost of this metering rollout is recovered through distribution network charges. Accordingly, we have included these costs in the distribution network component in this report, reflecting information provided by the AER.

Distribution network costs increase, on average by 10.8 per cent a year from 2012/13 to 2014/15. In the final year of the reporting period, we have escalated distribution network costs by the assumed rate of inflation.

These changes in distribution network costs contribute to the small movements in the Victorian representative market offer price between 2012/13 and 2014/15.

### **8.2.3 Environmental policies**

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon price mechanism, the renewable energy target, feed in tariff schemes and energy efficiency schemes.

The costs of each of these environmental policies are charged to residential consumers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale cost of electricity, while the cost of feed in tariff schemes are recovered either through increases in distribution network charges or retail costs. The costs of the renewable energy target and energy efficiency schemes are recovered through retail costs.

In 2012/13, environmental policies make up around 19 per cent of the representative market offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 11 per cent of the representative market offer price. This falls to 3 per cent in 2015/16, with the bulk of this decrease reflecting the move from a fixed carbon price to a floating price under the existing legislation.
- In 2012/13, renewable energy target costs made up around 5 per cent of the representative market offer price. This falls slightly across the reporting period, making up around 3 per cent in 2015/16.
- In 2012/13, feed in tariff scheme costs made up around 2 per cent of the representative market offer price. This does not change across the reporting period.
- In 2012/13, the cost of the Victorian Energy Efficiency Target makes up around 1 per cent of the representative market offer price. This does not change across the reporting period.

The reasons for these changes are discussed below.

## Carbon

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>238</sup>

In Victoria, the cost of the carbon pricing mechanism increases slightly during the two years from 2012/13 to 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls in 2015/16, reflecting the move from a fixed carbon price to a floating price under the existing legislation. This reduction in the cost of the carbon pricing mechanism is a key driver of the reduction in the Victorian representative market offer price identified in 2015/16.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

### *Renewable energy target*

As discussed in Chapter two, 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 meeting the targets under these policies are recovered by retailers from consumers.<sup>239</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET increases, on average, by 5.6 per cent a year from 2012/13 to 2015/16.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>240</sup>

The STP in the early years of our reporting period is relatively high and falls sharply throughout the reporting period.<sup>241</sup> The cost of the SRES decreases, on average, by 34 per cent from 2012/13 to 2015/16.

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<sup>238</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>239</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>240</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>241</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

### *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 these premium schemes are closed to new entrants, consumers who took part in these schemes remain eligible to claim the relevant tariff until the schemes conclude.

The now closed schemes included three separate tariffs:

- a 60 c/kWh premium tariff, continuing until 1 November 2024;
- a 25c/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.<sup>242</sup>

Currently, Victorian residential consumers can access a retailer funded feed in tariff scheme which provides a tariff which is no less than 8c/kWh. Individual retailers may offer a premium on this rate.

A key difference between the premium/transitional schemes and the retailer funded schemes is the way the cost of the scheme is recovered from consumers. The cost of the premium and the transitional schemes are recovered from residential consumers through distribution network charges. Retailers face the cost of 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 8c/kWh tariff are effectively part of the retail component discussed in section 8.2.1 above.

Although the premium, transitional and standard tariffs are now closed, their cost will continue to flow through into average market offer prices. The 60c/kWh premium tariff will continue to affect prices until November 2024, while the 25c/kWh transitional tariff and the standard tariff will continue to affect prices until December 2016.

After an increase of 11 per cent between 2012/13 and 2013/14, feed in tariff scheme costs are not expected to change throughout the remainder of the reporting period.

### *Victorian energy efficiency target*

The Victorian energy efficiency target (VEET) is a Victorian government scheme which is designed to reduce greenhouse gas emissions, encourage the efficient use of electricity and gas, and to encourage development of energy efficiency businesses.<sup>243</sup>

The VEET is a "white certificate scheme". Accredited energy efficiency providers are able to generate certificates under the VEET for undertaking specific activities. Each certificate represents the abatement of a tonne of carbon dioxide. Large electricity

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<sup>242</sup> Refer to [www.energyandresources.vic.gov.au/energy/environment-and-community/victorian-feed-in-tariff-schemes](http://www.energyandresources.vic.gov.au/energy/environment-and-community/victorian-feed-in-tariff-schemes).

<sup>243</sup> More information is available at: <https://www.veet.vic.gov.au/Public/Public.aspx?id=Home>

retailers are required to surrender a specified quantity of these certificates. Retailers may either create these certificates themselves or acquire them from other providers.

The cost of the VEET makes up around 1 per cent of the representative market offer price and is not expected to change between 2012/13 and the end of 2014. A Regulatory Impact Statement (RIS) is currently being undertaken to determine the appropriate abatement target for the next phase of the scheme (2015-2017).

## 9 Tasmania

### Box 9.1: Key findings

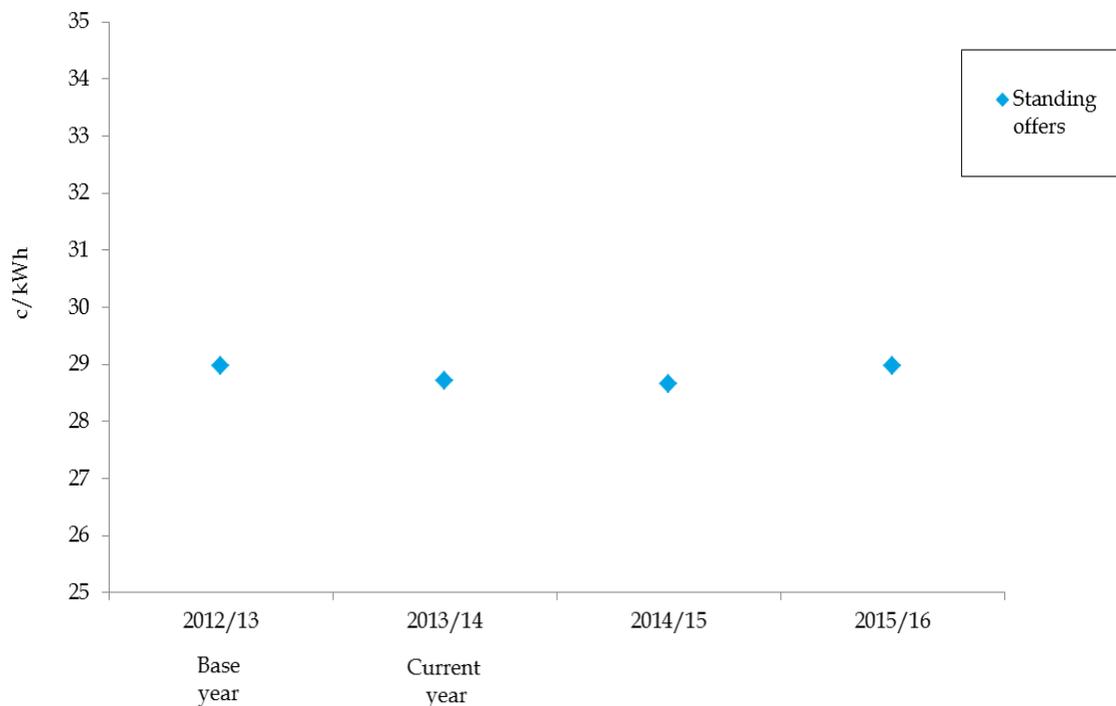
Standing offer prices in Tasmania are currently regulated. As announced by the Tasmanian government, retail contestability will be extended to residential consumers from July 2014.

In accordance with the current retail price determination and retail pricing proposals issued by the Tasmanian Government, standing offer prices are expected to decrease by around 5 per cent on 1 January 2014.

On average from 2012/13 to 2015/16, prices are expected to remain relatively stable. While various cost components either increase or decrease, interactions between these cost components means that the net effect is relatively flat standing offer prices.

Results in this chapter are based on the 2010 and 2013 Retail Price Determinations made by the Office of the Tasmanian Economic Regulator (OTTER). OTTER has since commenced consultation on the potential amendment of the 2013 Retail Price Determination. Any changes made to the 2013 Retail Price Determination may affect the results for Tasmania included in this report.

### 9.1 Trends in Tasmanian standing offer prices



The representative standing offer price is based on standing offer tariffs published by Aurora and the Tasmanian government. Specifically, we used the published Residential Light and Power tariff 31 from the following sources:

- For 2012/13, the representative standing offer price was based on Aurora's published standing offer electricity tariff.<sup>244</sup>
- For 2013/14, the representative standing offer price was based on the average of Aurora's approved standing offer electricity tariff for July 2013 - December 2013<sup>245</sup> and the standing offer for January 2014 to June 2014 published by the Tasmanian Government.<sup>246</sup>
- For the years 2014/15 and 2015/16, we escalated the 2013/14 representative standing offer by changes in the notional maximum revenue, as included in the Office of the Tasmanian Economic Regulator's (OTTER) 2013 standing offer investigation report (the 2013 Retail Price Determination).<sup>247</sup>

We note that the Tasmanian government has announced that the sale of Aurora's retail assets will not proceed. We also note that OTTER has commenced consultation on the potential amendment of the 2013 Retail Price Determination.<sup>248</sup> Any changes made to the 2013 Retail Price Determination may affect the results for Tasmania included in this report.

Our assessment of future movements of the representative standing offer price are based on the indicative total notional maximum revenue from OTTER's 2013 determination. While various cost components within the notional maximum revenue either increase or decrease through the reporting period, interactions between these cost components means that the net effect is relatively flat standing offer prices.

Any changes made by OTTER to the notional maximum revenue will affect our estimates of standing offer prices for 2014/15 and 2015/16.

More detail regarding the approach applied to Tasmania is provided in Appendix A.

*Key findings:*

- The representative standing offer price is expected to decrease by around 5 per cent on January 2014, in accordance with announcements made by the Tasmanian government and published standing offer prices.<sup>249</sup>

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<sup>244</sup> Aurora Energy, *Approved electricity tariffs from 1 July 2012*, Aurora Energy, 2012.

<sup>245</sup> Aurora Energy, *Retail Pricing Proposal for the 2013 Determination from 1 July 2013 - 31 December 2013*, Aurora Energy, 2013.

<sup>246</sup> Tasmanian Government, *Retail Pricing Proposal for Period 1 of the 2013 Interim Price-Regulated Retail Service Price Determination*, Tasmanian Government, August 2013.

<sup>247</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013.

<sup>248</sup> Tasmanian government, *Ministerial Statement, Implementation of Electricity Market Reforms*, Tasmanian Government, 26 September 2013; Office of the Tasmanian Economic Regulator, *Consultation Paper on proposed changes to the Interim Price-Regulated Retail Service Price Determinations*, November 2013.

<sup>249</sup> *Ibid.*, p.6. As per SCER's Terms of Reference, we are required to report on movement in electricity prices on a financial year basis. As this decrease in the representative standing offer price occurs mid-way through a financial year, it does not show up clearly in the graph above.

- Standing offer prices are expected to remain relatively stable, on average, over the three years from 2012/13 to 2015/16.
- Network costs increase by around 6.4 per cent while wholesale costs decrease by around 7.8 per cent for the three year from 2012/13 to 2015/16. The interaction between these movements contributes to the flat standing offer price.

*Effect of different household consumption*

For the representative market offer identified above, we applied a sample household consumption value of 8,800 kWh per annum.<sup>250</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>251</sup> The results of this analysis are included in table 9.1 below.

**Table 9.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average market offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (7,146 kWh)	29.84	\$2,132
Medium (8,800 kWh)	28.98	\$2,550
High (13,763 kWh)	27.64	\$3,804

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of the representative standing offer tariff, which consists of a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>252</sup>

Generally, Tasmanian households have the largest annual consumption in Australia. A combination of a cold climate and low gas penetration means that Tasmanian households have comparatively high electric hot water and space heating loads. Given these factors, the annual bill for a high consumption Tasmanian household is generally higher than in other NEM states.

It should be noted that there are a wide range of concessions available to Tasmanian residential electricity consumers. These can substantially reduce the cost of electricity faced by concession holders. For example, OTTER highlights that from 1 July 2013,

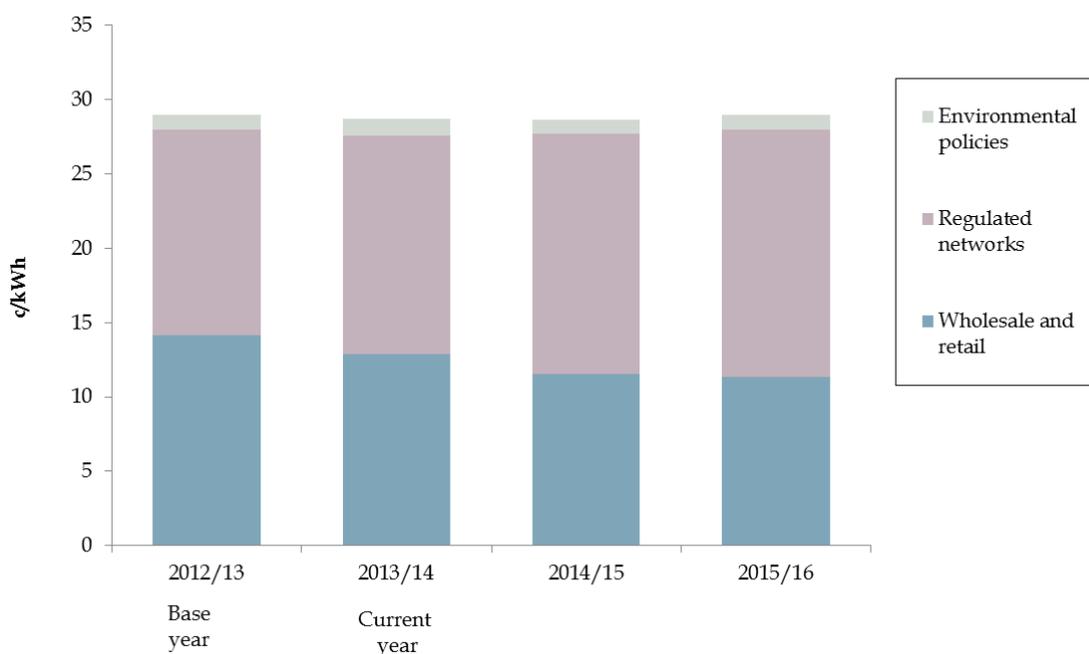
<sup>250</sup> As discussed in Chapter three, this sample household consumption value was based on information sourced from OTTER's Tasmanian Energy Performance Report 2011/12. See: Office of the Tasmanian Economic Regulator, *Tasmanian Energy Performance Report 2011/12*, OTTER, 2012.

<sup>251</sup> Chapter three provides more information on our approach to determining different household consumption.

<sup>252</sup> More information about different pricing structures is provided in Appendix D.

Tasmanian Pensioner Concession Card and Health Care Card holders received a rebate of \$1.26 per day for the fixed charge component of Tariff 31. This equates to a concession of \$458.84 per annum. OTTER also highlights that eligibility for concessions is generally broader in Tasmania than in other jurisdictions, with around one in three residential consumers receiving the concession.<sup>253</sup>

## 9.2 Trends in supply chain cost components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>1.00</b>	<b>1.14</b>	<b>0.93</b>	<b>0.99</b>
LRET	c/kWh	1.00	1.14	0.49	0.57
SRES	c/kWh			0.44	0.42
<b>Regulated networks</b>	<b>c/kWh</b>	<b>13.86</b>	<b>14.73</b>	<b>16.18</b>	<b>16.67</b>
<b>Wholesale and retail</b>	<b>c/kWh</b>	<b>14.11</b>	<b>12.85</b>	<b>11.56</b>	<b>11.32</b>
Wholesale	c/kWh	10.28	9.98	8.44	8.01
Retail	c/kWh	2.27	2.56	3.11	3.31
Prior year pass through	c/kWh	1.56	0.32	0.00	0.00
<b>Total</b>	<b>c/kWh</b>	<b>28.98</b>	<b>28.72</b>	<b>28.66</b>	<b>28.98</b>

Information on supply chain cost components for Tasmania has been sourced from OTTER's 2010 Retail Price Determination (with specific values for each component sourced from Aurora's 2012 and July 2013 pricing proposals) and OTTER's 2013 Retail Price Determination.<sup>254</sup> This includes projected movements in the cost components.

<sup>253</sup> Office of the Tasmanian Economic Regulator, *Comparison of 2013 Australian Standing Offer Energy Prices*, OTTER, July 2013, p.10.

<sup>254</sup> The relevant documents include: Office of the Tasmanian Economic Regulator, *Investigation of maximum prices for declared retail electrical services on mainland Tasmania: Final Report*, October 2010;

The cost components included in OTTER's 2010 and 2013 Retail Price Determinations make up the regulated notional maximum revenue. The notional maximum revenue is the total revenue that the regulated retailer is able to recover from the notional tariff base. The notional tariff base comprises consumer numbers and loads for all regulated small consumers.<sup>255</sup>

The notional tariff is for both residential and non-residential consumers. As the AEMC is required to report on costs for residential consumers only, we have applied the relative proportions of each cost component in the notional maximum revenue to the average standing offer price. We consider that this should reflect the relative proportion of the representative standing offer price that can be attributed to each cost component.

As OTTER's Retail Price Determinations do not include a specific cost of carbon, we have not reported a cost of carbon for Tasmania from 2012/13 to 2015/16. The 2010 Retail Price Determination also reports the LRET and SRES as a single value. Accordingly, we have also reported the cost of the renewable energy target as a single value for 2012/13 and 2013/14.

Further discussion of our approach for Tasmania is provided in Appendix A.

### **9.2.1 Retail and wholesale**

Wholesale and retail costs consist of the wholesale purchase cost of energy and the costs associated with retailing electricity to residential consumers. For Tasmania, the reported wholesale and retail costs are based on the values included in OTTER's 2010 and 2013 Retail Price Determinations.

In 2012/2013, wholesale and retail costs made up around 49 per cent of the average standing offer price. By 2015/16, this cost component is expected to decrease to around 39 per cent of the average standing offer price.

OTTER also approved adjustments to the notional maximum revenue allowed under its 2010 Retail Price Determination.<sup>256</sup> These adjustments allow for the recovery of differences between the forecast notional maximum revenue included in the 2010 Retail Price Determination and actual out turn costs. In 2012/13 and the period July 2013 to December 2013, adjustments were approved by OTTER for costs related to the renewable energy target and AEMO market fees. These amounts are identified as separate "prior year pass through" costs in the figure above. They make up around 5 per cent of the representative standing offer price in 2012/13 and around 1 per cent in 2013/14.

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Aurora Energy, *Retail Pricing Proposal for Period 3*, Aurora Energy, 2012; Aurora Energy, *Retail Pricing Proposal for the 2013 determination from 1 July 2013 - 31 December 2013*, and Aurora Energy, 2013; Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013.

<sup>255</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013.

<sup>256</sup> Office of the Tasmanian Economic Regulator, *Statement of Reasons, Approval of Retail tariffs for non-contestable tariff customers from 1 July 2012 in accordance with the 2010 Price Determination*, OTTER, June 2012, p.5.

To date, small residential consumers in Tasmania (those with annual consumption under 50MWh) have been supplied electricity exclusively by Aurora Energy.

As part of the Tasmanian Government's 2013 Energy Reform package, Aurora's retail consumer base was to be sold in two separate tranches. This was to be accompanied by a staged transition to unrestricted full retail competition for all small consumers in 1 July 2014. Retail price regulation was to be retained for residential consumers until competition was found to be effective.<sup>257</sup>

Accompanying the sale process, OTTER published a regulated Retail Price Determination to cover the period January 2014 to June 2016 (the 2013 Retail Price Determination). This determination was to cover those regulated consumers serviced by the retailers that bought Aurora's consumer base.<sup>258</sup>

The 2013 Retail Price Determination included a total notional maximum revenue to cover various costs, including wholesale energy purchase, network, AEMO charges, the renewable energy target, and retailer costs to serve. The determination was broken into three periods, with a different notional maximum revenue determined for each period.<sup>259</sup>

Following publication of OTTER's 2013 Retail Price Determination, the Tasmanian Government submitted a pricing proposal regarding the maximum prices that will apply for small consumers in period 1 of the determination (1 January 2014 to 30 June 2014).<sup>260</sup> The residential standing offer prices in this proposal included a decrease of 5.23 per cent on 1 January 2014.

On 26 September 2013, the Tasmanian government announced that the sale of Aurora's consumer base would not proceed. The government has advised that it expects the 5.23 per cent decrease in the standing offer will still occur as at 1 January 2014 and that full retail contestability will be extended to residential consumers as of 1 July 2014.

Due to this change in market circumstances, OTTER has commenced consultation on the revocation of a portion of the 2013 Retail Price Determination.<sup>261</sup>

As noted, the 2010 and 2013 Retail Price Determinations include a retail "cost to serve", which includes all of a retailer's costs. For consistency with other jurisdictions, we have shown these costs as a single "retail" component.

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<sup>257</sup> Tasmanian Government, *Tasmanian Energy Reform: Market and Regulatory Framework Position Paper*, Tasmanian Government, March 2013.

<sup>258</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013.

<sup>259</sup> These periods were: Period 1, covering 1 January 2014 to 30 June 2014; Period 2, covering 1 July 2014 to 30 June 2015; and Period 3, covering 1 July 2015 to 30 June 2016. Importantly, the [NMR] was calculated using an [NTB] that was provided by Treasury to OTTER. These [NTB] values are subject to change, depending on consumer numbers and total load, and will be determined by the regulator on an annual basis.

<sup>260</sup> Tasmanian Government, *Retail Pricing Proposal for Period 1 of the 2013 Interim Price-Regulated Retail Service Price Determination*, Tasmanian Government, August 2013.

<sup>261</sup> Office of the Tasmanian Economic Regulator, *Consultation Paper on proposed changes to the Interim Price-Regulated Retail Service Price Determinations*, November 2013.

During the reporting period, retail costs increase, on average, by around 13.6 per cent from 2012/13 to 2015/16.

As noted above, the AEMC used information provided by the Tasmanian Government and OTTER as the basis of its reporting of wholesale energy purchase costs.<sup>262</sup>

For 2012/13 and the first half of 2013/14, wholesale electricity purchase costs were sourced from the 2010 Retail Price Determination and relevant pricing proposals. For this period, OTTER's approach to estimation of wholesale energy purchase costs was to use the average of the long run marginal cost of new generation and Aurora's cost of purchasing wholesale electricity in Victoria.<sup>263</sup>

For the second half of 2013/14 and for the financial years 2014/15 and 2015/16, wholesale energy purchase costs were sourced from the 2013 Retail Price Determination. This determination reflects the Tasmanian Government's 2013 Energy Reform package, which includes regulation of Hydro Tasmania's wholesale market activities.<sup>264</sup>

Average demand in Tasmania has decreased in recent years; over the years 2008/09 to 2012/13, average demand fell by around 1.7 per cent annually. Under AEMO's medium growth planning scenario, average demand in Tasmania is expected to continue to fall over the next decade, with an annual reduction of around 0.2 per cent.<sup>265</sup>

During our reporting period, wholesale energy purchase costs decrease, on average, by around 7.8 per cent a year from 2012/13 to 2015/16. This is based on OTTER's findings as reported in the 2013 Retail Price Determination.

### 9.2.2 Regulated networks

We note that the Tasmanian government has committed to the integration of Aurora (distribution network business) and Transend (transmission network business). The

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<sup>262</sup> In this Chapter, the term wholesale energy purchase costs is used to describe OTTER's "wholesale electricity cost", defined by OTTER as the wholesale electricity price, adjusted for losses and forecast load. More information is available at: Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013, p.29.

<sup>263</sup> In May 2012, the Tasmanian government amended the regulations that govern OTTER's approach to estimating the wholesale purchase cost of energy, including the requirement to base the cost of energy on an average of LRMC and the Victorian price. In May 2013, the 2010 Retail Price Determination was extended by a period of six months to cover the period July to December 2013. Accordingly, the wholesale energy purchase cost for 1 July 2013 to December 2013 was based on OTTER's estimate for 2012/13, adjusted for inflation. More information is available at: Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013, p.24-25.

<sup>264</sup> This reform package included regulation of the standard range of electricity contracts that Hydro Tasmania was able to sell to other market participants. More information is available at: Tasmanian Government, *Tasmanian Energy Reform: Market and Regulatory Framework Position Paper*, Tasmanian Government, March 2013, pp.8 -12; and Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013, p.28.

<sup>265</sup> Australian Energy Market Operator, *2013 National Electricity Forecasting Report*, AEMO, 2013, p.7-2.

Tasmanian Government expects that this merger should be completed by 1 July 2014.<sup>266</sup>

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most consumers, across large urban areas at lower voltage.

Our analysis of these costs is also based on information from OTTER's 2010 and 2013 Retail Price Determinations. OTTER bases the network costs included in its Retail Price Determinations on the AER's network regulatory determinations. In its Retail Price Determinations, OTTER does not report distribution and transmission network costs separately. Hence, we have reported Tasmanian network costs in the same way.

To estimate network costs, OTTER applied actual network tariffs from AER regulated network pricing proposals to forecast load and consumer numbers. This was used to develop network costs for the period 1 January 2014 to 30 June 2014. OTTER also developed estimates of future network tariffs and applied these to forecast consumer load and numbers. This was used to develop the regulated network costs for 2014/15 and 2015/16.<sup>267</sup>

In 2012/2013, regulated network costs made up around 48 per cent of the representative standing offer price. By 2015/16, network costs will make up around 58 per cent of the representative standing offer price.

Network costs in Tasmania are expected to increase, on average, by around 6.4 per cent a year from 2012/13 to 2015/16.

### 9.2.3 Environmental policies

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon price mechanism, the renewable energy target, feed in tariff schemes and energy efficiency schemes.

OTTER's 2013 Retail Price Determination did not include a specific carbon cost component. As noted, we have not reported on the cost of carbon in Tasmania.<sup>268</sup>

OTTER's 2010 Retail Price Determination did not separate out the cost of the large scale renewable energy target (LRET) from the small scale renewable energy scheme (SRES).

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<sup>266</sup> More information is available here: *Ministerial Statement: Implementation of Electricity Market Reforms*, 26 September 2013. Available at: [http://www.electricity.tas.gov.au/wp-content/uploads/2013/09/Ministerial\\_Statement\\_on\\_Electricity\\_Reform\\_26-September-2013\\_FINAL.pdf](http://www.electricity.tas.gov.au/wp-content/uploads/2013/09/Ministerial_Statement_on_Electricity_Reform_26-September-2013_FINAL.pdf).

<sup>267</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, OTTER, July 2013, p.32. It should be noted that these network costs were based on different inputs, most notably different total customer numbers.

<sup>268</sup> While there is no specific identification of carbon in either of OTTER's Retail Price Determinations, it is assumed that the cost of carbon is included in the overall wholesale energy purchase cost. Tasmanian electricity consumers pay a carbon cost despite most electricity generation being from non-carbon emitting generation sources (ie, hydro and wind generation). This is because Tasmanian prices are currently influenced by prevailing wholesale market prices in other NEM regions, given the Basslink interconnection with Victoria.

This means that for the 2012/13 and 2013/14 years of our reporting period we have expressed these costs as a single value for Tasmania.

In 2012/13, LRET and SRES costs together make up around 3 per cent of the representative standing offer price. This does not change substantially across the reporting period.

#### *Renewable energy target*

As discussed in Chapter two, the renewable energy target consists of two components: LRET and the SRES. The costs of both of these policies are recovered by retailers from consumers.

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market. The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>269</sup>

Retailers face the cost of the renewable energy target and pass these costs through to consumers.

OTTER has included recovery of these costs in both of its Retail Price Determinations. In the 2010 Retail Price Determination the LRET and SRES costs were not reported separately, so we have reported these as a single value for 2012/13 and 2013/14.

From 2012/13 to 2013/14, combined LRET and SRES costs increase, on average, by 13 per cent.

From 2014/15 to 2015/16, LRET costs increase by 16 per cent. SRES costs decrease by 4 per cent across the same period.<sup>270</sup>

#### *Feed in tariff schemes*

Since 2000 Aurora has offered a Net Metering Buyback scheme to residential consumers that use renewable generation under 10kW.

For residential consumers who joined before 30 August 2013, this scheme provided a 1:1 payment equal to the retail cost of electricity. Eligible parties will continue to receive this premium tariff until 1 January 2019.

For residential consumers who joined this scheme after August 2013, the available tariff has been set at 8 c/kWh.<sup>271</sup> This tariff is available until December 2013.

OTTER is currently progressing a review of the Tasmanian feed in tariff scheme and has published a draft report that provides a proposed methodology for calculation of a

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<sup>269</sup> A detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>270</sup> Due to the aggregation of these values in 2013/14, it is not possible to report on movements in the separate components between 2013/14 and 2014/15.

<sup>271</sup> More information is available at <http://www.livinggreener.gov.au/rebates-assistance/tas/electricity-feed-in-tariff>.

"fair and reasonable" feed in tariff. OTTER has also proposed an indicative feed in tariff rate of 8.282 c/kWh to apply from 1 January 2014.<sup>272</sup>

The cost of the Net Metering Buyback scheme is currently borne entirely by Aurora Energy's Energy Business (retail). Aurora is not reimbursed for the cost of the scheme, nor is the cost recovered from residential consumers via electricity bills. The net metering buyback scheme is therefore effectively a "retailer funded" scheme, although the cost of the scheme is not faced by residential consumers.

Given that the cost of this scheme is not currently faced by residential consumers, we have not reported a feed in tariff component of the representative standing offer price in Tasmania.

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<sup>272</sup> More information is available here:  
[http://www.energyregulator.tas.gov.au/domino/otter.nsf/LookupFiles/133028\\_Regulated\\_Feed-in\\_Tariff\\_for\\_Tasmanian\\_Small\\_Customers\\_-\\_Draft\\_Report.PDF/\\$file/133028\\_Regulated\\_Feed-in\\_Tariff\\_for\\_Tasmanian\\_Small\\_Customers\\_-\\_Draft\\_Report.PDF](http://www.energyregulator.tas.gov.au/domino/otter.nsf/LookupFiles/133028_Regulated_Feed-in_Tariff_for_Tasmanian_Small_Customers_-_Draft_Report.PDF/$file/133028_Regulated_Feed-in_Tariff_for_Tasmanian_Small_Customers_-_Draft_Report.PDF)

## 10 Western Australia

### Box 10.1: Key findings

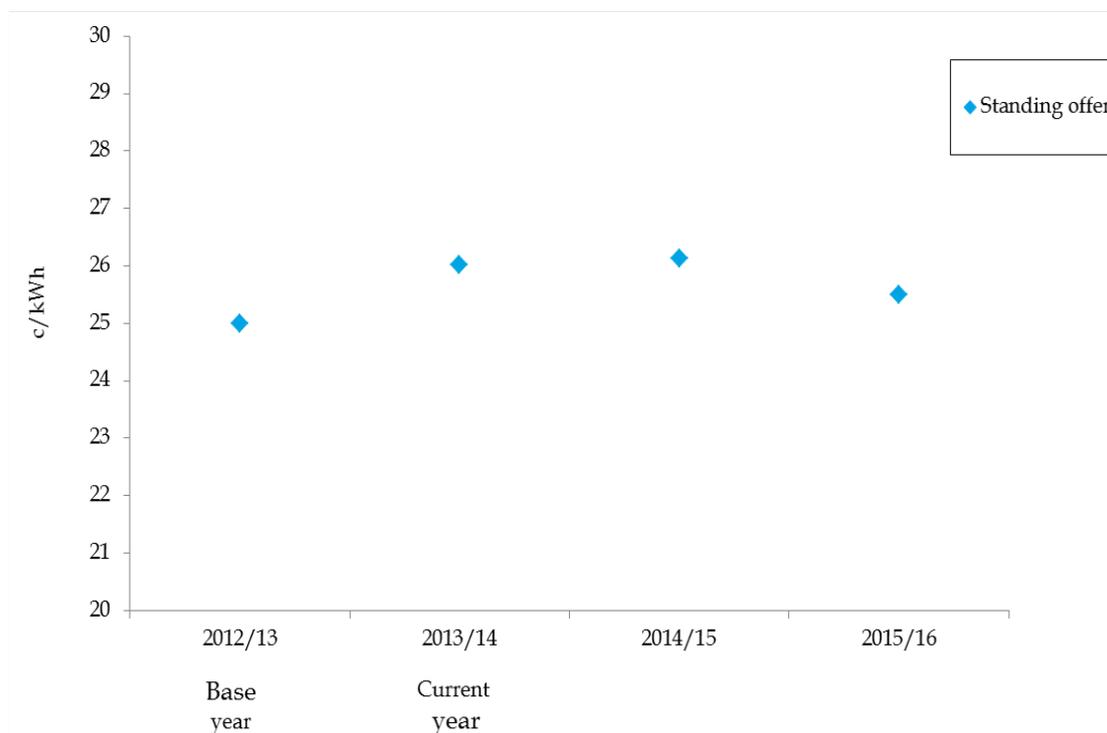
Residential electricity prices are currently set by the Western Australian government. Standing offer prices in 2012/13 did not reflect the costs of supply and delivering electricity to consumers.

Standing offer prices are expected to increase by 2.3 per cent a year for the two years from 2012/13 to 2014/15. The main driver of this increase is distribution network costs.

Prices are then expected to decrease from 2014/15 to 2015/16. The decrease is primarily due to a decrease in carbon pricing costs, reflecting the fixed carbon price moving to a floating price under existing legislation.

Due to the government's uniform tariff policy, residential consumers outside the SWIS pay the same standing offer rate as those consumers in the South-West Interconnected System (SWIS). Accordingly, our analysis of prices and cost components for Western Australia are provided for the (SWIS).<sup>273</sup>

### 10.1 Trends in Western Australian standing offer prices



<sup>273</sup> The SWIS runs from Kalbarri in the north to Kalgoorlie in the east and Albany in the South.

The 2012/13 and 2013/14 representative standing offer prices were based on the standing offer tariffs published by the government.<sup>274</sup> For the years 2014/15 and 2015/16, our trends for representative standing offer prices is based on the movements in the underlying supply chain cost components.

An overview of our approach for Western Australia is provided in Appendix A.

#### *Key findings*

- The representative standing offer price is expected to increase, on average, by 2.3 per cent a year for the two years from 2012/13 to 2014/15. This increase is primarily due to distribution network costs, which increase by 10 per cent from 2012/13 to 2013/14.<sup>275</sup>
- The representative standing offer price is expected to decrease by 2.4 per cent in 2015/16. This decrease reflects the move from a fixed carbon price to a floating price under existing legislation.

#### *Effect of different household consumption levels*

For the representative standing offer identified above, we applied a sample household consumption value of 5,801 kWh per annum.<sup>276</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>277</sup> The results of this analysis are included in table 10.1 below.

These results show how as total consumption changes, the average unit cost of electricity declines. This reflects the structure of the Western Australian standing offer tariffs that formed the basis of the representative standing offer. These tariffs had both a fixed and a variable component.<sup>278</sup> As consumption increases, the fixed component is “spread” out across a larger volume of consumption, decreasing the average price of electricity.<sup>279</sup>

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274 For 2012/13 and 2013/14, the specific tariff applied was Residential Electricity Tariff A1/A2. Refer to Western Australian Department of Finance – Public Utilities Office for more information: [www.finance.wa.gov.au/electricity\\_prices](http://www.finance.wa.gov.au/electricity_prices).

275 For distribution costs, only the changes for the period 2012/13 to 2013/14 are described here, reflecting the current Price List approved by Economic Regulation Authority. Distribution network costs in 2014/15 and 2015/16 are escalated by the expected rate of inflation.

276 As discussed in Chapter three, this sample household consumption was based on information provided to the AEMC by the Western Australian Public Utilities Office. Over the reporting period to 2015/16, it is recognised that there may be changes in this sample consumption. For the purposes of this report, the value for 2012/13 has been used.

277 Chapter 1 provides more information on our approach to determining different household consumption levels.

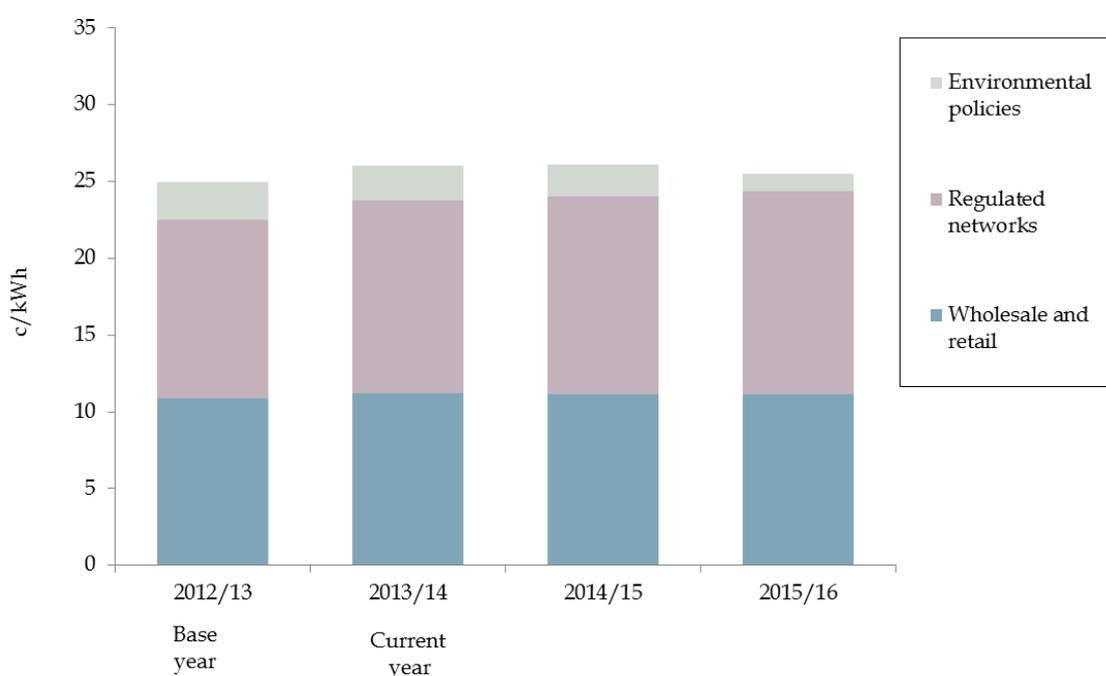
278 Generally standing offer tariffs in WA have a high variable charge and low fixed charge.

279 A more detailed explanation of different pricing structures available is provided in Appendix D.

**Table 10.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average standing offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (4,599 kWh)	25.62	\$1,178
Medium (5,801kWh)	25.00	\$1,450
High (9,408 kWh)	24.09	\$2,266

## 10.2 Trends in supply chain components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>2.52</b>	<b>2.28</b>	<b>2.09</b>	<b>1.16</b>
Carbon	c/kWh	1.13	1.16	1.19	0.27
LRET	c/kWh	0.56	0.57	0.56	0.65
SRES	c/kWh	0.83	0.55	0.33	0.24
<b>Regulated networks</b>	<b>c/kWh</b>	<b>11.59</b>	<b>12.57</b>	<b>12.88</b>	<b>13.21</b>
Transmission	c/kWh	2.02	2.00	2.05	2.10
Distribution	c/kWh	9.57	10.57	10.83	11.10
<b>Wholesale and retail</b>	<b>c/kWh</b>	<b>10.89</b>	<b>11.17</b>	<b>11.16</b>	<b>11.14</b>
Wholesale	c/kWh	10.77	10.79	10.78	10.75
Retail	c/kWh	0.12	0.39	0.39	0.39
<b>Total</b>	<b>c/kWh</b>	<b>25.00</b>	<b>26.02</b>	<b>26.13</b>	<b>25.50</b>

Western Australia has only one competitive wholesale electricity market, the Wholesale Energy market (WEM). The WEM operates in the South West Interconnected System (SWIS).<sup>280</sup> The SWIS runs from Kalbarri in the north to Kalgoorlie in the east and Albany in the south.<sup>281</sup> It is not connected to the National Electricity Market.

Outside of the SWIS, there are 34 small, isolated electricity systems that power remote townships, and two small interconnected systems: one in the Pilbara, referred to as the North Western Interconnected System (NWIS), and one that connects the towns of Kununurra and Wyndham. The NWIS consists of both public and private networks and generators. These are the responsibility of Horizon Power, which is a fully vertically integrated government owned entity. All customers on Horizon Power's grids are contestable.

A more detailed overview of the Western Australian electricity market is provided in Appendix F.

### 10.2.1 Retail and Wholesale

Wholesale market costs consist of the wholesale purchase cost of energy. Unlike the NEM, which is an energy-only market, the WEM has two components: a short-term balancing market, which allows for the buying and selling of electricity, and a capacity market, which provides incentives for long term investment in generation capacity. An overview of the WEM is provided in Appendix F.

Our reported wholesale market cost is based on modelling undertaken by NERA.

The retail component is the residual difference between the total of all the supply chain cost components (wholesale, network, and environmental policies) and the representative standing offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation. Due to the gap between the standing offer and the cost of supply this methodology will underestimate the actual retail component.

Residential electricity prices are currently regulated and set by the Western Australian Government. Synergy is required to make the standing offer available to residential consumers.<sup>282</sup> Changes to electricity tariffs, fees and charges are generally considered by the Western Australian government annually as part of the State Budget process.

Over last decade, residential electricity prices in Western Australia have generally been lower than the cost to supply and deliver electricity to consumers. This is in part due to

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280 The WEM was introduced in September 2006. The reform was designed to provide consumers with choice of competitively priced energy products and services, and to attract private investment into the market.

281 Much of the information for this section was obtained from the Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012, Appendix B: Background to the electricity sector in Western Australia, p.128.

282 Synergy must also make available the standing offer price to some larger customers.

the previous policy regarding electricity tariffs<sup>283</sup> and the subsidies that applied. The subsidies include:

- Community Service Obligation (CSO) payments: These are payments made by the state government to cover the cost of various customer service programs. In particular, due to tariffs being set below cost-reflective levels, the government makes a "tariff adjustment payment" via the CSO mechanism, to Synergy and Horizon Power to cover its cost shortfall.
- Tariff equalisation contribution (TEC): The Western Australian government has a uniform tariff policy which means that small use customers outside of the SWIS pay the same electricity tariffs as those in the SWIS. As the cost of supply to customers outside the SWIS is greater, the additional costs incurred by Horizon Power in supplying electricity are funded by the Tariff Equalisation Fund (TEC), which is itself funded from an additional levy on SWIS customers - the TEC. The amount of the contribution is determined by the government on an annual basis and is included in Western Power's distribution network charge.

Since 2009, residential electricity prices have been increasing. The increases reflect a move toward prices that reflect actual costs of supply, higher cost of fuel used for generation, increased network operating costs following a period of under investment and increases attributable to environmental policies.<sup>284</sup>

In July 2011, the Western Australian Treasurer requested that the Economic Regulation Authority (ERA) undertake an inquiry into the efficiency of Synergy's costs and electricity tariffs. This was the first inquiry by the ERA into Synergy's retail costs. The final report was published on 5 June 2012 and tabled in Parliament on 3 July 2012.

The recommendations from the final report have assisted the state government decision making in relation to its budget processes and current and future changes to electricity prices.

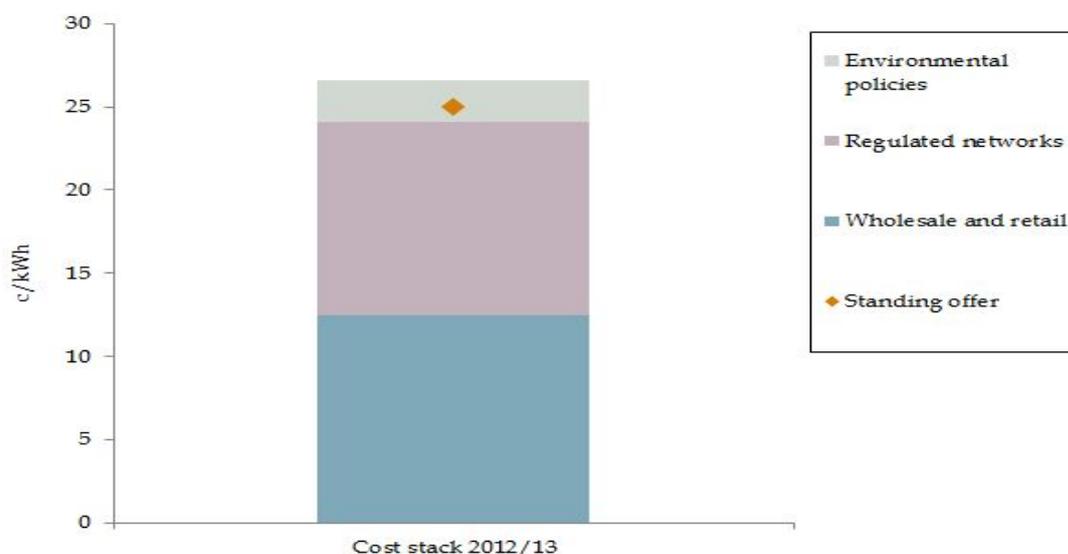
As shown in figure 10.1 residential retail electricity prices in the SWIS for 2012/2013 were lower than the actual cost of supplying electricity.

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<sup>283</sup> Between 1997 and 2009 residential tariffs were unchanged. As a result, tariffs did not keep pace with inflation, which increased around 47 per cent during the period. Refer to the Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012.

<sup>284</sup> Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final Report, 4 July 2012; Refer to Western Australian Department of Finance, Public Utilities Office website at <http://www.finance.wa.gov.au/cms/content.aspx?id=15096>.

**Figure 10.1** 2012/13 Residential electricity prices as compared to total costs to supply



As discussed in Chapter two, we developed estimates of wholesale energy purchase costs out to 2015/16. For Western Australia, NERA specifically used a "stand-alone" long run marginal cost approach which is consistent with the approach taken by the ERA for determining wholesale energy purchase costs for the SWIS.<sup>285</sup> As noted, stand-alone long run marginal cost approach generally result in higher wholesale purchase costs than market modelling as used.

Since 2008, energy consumption in the SWIS has been declining. This is consistent with the observed declines in consumption in NEM states. The Independent Market Operator of Western Australia (IMOWA)<sup>286</sup> notes some factors for the decline in demand in Western Australia. Such factors include changes in behaviour due to rising electricity prices, installation of rooftop solar generators, reduced investment by small to medium enterprises since global financial crisis, and the adoption of more energy efficient appliances by consumers.<sup>287</sup>

The IMOWA, as part its recent Electricity Statement of Opportunities report, highlights that average annual demand growth in sent out energy is projected to grow at 1.9 per cent per annum over next ten years.<sup>288</sup>

For our reporting period, wholesale energy purchase costs remain relatively stable.<sup>289</sup> We note that there are a number of reforms and reviews underway which may result in

<sup>285</sup> Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, final report, 4 July 2012, p.41.

<sup>286</sup> The IMOWA is the market operator for the WEM. Each year the IMOWA provides information on existing supply capacity and future electricity demand to current and potential participants in the WEM.

<sup>287</sup> Independent Market Operator, 2013 *Electricity Statement of Opportunities* IMOWA, 2013. p.4.

<sup>288</sup> Independent Market Operator, 2013 *Electricity Statement of Opportunities* IMOWA, 2013. p.3.

<sup>289</sup> In developing their estimates of wholesale costs, NERA utilised the IMO's SOO 2013 demand forecasts. More information can be found in NERA's consultant report.

changes for the operation of the WEM. Such changes may impact future wholesale electricity purchase costs.<sup>290</sup>

## 10.2.2 Regulated networks

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most customers, across large urban areas at lower voltage.

Our analysis of network costs is based on information provided by the Western Australian Public Utilities Office and sourced from the ERA's most recent access arrangement for Western Power. Where no regulatory determination exists, we have escalated the cost of regulated networks between years by the expected rate of inflation.

In 2012/2013, regulated network costs made up around 46 per cent of the representative standing offer price. Of this, transmission network costs made up around 8 per cent, while distribution makes up around 38 per cent.

By 2015/16, transmission network will make up around 8 per cent of the representative standing offer price, while distribution costs will make up around 44 per cent. The reasons for these movements are discussed below.

### *Transmission and distribution*

Both transmission and distribution network allowances in the SWIS are determined by the ERA. Although transmission and distribution network services are identified as separate components, both of these network services are provided by Western Power.

Third party access to the transmission and distribution networks in the SWIS and the provision of network services are governed by the Western Australian Electricity Networks Access Code. It prescribes the commercial arrangements, including the access charges that generators and retailers must pay to use Western Power's networks.

Western Power's most recent proposed third party access arrangement, referred to as AA3, for 2012 - 2017 was initially approved by the ERA on 29 November 2012.<sup>291</sup> In June 2013 the ERA varied Western Power's access arrangement to account for changes in recoverable revenue. This variation to the access arrangement took effect 1 July 2013 and resulted in slightly increased network charges from the original decision. The ERA subsequently approved a revised 2013-14 Price list submitted by Western Power. The annual average change in tariffs as approved by ERA, including CPI, is four per cent.

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<sup>290</sup> For example, current reforms underway include the merger of Verve and Synergy and review of Market Rules, the Market Rules Evolution Plan, the Reserve Capacity Mechanism review and proposed rule changes. See Independent Market Operator, 2013 *Electricity Statement of Opportunities* IMOWA, 2013. p.79-81.

<sup>291</sup> Economic Regulation Authority, *Western Power's proposed revised access arrangement for the Western Power network*, 29 November 2012.

This included an increase of 5.3 per cent in distribution costs and decrease of 12 per cent for transmission.<sup>292</sup>

Network prices in the SWIS also reflect the government's uniform tariff policy. As noted, the TEC funds the difference between the cost of supplying electricity in the SWIS and the cost of supply outside of the SWIS.

### 10.2.3 Environmental policies

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target, and feed in tariff schemes.

The costs of each of these environmental policies are charged to residential customers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale cost of electricity. For Western Australia, the cost of feed in tariff schemes are funded by the government

In 2012/13, environmental policies make up around 10 per cent of the representative standing offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 5 per cent of the representative standing offer price. This falls to 1 per cent in 2015/16, with the bulk of this decrease reflecting the move from a fixed carbon price to a floating carbon price under existing legislation.
- In 2012/13, renewable energy target costs made up around 5 per cent of the representative standing offer price. This falls slightly across the reporting period, making up around 4 per cent in 2015/16.

The reasons for these changes are discussed below.

#### *Carbon*

Our analysis of the costs associated with the carbon pricing mechanism was based on modelling wholesale market outcomes with and without a price on carbon included.<sup>293</sup>

The cost of the carbon pricing mechanism increases slightly during the two years from 2012/13 to 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls sharply in 2015/16, reflecting the move from a fixed to a floating carbon price under existing legislation.

This reduction in the cost of the carbon pricing mechanism is a key driver of the reduction in Western Australian residential retail prices identified in 2015/16.

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<sup>292</sup> ERA note that the change in revenue will be recovered in the ten months from September 2013 to June 2014. As Western Power is revenue capped, the forecast increases may change if demand differs from that forecast, and depending on the final decision about pass through by the Western Australian Government.

<sup>293</sup> NERA determined the cost of the carbon pricing mechanism by running their market model twice, with a price on carbon included and then excluded from the modelling. The difference between these two runs of the model is equivalent to the cost of the carbon pricing mechanism. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

#### *Renewable energy target*

As discussed in Chapter two, 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 meeting the targets under these policies are recovered by retailers from their customers.<sup>294</sup>

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET increases, on average, by 5.6 per cent a year from 2012/13 to 2015/16.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>295</sup>

The STP falls sharply throughout the reporting period.<sup>296</sup> The cost of the SRES in Western Australia decreases, on average, by 34 per cent a year from 2012/13 to 2015/16.

#### *Feed in tariff schemes*

A feed in tariff scheme has been introduced in Western Australia. This was the Residential Net Feed-in scheme. The feed-in tariff scheme was open to applications from 1 July 2010 to 1 August 2011. The scheme is now closed to new applicants. This scheme tariff rates included:

- before 1 July 2014 - 40c/kWh; and
- from 1 July 2011 - 20c/kWh.

The feed in tariff schemes are funded by the Western Australian government; hence its costs do not flow through directly to residential electricity prices. Given this, these costs are not included in this report.

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<sup>294</sup> NERA determined the cost of the renewable energy target as part of their market modelling. More information is available at: NERA Economic Consulting, *Projections of Wholesale Energy Costs*, NERA, September 2013.

<sup>295</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>296</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

## 11 Northern Territory

### Box 11.1: Key findings

Residential electricity prices are set by the Northern Territory government through Electricity Pricing Orders.<sup>297</sup>

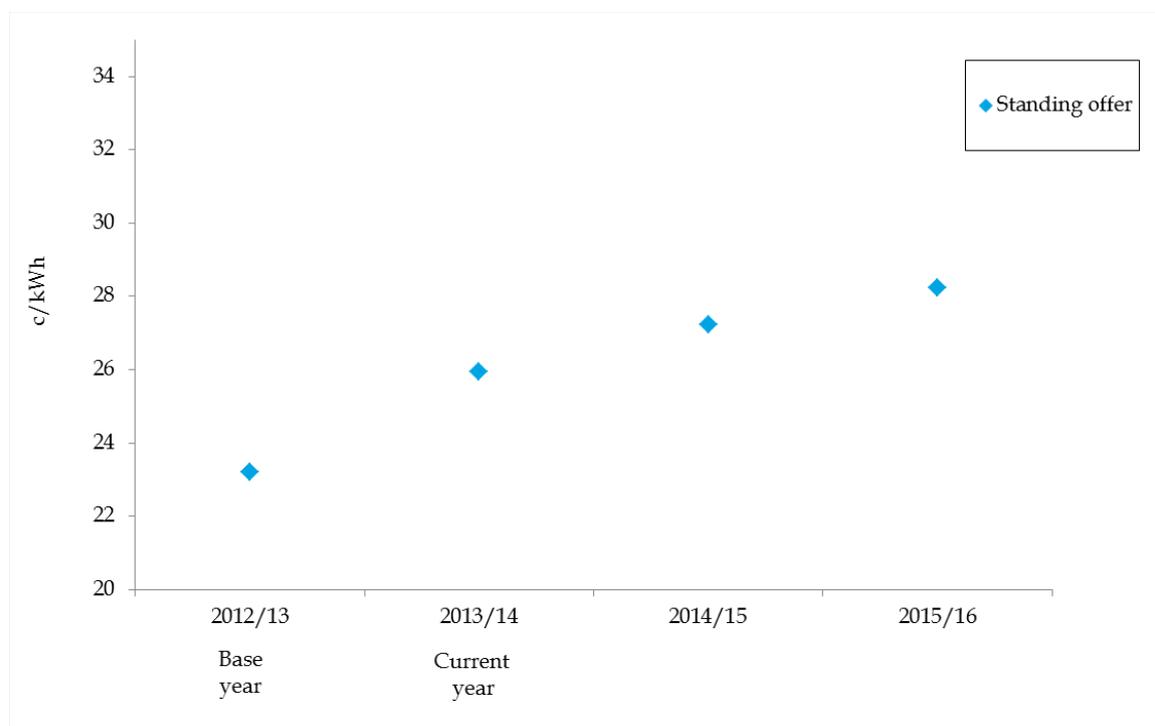
In 2012/13, standing offer prices did not reflect the costs of supplying and delivering electricity to consumers. The Northern Territory government has announced a number of increases to bring the standing offer to more cost reflectivity.

Standing offer prices increased by 11.8 per cent from 2012/13 to 2013/14. They are then expected to increase, on average, by 4.4 per cent a year for the two years from 2013/14 to 2015/16. These increases are due to standing offer prices moving toward more cost-reflective levels.

There are currently three licensed retailers in the Northern Territory, however Power and Water Retail is the only company presently retailing electricity services to residential consumers.

Due to the Northern Territory Government's uniform tariff policy, all Northern Territory residential consumers pay the same standing offer price as those consumers in the Darwin/Katherine area. Our analysis of prices and cost components is based on costs for consumers in the Darwin/Katherine area.

### 11.1 Trends in Northern Territory standing offer prices



<sup>297</sup> These pricing orders apply to contestable customers using less than 750 MWh per annum.

The 2012/13 representative standing offer price was based on the standing offer tariffs published by the NT government.<sup>298</sup> We note that price adjustments by the Northern Territory government are done on a calendar basis (ie 1 January). The representative standing offer price for the base year is based on the average of standing offer available in 2012 and 2013.

An overview of our approach for the Northern Territory is provided in Appendix A.

*Key findings for Northern Territory*

- Standing offer prices increased by 11.8 per cent from 2012/13 to 2013/14. Standing offer prices are expected to show an annual average increase of 4.4 per cent from 2013/14 to 2015/16.
- These increases are primarily due to a movement towards cost-reflective levels as announced by the Northern Territory government.

*Effect of different household consumption levels*

For the representative market offer identified above, we applied a sample household consumption value of 9,135 kWh per annum in 2012/13.<sup>299</sup>

As outlined in Chapter three, we considered the effect of different annual household consumption on representative market offer prices faced by residential consumers in 2012/2013. This included considering both a “low” and a “high” electricity consumption household. We assumed that a low consumption household consisted of one person, while a high consumption household had five people.<sup>300</sup> The results of this analysis are included in table 11.1 below.

These results show how, as total consumption changes, the average unit cost of electricity declines. This reflects the structure of the Northern Territory standing offer tariffs which formed the basis of the representative standing offer. These tariffs had both a fixed and a variable component. As consumption increases, the fixed component is "spread" out across a larger volume of consumption, decreasing the average price of electricity.<sup>301</sup>

**Table 11.1 Effect of different household consumption on average electricity price and annual expenditure in 2012/13**

Household consumption	2012/13 Average standing offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
Low (7,788 kWh)	23.47	\$1,828
Medium (9,135kWh)	23.19	\$2,119

<sup>298</sup> Refer to Electricity Pricing Order (prescribed class of contestable customers using less than 750 MWh of electricity each year) - 1 May 2013 - 31 December 2013.

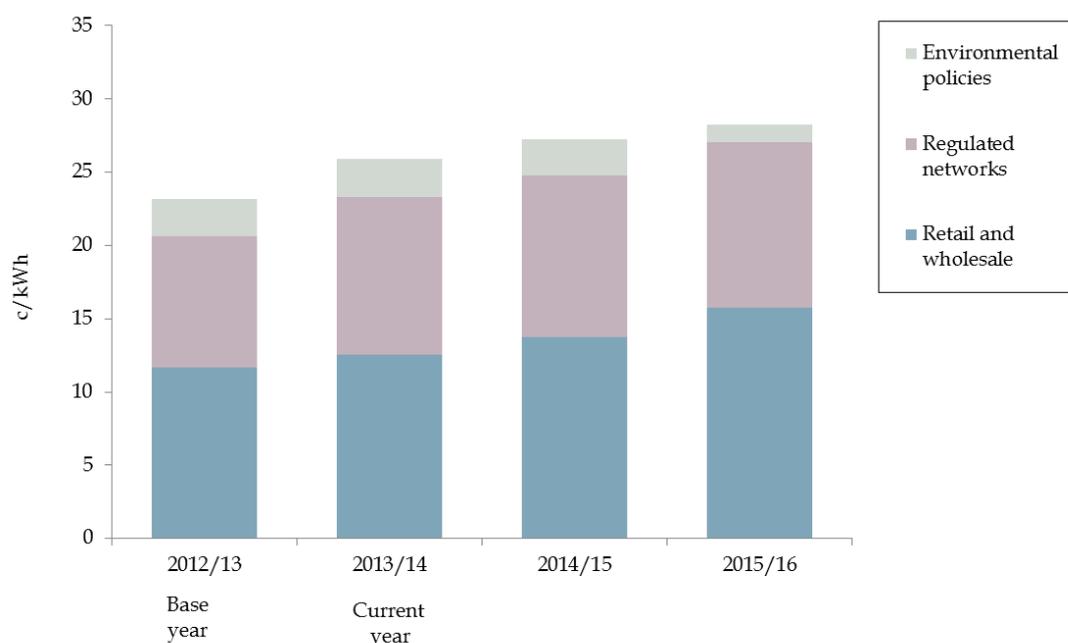
<sup>299</sup> As discussed in Chapter three, this sample household consumption was based on information provided to the AEMC by the Northern Territory Utilities Commission.

<sup>300</sup> Chapter three provides more information on our approach to determining different household consumption.

<sup>301</sup> An overview of different pricing structures available in the market is provided in Appendix D.

Household consumption	2012/13 Average standing offer price (c/kWh)	2012/13 Annual household expenditure (\$/annum)
High (13,177 kWh)	22.70	\$2,991

## 11.2 Trends in supply chain components



		2012/13 Base year	2013/14 Current year	2014/15	2015/16
<b>Environmental policies</b>	<b>c/kWh</b>	<b>2.57</b>	<b>2.61</b>	<b>2.44</b>	<b>1.17</b>
Carbon	c/kWh	1.49	1.53	1.61	0.37
LRET	c/kWh	0.45	0.45	0.45	0.52
SRES	c/kWh	0.63	0.63	0.38	0.28
<b>Regulated networks</b>	<b>c/kWh</b>	<b>8.92</b>	<b>10.77</b>	<b>11.04</b>	<b>11.32</b>
Network services	c/kWh	8.92	10.77	11.04	11.32
<b>Retail and wholesale</b>	<b>c/kWh</b>	<b>11.71</b>	<b>12.55</b>	<b>13.75</b>	<b>15.75</b>
Wholesale	c/kWh	14.59	14.95	15.33	15.71
Retail	c/kWh	-2.89	-2.40	-1.58	0.05
<b>Total</b>	<b>c/kWh</b>	<b>23.19</b>	<b>25.93</b>	<b>27.23</b>	<b>28.24</b>

The structure of the electricity market in the Northern Territory is influenced by its remoteness from other electricity markets and by the geographic dispersion of the population throughout the Territory. It consists largely of three separate, regulated systems that supply the regions of Darwin/Katherine, Alice Springs and Tennant Creek, together with a large number of stand-alone systems that supply remote communities. Other than Darwin and Katherine, no other regions are interconnected.

The Northern Territory supply side is dominated by Power and Water Corporation (PWC), which is a vertically integrated government owned corporation with generation, network and retail business units. The Northern Territory government has established ring fencing legislation so that the market dominance due to this extensive vertical integration is not used in an anti-competitive manner. From July 2014, PWC will be restructured to separate its monopoly and competitive businesses into stand-alone government owned corporations with separate boards.<sup>302</sup>

The 2012/13 wholesale market cost is based on information provided by the Northern Territory government.<sup>303</sup> For the remaining years of our reporting period, wholesale costs were escalated by the assumed rate of inflation.

The retail component has not been directly estimated. Rather, the retail component is the difference between the total of all the supply chain cost components (wholesale, network, and environmental policies) and the representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated the 2012/13 retail component by the assumed rate of inflation.

Further information on the Northern Territory electricity market is provided in Appendix F.

### **11.2.1 Retail and Wholesale**

Residential electricity prices are currently regulated by the Northern Territory government. Electricity Prices are provided through electricity pricing orders.

Since 2000, full retail contestability has been introduced to Northern Territory customers on a progressive basis. While this is the case, PWC remains the sole retailer providing standing offers in Northern Territory. In 2011 and 2012, retail licences were granted to two new entrants, QEnergy, and ERM Power in 2012. The Northern Territory government note a number of reasons for lack of retail competition, including demographic, geographic and economic factors.<sup>304</sup>

The Northern Territory Government has announced regulatory reform of the energy sector to bring the Territory's regulatory arrangements more into line with those in other jurisdictions and introduce initiatives to encourage competition at the retail end of the market to allow business and households to choose their electricity supplier. This follows reviews undertaken by the Northern Territory Utilities Commission, which generally supported greater alignment, where possible, with principles adopted in the NEM.<sup>305</sup>

As shown in figure 11.1, residential retail electricity prices in the Northern Territory for 2012/2013 were lower than the actual cost of supplying electricity. This is despite the 20 per cent increase to the regulated price announced by the Northern Territory

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<sup>302</sup> Refer to NT Government media release 27 September 2013.

<sup>303</sup> Modelling of the wholesale energy component was not undertaken for the Northern Territory due to the localised and small-scale character of the market.

<sup>304</sup> See Appendix E for a description of the Northern Territory electricity market.

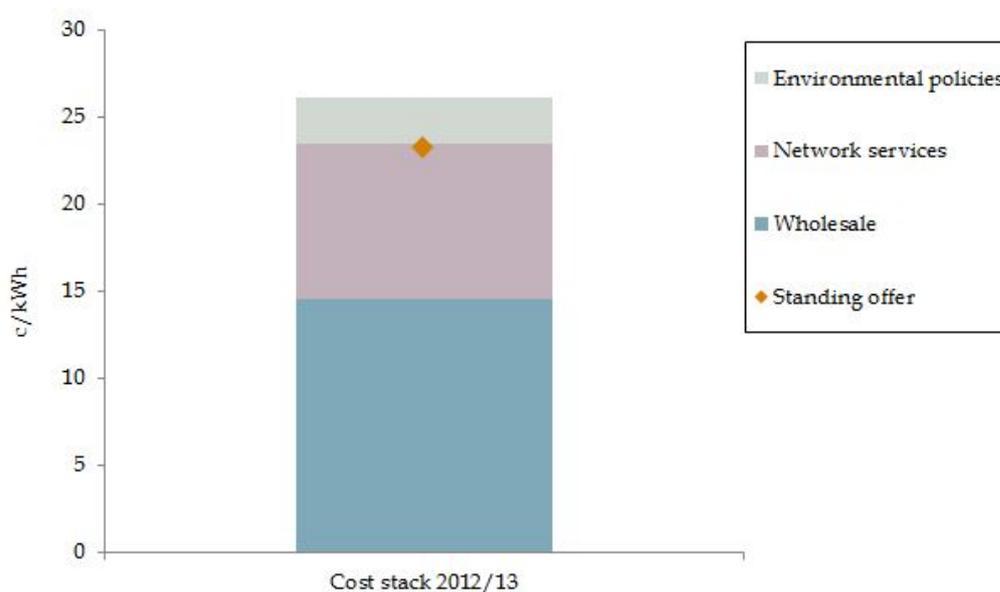
<sup>305</sup> Northern Territory Utilities Commission *Review of electricity system planning and market operation roles and structures*, Final Report, December 2011.

Government effective from 1 January 2013. The government has announced that an additional five per cent indexation of tariffs will occur on 1 January 2014 and 1 January 2015.<sup>306</sup>

Currently, supply to regional and remote areas is subsidised under the Government's uniform tariff policy through Community Service Obligation payments for residential and small business consumers. This means that eligible customers pay either uniform or subsidised tariffs. The costs are met by community service obligation payments made to Power and Water Corporation (PWC). They do not directly impact retail electricity prices, although without these payments retail prices would be higher than their currently level.

The policy is also supported by the government accepting a lower than normally commercially acceptable rate of return on total assets (ie the return on total assets was forecast to be 0.9 per cent in 2012-13).<sup>307</sup> Capital expenditure requirements are funded by borrowing, which is implicitly guaranteed by the Northern Territory government. Each year, PWC sets out its financial position in its Statement of Corporate Intent (SCI), which sets out its financial plans and projections for five years, including the Budget year. The SCI process is the principal mechanism through which the Northern Territory government agrees to the expenditure plans of PWC.

**Figure 11.1 2012/13 Residential electricity prices as compared to supply and delivery of electricity**



There is no wholesale market in operation in the Northern Territory. The purchase of wholesale energy from PWC is via bilateral contracts rather than a wholesale spot

<sup>306</sup> Power and Water Corporation, *Northern Territory Government review of tariffs*, media release, PWC, 28 March 2013. More information is available at: [http://www.powerwater.com.au/news\\_and\\_publications/news/nt\\_government\\_reviews\\_tariffs](http://www.powerwater.com.au/news_and_publications/news/nt_government_reviews_tariffs), 28 March 2013.

<sup>307</sup> Power and Water Corporation, *Statement of Corporate Intent 2013-14.*, PWC, 2012.

market like the NEM. Prices are therefore established between contracting parties themselves. This means that there is no wholesale reference price and limited information is available on the cost of wholesale electricity in the Northern Territory.

The Northern Territory Utilities Commission maintains oversight of PWC's wholesale electricity prices. The purpose of such regulation is to ensure that the wholesale energy prices paid by contestable customers are similar to those that would occur in a competitive environment. Further, PWC's generation business recovers, over time, from individual contestable customers, no more than the reasonable long-run cost of supplying them with wholesale energy, including a return on capital invested commensurate with the commercial and regulatory risks involved.<sup>308</sup>

In 2012/13, wholesale energy purchase costs make up 63 per cent of the representative standing offer price. For the remaining reporting period, we have assumed that wholesale energy purchase costs increase at the rate of inflation.

### **11.2.2 Regulated networks**

Regulated network costs consist of the cost of transmission and distribution networks. Transmission networks transport electricity from generators to load centres, across long distances at high voltage. Distribution networks are responsible for the delivery of electricity to most customers, across large urban areas at lower voltage.

The regulatory framework in the Northern Territory does not make any distinction between the transmission and distribution networks, with both services being bundled under the general heading of "network services".

Our analysis of network costs is also based on information provided by the Northern Territory Utilities Commission and sourced from the Commission's most regulatory determination. Where no regulatory determination exists, we have escalated the cost of regulated networks by the assumed rate of inflation.

In 2012/2013, regulated network service costs made up around 38 per cent of the representative standing offer price. Over the reporting period, network services costs increase to make up 40 per cent. The reasons for these movements are discussed below.

#### *Transmission and distribution networks*

Network price regulation is the responsibility of the Northern Territory Utilities Commission and is carried out in accordance with the provisions of Part 3 of the Electricity Networks (Third Party Access) Code (Northern Territory).

The current network regulatory control period for PWC networks commenced on 1 July 2009 and ends on 30 June 2014.

For the current regulatory control period, the Northern Territory Utilities Commission approved an annual average increase of 3.4 per cent plus CPI adjustments over the period. This increase reflected what the Utilities Commission believed to be efficient

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<sup>308</sup> Northern Territory Utilities Commission, available at: <http://www.utilicom.nt.gov.au/Electricity/pricing/Pages/Wholesale-Generation-Pricing.aspx>], page viewed 16 October 2013.

operating costs, taking into account real increases in network costs experienced in recent years.<sup>309</sup>

PWC is currently progressing its five year utility infrastructure investment program, estimated at approximately \$1.5 billion.<sup>310</sup> The programme includes capital works as well as maintenance and repairs and is the largest infrastructure program undertaken in the Northern Territory.

The Northern Territory Utilities Commission has commenced the process for considering the next regulatory period for PWC. The next period is to commence on 1 July 2014. A framework and approach decision paper was published in December 2012. The Northern Territory Utilities Commission indicated that it intends to move away from a price cap form of regulation to a revenue cap approach. Further, a single determination will be made for all regulated networks operating in the Northern Territory, rather than individual determinations for each component.

PWC submitted its initial pricing proposal to the Northern Territory Utilities Commission in September 2013. In this proposal PWC requested an increase in revenue in 2013/14 of 57 per cent as it considers that the previous determination did not allow it to recover efficient costs.<sup>311</sup>

Between 2012/13 and 2013/14, network costs increased by 21 per cent. As the current regulatory period concludes in July 2014, network costs from 2013/14 to 2015/16 are escalated by the assumed rate of inflation.

### 11.2.3 Environmental policies

A range of environmental policies have been introduced to deliver climate change related outcomes. These policies include the carbon pricing mechanism, the renewable energy target and feed in tariff schemes.

The costs of each of these environmental policies are charged to residential customers in different ways. For example, the cost of the carbon pricing mechanism is recovered through increases in the wholesale cost of electricity. For Northern Territory, there is a voluntary feed in tariff scheme, however this is not legislated. Given this, we have not included this scheme in our reporting.

In 2012/13, environmental policies make up around 11 per cent of the representative standing offer price.

- In 2012/13, the cost of the carbon pricing mechanism made up around 6 per cent of the representative standing offer price. This falls to 1 per cent in 2015/16, with the bulk of this decrease occurring in 2015/16 due to the fixed carbon price moving to floating carbon price under existing legislation.

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309 Northern Territory Utilities Commission, *Networks pricing: 2009 regulatory reset, Final Determination*, March 2009, p.19.

310 Power and Water Corporation, *Annual Report 2011*. This investment figure extends across networks, power stations as well as water and sewerage infrastructure.

311 Power and Water Corporation, 2013 *Initial Regulatory Proposal*, September 2013, p.4.

- In 2012/13, renewable energy target costs made up around 5 per cent of the representative standing offer price. This falls slightly across the reporting period, making up around 3 per cent in 2015/16.

The reasons for these changes are discussed below.

### *Carbon*

The cost of the carbon pricing mechanism for 2012/13 is based on the carbon price path as currently legislated. From 2013/14 to 2015/16, the cost of the carbon pricing mechanism is based on an estimate supplied to the AEMC by the Northern Territory Government.

The cost of the carbon pricing mechanism increases slightly between 2012/13 to 2014/15. This reflects the movements in the carbon price as included in the existing legislation. It then falls sharply in 2015/16, reflecting the move from a fixed to a floating carbon price under existing legislation.

We note that the Australian Government has introduced legislation to remove the carbon pricing mechanism. Removing the carbon pricing mechanism will reduce prices compared to those in this report for 2014/15.

### *Renewable energy target*

As discussed in Chapter two, 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 policies are recovered by retailers from their customers.

Our analysis of the cost of the LRET and SRES in the Northern Territory is based on information supplied by the Northern Territory Government.

The purpose of the LRET is to encourage entry of large scale renewable generation. It provides large scale renewable generators with a revenue stream external to the wholesale spot market.

The cost of the LRET is expected to remain constant throughout the reporting period.

The purpose of the SRES is to encourage entry of small scale renewable generation. Retailers are required to surrender a number of small-scale technology certificates (STCs) under the SRES, in proportion to the small scale technology percentage (STP) which is set by the Clean Energy Regulator.<sup>312</sup>

The STP decreases throughout the reporting period.<sup>313</sup> This means that the cost of the SRES in the Northern Territory decreases, on average, by 33 per cent a year from 2013/14 to 2015/16.

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<sup>312</sup> A more detailed explanation of this mechanism is provided in Chapter two of this report.

<sup>313</sup> The high STP value in 2012/13 can be attributed to various factors, including the effects of jurisdictional feed in tariff schemes as well as the solar credit multiplier. Chapter two provides a more detailed explanation of this issue.

## **A Methodology**

### **A.1 Introduction**

The appendix outlines our approach to estimating the price trends for residential electricity prices and the supply chain cost components included in the 2013 Residential electricity price trends report. We outline:

- the consumption levels and profiles used and how these were applied in our analysis;
- the sources of the data and our approach to determining our representative average c/kWh value of:
  - representative market offers and standing offers; and
  - the supply chain cost components for NEM states, Tasmania, Western Australia and the Northern Territory.

The possible future price outcomes presented in this report are not forecasts. They should be treated as providing information as to possible residential electricity price trends, based on current knowledge and assumptions.

### **A.2 Consumption levels and profile**

An important input to inform our analysis was annual household consumption and corresponding quarterly consumption profiles for each state and territory. Annual consumption refers to the total amount of electricity, in kWh, used by a household in a given year. Meanwhile, the consumption profile reflects how much electricity a household may use in any given quarter of the year. The annual consumption and profiles are used to calculate the representative market and standing offer prices as outlined in section A.3.1.

The annual consumption values used in this report were provided by each of the jurisdictional governments. These values are shown in Table A.1 for each jurisdiction. We understand that the jurisdictional values provided have taken into account reductions in electricity consumption in recent years. Therefore, the values used may be different to those used in other reports.

**Table A.1 Annual consumption values used**

Jurisdiction	Consumption value used
Queensland	5,370 kWh
New South Wales	6,500 kWh
Australian Capital Territory	7,670 kWh
South Australia	5,000 kWh
Victoria	4,645 kWh
Tasmania	8,800 kWh
Western Australia	5,841 kWh
Northern Territory	8,082 kWh

Different states and territories generally adopt different approaches to determining these annual consumption values. For example, in Victoria the consumption value is an assumed consumption of a “sample” customer (ie a single rate network tariff customer with gas hot water). Alternatively, for New South Wales, the consumption value is based on “average” consumption (ie total residential load divided by total residential consumers, and therefore includes a component representing consumers with electric hot water). Further, variations in climate, population characteristics, economic conditions and the availability of domestic gas means that annual consumption will differ between each state and territory.

We used the 2012/13 annual consumption values provided by jurisdictions as the basis of our analysis for the entire reporting period. This has been done so that our results are accurate and our approach is consistent between jurisdictions.

We engaged NERA Economic Consulting to develop these quarterly consumption profiles. For Queensland and New South Wales, NERA used the net system load profile (NSLP) as the basis of the load profile, after removing controlled load. For all other NEM jurisdictions, NERA used either the NSLP or a load profile sourced direct from the jurisdiction. For Western Australia the quarterly consumption profile was based on the South Australian load profile. No estimate was made for the quarterly division of electricity consumed in the Northern Territory.

### **A.3 General approach to estimating representative market offers**

The Terms of Reference for the 2013 Residential electricity price trends report required the AEMC to examine trends in market offers "where appropriate". This is a change from previous reports where only standing offer prices were reported. We have reported on market offers for Queensland, New South Wales, South Australia and Victoria. All market offer prices are presented as a nominal, GST exclusive value.

### **A.3.1 Base year (2012/13)**

Our analysis of the 2012/13 representative market offer price was based on data and information supplied to the AEMC by retailers.

We asked retailers to nominate their lowest generally available market offer in each distribution region in which they were active as at 1 February 2013. The combined market share of the retailers who responded to our request is over 95 per cent of small consumers in all distribution regions, in those states where market offers were examined.

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

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

We assumed that all discounts associated with the market offer were awarded, while no penalties (such as for late payment) were incurred. We did not attempt to calculate a monetary value on non-financial inducements, such as football club memberships.

To account for the changes in Victorian network prices on 1 January 2013, we requested retailers to also nominate an offer that was available as at 1 August 2012 for all Victorian distribution regions. The Victorian 2012/13 representative market offer price is the average of these August 2012 tariffs and the February 2013 tariffs.

Tariffs charged by retailers include both fixed and variable charges. For our report, each market offer supplied by a retailer is converted into a single c/kWh value. This process takes into account both the fixed and variable charge components of an offer, by:

- multiplying the variable charge by the assumed kWh consumption in the quarter;
- multiplying the fixed daily charge by the number of days in the quarter; and
- summing the results to obtain the total quarterly cost.

These total quarterly costs were then summed to develop an annual total cost. The annual total cost was then divided by the annual consumption to develop a single c/kWh average unit cost for each retailer in each distribution region.

A simple average was used to determine the representative market offer for each distribution region. In jurisdictions with multiple distribution regions, these simple averages values were then weighted by the share of total residential consumers in each distribution region, to provide a single state wide representative average c/kwh market offer value.

### **A.3.2 Trends for future years (2013/14 - 2015/16)**

Future trends in market offers are shown as a range for Queensland, New South Wales and South Australia. The range reflects the difference between the representative average c/kWh market offer value:

- expressed as a mark-down from the standing offer in 2012/13; and
- expressed as a mark-up from the underlying cost stack for 2012/13.

For 2013/14, 2014/15 and 2015/16, the extent of this range reflects independent movements in the standing offer price path relative to movements in the underlying cost components

As there is no independent price path for standing offers in Victoria, it has not been possible to show a range of possible future market offer prices. To consider future movements in the Victorian market offer price, we determined the mark-up of the market offer from the cost stack in 2012/13. We then assumed this mark-up remained as a constant (adjusted for inflation<sup>314</sup>), given movements in the underlying cost stack, for the years 2013/14, 2014/15 and 2015/16.

## **A.4 General approach to estimating representative standing offers**

### **A.4.1 Base year and current year (2012/13 and 2013/14)**

Representative average standing offer prices (c/kWh) for each jurisdiction were based on published standing offer prices, available in 2012/2013 and 2013/14.<sup>315</sup>

For Queensland, the representative standing offers for 2012/13 and 2013/14 were based on Tariff 11, which is regulated by the Queensland Competition Authority (QCA).<sup>316</sup>

In New South Wales, the representative standing offers for 2012/13 and 2013/14 were based on the tariffs that have been approved by the Independent Pricing and Regulatory Tribunal (IPART) for the relevant standard retailers.<sup>317</sup> These standing offers were weighted by the share of consumers in each of the three distribution regions.

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<sup>314</sup> We assumed an inflation rate of 2.5 per cent, being the midpoint of the Reserve Bank of Australia's inflation target

<sup>315</sup> Standing offer contracts are sometimes referred to as '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.

<sup>316</sup> Queensland Competition Authority, *Regulated retail electricity prices 2013-14*, QCA, May 2013.

<sup>317</sup> In NSW there is a distinction between standing offers and the regulated offer. While the terms and conditions of the standing offer contract are set out in the National Energy Retail Rules, standing offer prices are set by individual retailers. In contrast, regulated offer contracts have terms and conditions set out in the National Energy Retail Rules with prices regulated by IPART. For NSW, this report considers only these regulated offer prices. For consistency, the term 'standing offer prices' has been used to describe these offers. The standard retailer in the Ausgrid distribution region is Energy Australia. The standard retailer in the Essential and Endeavour distribution regions is Origin Energy.

For the Australian Capital Territory, the standing offer prices for 2012/13 and 2013/14 are based on ActewAGL's 'home plan' tariffs for 2012/13 and 2013/14.<sup>318</sup>

In Victoria and South Australia standing offers are set by retailers. Victorian standing offer prices in this report for 2012/13 were based on the average of the AGL, EnergyAustralia and Origin standing offer in each distribution region as at 1 February 2013 and 1 August 2012, which these retailers supplied to the AEMC. The Victorian standing offer price for 2013/14 is trended forward from the 2013/14 value according to the movements in the underlying supply chain cost components.

South Australian standing offers for 2012/13 and 2013/14 are based on the gazetted standing offers provided by AGL, as at 1 February 2013 and 1 August 2013. We separately displayed trends in the transitional standing offer and the standing offer available to new consumers.

Tasmanian standing offers for 2012/13 were based on the regulated Tariff 31, which is regulated by Office of the Tasmanian Economic Regulator (OTTER) and offered by Aurora in 2012/13. The standing offer tariff for 2013/14 is the average of Tariff 31 for the period July to December 2013 and the standing tariff that was announced by OTTER as part of the 2013 Retail Price Determination to apply from January to June 2014.<sup>319</sup>

Western Australian and Northern Territory standing offer prices shown for 2012/13 and 2013/14 reflect the tariffs that have been gazetted by the relevant jurisdictional governments for residential consumers. The Northern Territory tariff for 2012/13 is the average of the standing tariff for 2012 and standing the tariff for 2013.

#### **A.4.2 Trends for future years (2014/15 - 2015/16)**

Our consideration of standing offer price trends differed between jurisdictions, depending on the regulatory approach in the relevant state or territory:

- For New South Wales, we trended the representative standing offers to 2015/16 according to the indicative price path published by the Independent Pricing and Regulatory Tribunal (IPART) in its most recent Regulated Retail Price determination.<sup>320</sup>
- For Tasmania, we assumed that the price trend matches movements in the “notional maximum revenue” for regulated retailers, as determined by OTTER in the 2013 Retail Price Determination.<sup>321</sup>

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<sup>318</sup> This tariff is available on the ActewAGL website, <http://www.actewagl.com.au/Product-and-services/Offers-and-prices/Prices/Residential/ACT/Electricity-prices.aspx>.

<sup>319</sup> Note that the approved tariff for January to June 2014 is being re-evaluated by Aurora to take into account the decision not to proceed with the sale of Aurora's customer base.

<sup>320</sup> Independent Pricing and Regulatory Tribunal, *NSW Electricity Regulated Retail Tariffs and Charges - 1 July 2013 to 30 June 2016*, IPART, June 2013.

<sup>321</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, July 2013. To determine the trend from 2013/14 to 2014/15 we annualised the notional maximum revenue allowed in period 1 of the July 2013 determination. In doing so, we assumed that consumption is

- For the Northern Territory, we used the current price path out to December 2015 as announced by the Northern Territory government. We escalated prices in January 2016 at the assumed rate of inflation.
- For the remaining states, our analysis of the future price path was based on the movements in the underlying supply chain cost components.

## **A.5 General approach to determining supply chain cost components**

For the 2013 retail price trend report, we have grouped the components of the supply chain into three categories:

- The *competitive market* for the purchase of wholesale electricity and the retail sale of electricity. Wholesale energy purchase costs include purchases from the spot markets and financially hedging contracts, ancillary services, market fees and energy losses.<sup>322</sup> Retail includes a retailer's operating costs which include direct costs that a retailer incurs in running the retail part of its business, and a return for investing in its business and the risk it assumes in providing retail services.
- The *regulated network* sector which transmits and distributes electricity to consumers. Regulated network costs cover costs associated with building and operating transmission and distribution networks, including a return on capital and the costs associated with metering. These costs are regulated by the Australian Energy Regulator (AER) in the National Electricity Market (NEM) and the Economic Regulatory Authority (ERA) in Western Australia.
- External *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 carbon pricing mechanism, the renewable energy target and the various state and territory feed in tariff and energy efficiency schemes.

This distinction of supply chain costs is most appropriate in the mainland NEM states (ie Queensland, New South Wales, Australian Capital Territory, South Australia, and Victoria) where there is competition between different firms across the supply chain. Below, we lay out the methodology used to determine each of the supply chain cost components for NEM states. We then outline our approach for Tasmania, Western Australia and the Northern Territory.

### **A.5.1 NEM states**

A similar methodology was used to determine trends in cost components for all of the NEM states, including Queensland, New South Wales, the Australian Capital Territory, South Australia, and Victoria. The costs for each supply chain component for each year of the reporting period was reported in a c/kWh format, as outlined below. The sum of these individual components informed our analysis of future movements

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not equal between the first and second half of a calendar year, and thus weighted the notional maximum revenue by the relevant quarterly consumption values.

<sup>322</sup> In Tasmania, Western Australia and the Northern Territory, generation is predominately government owned.

of representative market and standing offers. This also formed the basis for our evaluation of drivers of price movements.

## **Competitive market**

### *Wholesale energy purchase costs*

For the competitive market component, we engaged NERA Economic Consulting (NERA) to undertake detailed modelling of future wholesale energy purchase costs. NERA reported wholesale energy purchase costs in a \$/MWh format. This was then converted to a c/kWh value in our model.

An overview of NERA's approach is provided in their consultant report published with the final 2013 Residential electricity price trends report.

Different retailers have different strategies for managing wholesale energy purchase costs. The extent of the wholesale costs faced by an individual retailer will be influenced by factors such as the retailer's approach to risk management, economies of scale and whether or not the retailer possesses physical generation assets. As a result, for those states where market offers are available we present a range for the wholesale and retail components. The wholesale energy purchase cost range has been based on the following:

- As a lower bound for the range, we applied a market modelling approach to estimate the costs associated with hedging a typical retailer's customer load through the purchase of contracts. Inputs to this process included modelled spot prices, contract prices (which were assumed to trade at a 5 per cent premium to expected cash flows) and the load profile to be hedged by the retailer.

The specific hedging strategy adopted by a retailer will depend 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. The results of this approach were used as the basis of future trends.

- As an upper bound for the range, we used a "stand alone" or "greenfields" long-run marginal cost (LRMC) methodology. This approach estimates the cost associated with constructing a new, optimal generation system to satisfy demand in a given year, assuming that there is currently no generation to serve the required load.

We have used the two approaches described above for South Australia, Victoria, New South Wales and Queensland.

For Queensland, NERA estimated the wholesale energy component of the regulated standing offer for 2014/15 and 2015/16. In doing so, NERA sought to replicate the approach taken by the QCA when determining wholesale energy costs. This estimate has been used to trend forward the Queensland representative standing offer price for 2013/14.

For the Australian Capital Territory, NERA also estimated the wholesale energy component of the regulated standing offer for 2014/15 and 2015/16. NERA replicated

the methodology used by the Independent Competition and Regulatory Commission (ICRC) when determining wholesale costs. This was used as the basis of future trends for the wholesale energy purchase costs for the Australian Capital Territory. This was then an input to analysing trends in the representative offer price.

### *Retail*

The retail component has not been directly estimated. Rather, the retail component for 2012/13 represents the residual difference between the total of all the other supply chain cost components (wholesale, network, and environmental policies) and the representative market offer or standing offer (in the case of the Australian Capital Territory, Tasmania, Western Australia and the Northern Territory). For the remaining years of our reporting period from 2013/14, we have escalated the 2012/13 retail component by the assumed rate of inflation.

For the states with market offers we have presented the retail cost component as a range to account for the different wholesale energy purchase costs that a retailer may face.

The upper bound of the retail component range in market offer states is the residual difference between the total of all the supply chain cost components (including network, environmental policies and the wholesale energy purchase costs obtained through NERA's market modelling) and the representative market offer in 2012/13. For the remaining years of our reporting period, we have escalated this section of the 2012/13 retail component by our assumed rate of inflation.

The lower bound of the retail component range in market offer states is the residual difference between the total of all the supply chain cost components (including network, environmental policies and the wholesale energy purchase costs obtained through NERA's LRMC method) and the representative market offer for each year.

### **Regulated networks**

For the regulated network component, we used data from the Australian Energy Regulator (AER) for both transmission and distribution network costs. This data included any metering charges, where appropriate. Actual approved network prices have been used for the period 2012/13 and 2013/14.

Where network regulatory determinations exist that cover all or a portion of the rest of our reporting period, we have escalated the 2013/14 network costs by the relevant X-factor to determine trends in network costs.

Where no determination exists to cover the remainder of our reporting period, we have escalated network costs from 2013/14 at the assumed rate of inflation.

The regulated network costs 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 single state wide representative transmission and distribution c/kWh value for each year.

## Environmental policies

### *Carbon*

SCER's Terms of Reference for this review required the AEMC to consider the costs associated with a carbon price. Accordingly, our analysis of the cost for carbon is based on the legislation currently in place.

NERA estimated the cost of carbon out to 2015/16 as part of their broader modelling of wholesale energy purchase costs. To estimate the cost of carbon, NERA ran their market model twice, with and without the carbon price included in the model. The difference between these two runs of the model is the basis of our reported cost of carbon. We converted the \$MWh values provided by NERA Economic consulting to determine the c/kWh value provided in the 2013 Residential electricity price trends report.

The input price of carbon used for this modelling was based on the legislated forward price of carbon to 2014/15. For 2015/16, the price of carbon was based on the forward curve for European Union emissions allowances.

### *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).

Our analysis of these costs is based on modelling undertaken by NERA. The costs estimated by NERA for both of these schemes are the same across all mainland NEM states and Western Australia.

### *Jurisdictional energy efficiency and feed in tariff schemes*

Our analysis of the costs of energy efficiency programs is based on information supplied by the jurisdictional governments.

Similarly, our analysis of the impact of feed in tariff schemes is based on information supplied by jurisdictional governments. As advised by the Queensland government, the estimate of the feed in tariff costs for that state were derived from annual bill impact estimates published by the QCA, divided by the assumed consumption value.<sup>323</sup>

## **A.5.2 Tasmania**

All the supply chain cost components we have reported for Tasmania have been sourced and based on relevant regulatory instruments, including OTTER's 2010 and 2013 Retail Price Determinations as well as pricing proposals from Aurora and the Tasmanian Government.

In Tasmania, OTTER determines a notional maximum revenue which the regulated retailer may recover from all regulated consumers, including some non-residential consumers. As we are required to report on prices and costs for residential consumers

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<sup>323</sup> QCA, *Review of Solar Feed-in Tariff for Queensland*, March 2013, p. 70.

only, we took the relative proportions of each cost component in the notional maximum revenue and applied this to the standing offer price. This proportion formed the basis of the Tasmanian cost components included in our report.

As OTTER's Retail Price Determinations do not include a specific cost of carbon, we therefore have not reported a carbon cost for Tasmania from 2012/13 to 2015/16. The 2010 Retail Price Determination reports the LRET and SRES as a single value. Accordingly, we have also reported the cost of the renewable energy target as a single value for 2012/13 and 2013/14. OTTER also reports network costs as a single value, which we have reported as the 'network' cost.

Our published trends in future component costs have been based on available data sources as shown in the below table.

**Table A.2 Data sources for Tasmanian component costs**

Year	Data source
2012/13	Aurora 2012/13 approved pricing proposal. <sup>324</sup>
2013/14	July 2013 - December 2013: Aurora pricing proposal. <sup>325</sup> January 2014 - June 2014: Period 1 of OTTER's July 2013 Retail Price Determination <sup>326</sup>
2014/15	Period 2 of OTTER's July 2013 Retail Price Determination.
2015/16	Period 3 of OTTER's July 2013 Retail Price Determination.

### A.5.3 Western Australia

Our analysis of the components of Western Australian residential electricity retail prices are based on data provided to the AEMC by the Western Australian government. The sum of these individual components informed our analysis of future trends of market and standing offers. This also formed the basis for discussion on drivers in price movements. The representative c/kwh values for the supply chain cost components we calculated similar to NEM states.

#### Wholesale and retail

The AEMC commissioned NERA Economic Consulting to undertake wholesale market modelling to inform our results. NERA modelled wholesale energy purchase cost trends in Western Australia for the period 2012/13 to 2015/16. NERA estimated Western Australian wholesale energy purchase costs using a stand-alone LRMC approach. NERA's report is available on our website.

<sup>324</sup> Aurora Energy, *Approved electricity tariffs from 1 July 2012*, Aurora Energy, 2012.

<sup>325</sup> Aurora Energy, *Approved electricity tariffs from 1 July 2013*, Aurora Energy, 2013.

<sup>326</sup> Office of the Tasmanian Economic Regulator, *Report on the investigation of maximum prices for interim price-regulated electricity retail services for small customers on mainland Tasmania*, July 2013.

As noted, the retail component has not been directly estimated but is a residual difference between the total of all the other supply chain cost components (wholesale, network, and environmental policies) and the standing offer.

### **Regulated network**

For Western Australia, we based our analysis of regulated network costs on information provided by the Western Australian Government. Beyond 2013/14, no determination applies, so we have escalated network costs at the assumed rate of inflation.

### **Environmental policies**

The cost component of the carbon, LRET and SRES schemes was determined by NERA, using the same process as in the NEM states.

#### **A.5.4 Northern Territory**

Analysis of the supply chain cost components for the Northern Territory has been based on information provided by the Northern Territory Government. We used this information to develop supply chain component costs for a consumer in Darwin and applied this result across the entire territory. We note that supply chain component costs may differ for consumers in other regions of the territory. The calculation of representative c/kWh values determined similar to all other jurisdictions.

### **Wholesale and retail**

Our analysis of wholesale costs is based on information supplied by the Northern Territory Government for 2013/14. These costs were escalated at our assumed rate of inflation for all other years.

As noted, the retail component has not been directly estimated but is a residual difference between the total of all the other supply chain cost components (wholesale, network, and environmental policies) and the standing offer.

### **Regulated network**

We based our analysis of network costs from information provided by the Northern Territory Government. After 2013/14, no network determination applies, so we have escalated network costs at the assumed rate of inflation.

### **Environmental policies**

The Northern Territory government supplied a c/kWh value for the impact of the carbon cost in 2013/14. We trended this carbon cost forward at the same rate as the assumed carbon price used by NERA in their modelling in other jurisdictions. The price of carbon assumed for this modelling was based on the legislated forward price of carbon to 2014/15. For 2015/16, the price of carbon was based on the forward curve for European Union emissions allowances.

The Northern Territory government also supplied information on the costs of the LRET and SRES for consumers in the Darwin region.

## B List of jurisdictional Feed in Tariff schemes

Currently available mandatory FiT schemes by jurisdictions

Area	Scheme	Eligible Technologies	Applications Opened	Applications Closed	Rate of Tariff	Period of Tariff	Structure of Tariff	Scheme capacity	Funding Arrangements
VIC	Current Feed-In Scheme	Wind, hydro, PV, biomass or as specified in legislation Max 100kW	1 January 2013	31 December 2016	Not less than 8c/kWh The retailer may offer a premium on this rate	The tariff will be reset every year	Net	N/A	Retailer funded. Must be offered by retailers with more than 5,000 customers.
QLD	Solar Bonus Scheme	PV Max 5 kW	10 July 2012	30 June 2014	8c/kWh	9-Jul-12 to 30-Jun-14	Net	187.7 MW (Forecast for 2013)	The costs associated with the scheme are passed through to distribution customers.
SA	Minimum Retailer Payment	PV	1 July 2012	31 December 2013	7.6c/kWh (Draft Price Determination)  9.8c/kWh	From 1 Jan 2014 1 July 2012 to 31-Dec-13	Net	N/A	Retailer funded.
WA	Renewable Energy Buyback Scheme	All renewable sources Max 5 kW. Larger capacity units are eligible at the retailer's discretion. Horizon Power previously offered the standard FiT rate to customers connecting at up to 10kVA (single phase) or 30kVA (three phase).	1 May 2005	There is no specified scheme end date.	The tariff is fixed by each energy retailer. The tariff must be 'fair and reasonable' and is approved by the Public Utilities Office. There are currently 2 tariffs offered: 1. Synergy: a fixed 8.8529c/kWh; and 2. Horizon: current rate per kWh payable for electricity consumed. The rate varies between 10c/kWh 50c/kWh	The tariff is set at the discretion of each relevant retailer, but must be approved by the Co-ordinator or Energy	Net	N/A	The rate of the tariff paid under the scheme is set by the retailer. The PUO approves the terms and conditions (including rates) of each retailer's buyback offer. There is no cost pass-through mechanism.

Closed mandatory FiT schemes by jurisdiction

Area	Scheme	Eligible Technologies	Applications Opened	Applications Closed	Rate of Tariff	Period of Tariff	Structure of Tariff	Scheme capacity	Funding Arrangements
NSW	Solar Bonus Scheme	PV and wind, and any other prescribed source (none prescribed) Max 10 kW	1 January 2010	28 April 2011 (Must be connected to the grid by 30 June 2012)	60c/kWh (If system purchased or leased by 27 October 2010 and application lodged before 18 November 2010) 20c/kWh (For systems purchased or leased after 28 October 2010 or applications lodged after 19 November 2010)	Until 31 December 2016	Gross (Customers may elect to receive a net tariff)	300 MW* Approximately 340MW according to IPART 2013 review with 84% on the 60c/kWh rate	Costs are funded through the Climate Change Fund levy, which is itself funded by energy customers through distribution charges. From 1 July 2013, retailers must contribute 6.6c/kWh to the scheme.
QLD	Solar Bonus Scheme	PV Max 5 kW	1 July 2008	9 July 2012 (Installed by 30 June 2013)	44c/kWh	1-Jul-08 to 1-Jul-28	Net	910.6 MW (Forecast for 2013)	The costs associated with the scheme are passed through to distribution customers. Cost pass through is mandated by legislation, through the cost pass through mechanism contained in the Queensland distribution determination.

Area	Scheme	Eligible Technologies	Applications Opened	Applications Closed	Rate of Tariff	Period of Tariff	Structure of Tariff	Scheme capacity	Funding Arrangements
SA	Solar Feed-in Scheme	PV Max 10kW (45kWh/day)	1 Oct 2011	30 September 2013	16c/kWh	1 Oct 2011 to 30-Sep-16	Net	60MW	The costs associated with the Scheme are recovered through distribution charges.
		PV Max 10/30 kVA <sup>327</sup>	1 July 2008	30 September 2011	44c/kWh (Connections prior to 1 Oct 2011)	1-Jul-08 to 30 June 2028	Net		The costs associated with the Scheme are recovered through distribution charges via r. 6.18.7A of the NER.
	Minimum Retailer Payment	PV Max 10/30 kVA	27 January 2012	30 June 2012	7.1c/kWh (Connections from 27 Jan 2012 to 30 June 2012)	27-Jan-12 to 30 June 2012	Net	N/A	Retailers meet the costs of the payments.
WA	Residential Net Feed-in Scheme	All renewable sources Max 5 kW	1 August 2010	1 August 2011	40c/kWh (Applications prior to 1 July 2011) 20c/kWh (Applications from 1 July 2011 to 1 August 2011)	10 years from connection	Net	150 MW*	The WA government meets the costs of the scheme.

<sup>327</sup> For customers in Group 2 and 3, the feed in tariff payment is limited to the first 45kWh exported to the grid each day.

Area	Scheme	Eligible Technologies	Applications Opened	Applications Closed	Rate of Tariff	Period of Tariff	Structure of Tariff	Scheme capacity	Funding Arrangements
VIC	Premium Scheme	PV Max 5 kW	1 November 2009	29 December 2011	60c/kWh	1 November 2009 to 1 November 2024	Net	100 MW* 175MW (actual)	The costs associated with the scheme are passed through to distribution customers. Cost pass through is mandated by legislation through the cost pass through mechanism contained in the Victorian distribution price determination.
	Standard Scheme	Wind, solar, hydro, biomass and any other specified by Order (none specified) Max 100 kW Min 5 kW	1 January 2008	31 December 2012	'Fair and reasonable tariff'. The same as customers buy electricity from their retailer.	1 January 2008 to 31 December 2016	Net	N/A	The retailer bears the cost of the scheme. The retailer controls the rate of the tariff paid, with the proviso that the rate is 'fair and reasonable' and not less than the rate the customer pays to buy electricity from the retailer.
	Transitional Scheme	PV Max 5 kW	1 January 2012	31 December 2012	25c/kWh	1 January 2012 to 31 December 2016	Net	75 MW*	The costs associated with the scheme may be passed through to distribution customers.
ACT	Micro Generator Scheme	PV and wind, and any other source determined by the Minister (none determined) Max 30 kW	1 March 2009	31 May 2011 (On 12 July 2011 the scheme was reopened to micro-generators by allowing them	50.05c/kWh (Connections from 1 March 2009 to 30 June 2010, with capacity < 10 kW) 40.04c/kWh	20 years from connection	Gross	15 MW*	The costs associated with the schemes are recovered through distribution charges via r. 6.18.7A of the NER. However, the 'normal cost' of electricity (as determined by the

Area	Scheme	Eligible Technologies	Applications Opened	Applications Closed	Rate of Tariff	Period of Tariff	Structure of Tariff	Scheme capacity	Funding Arrangements
				to access the scheme cap originally reserved for medium generators.)	(Connections from 1 March 2009 to 30 June 2010, with capacity between 10 kW and 30 kW) 45.7c/kWh (Connections from 1 July 2010 to 31 May 2011) 30.1c/kWh (Connections from 12 July 2011 to 13 Jul 2011)				Minister – currently 7.5c/kWh) is incurred by retailers.
	Medium Generator Scheme	PV and wind 30 kW – 30MW	1 February 2011	13 July 2011	34c/kWh (connections from February 2011 to 11 July 2011) 30.1c/kWh (Connections from 12 July 2011 to 13 July 2011)	20 years from connection	Gross	15 MW*	The costs associated with the schemes are recovered through distribution charges via r. 6.18.7A of the NER. However, the 'normal cost' of electricity (as determined by the Minister – currently 7.5 cents/kWh) is incurred by retailers.

## C Government concession schemes and rebates

CSOs are created by jurisdictional governments to assist consumers to meet their electricity needs and costs. Typically, a CSO might involve either subsidising the retailer to provide non-commercial service or concession on energy bills for a customer that meets certain eligibility requirements. The range and level of CSOs is determined by each state government and accounts for government spending as part of a broader range of concession programs relating to health, transport, education, etc.<sup>328</sup>

CSOs can be delivered to consumers in a number of different ways. They can either be provided directly to consumers as a rebate, through their retailer as a discount to their energy bill, or sometimes through community welfare organisations in the form of emergency payments. Table C.1 outlines jurisdictional government concession schemes for the NEM and includes information regarding eligibility requirements and the level or amount of concession. For most energy-related concession schemes, the concession amount is not determined according to the consumption threshold amount and is an absolute figure.

With the exception of Victoria, most energy-related concession schemes are paid as lump sum, irrespective of consumption levels.<sup>329</sup> In Victoria, energy concession schemes are provided as a percentage discount (around 18 per cent) of the total energy bill. As discussed below, the MCE CSO framework provides high level guidance on the design on CSOs to ensure that they have a non-distortionary impact on the market and do not blunt price signals.

Eligibility for most ongoing energy CSOs is usually determined according to whether the consumer receives a commonwealth government allowance, and therefore is eligible for a variety of commonwealth concession cards, including a Commonwealth Pension Concession Card (CPCC), a Commonwealth Health Care Card (CHCC) or a Veteran's Affairs Pensioner Concession Card (VAPCC).

For the majority of jurisdictions eligibility for either of these two types of concession cards results in eligibility for jurisdictional energy concession schemes. In some instances, jurisdictional governments may broaden eligibility requirements to include a range of other commonwealth concession cards may not have as strict means tests applied (for example, the Commonwealth Seniors Health Card). Most jurisdictions however, set their own specific conditions for receiving energy concessions for medical purposes.

Eligibility to receive a commonwealth allowance, and therefore commonwealth concession card, is typically tested through a combination of income and asset tests ('means tested'). CPCCs are available to a core group of government welfare recipients

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<sup>328</sup> It should be noted that in Australia there is currently no operational definition employed by governments to define vulnerable consumers. The National Energy Customer Framework does not define vulnerable consumer, although it provides a regulatory process for retailers to implement hardship programs for customers experiencing either temporary or more permanent difficulties in meeting energy payments.

<sup>329</sup> The impact of CSOs and their ability to capture 'vulnerable' consumers is considered in detail in a recently published paper by Paul Simshauser and Tim Nelson titled *The Energy Market Death Spiral – Rethinking Customer Hardship*

including job seekers, single parents and carers, age pensioners, and disability pensioners. A broader group of government welfare recipients are eligible for a CHCC, and generally includes individuals receiving a commonwealth allowance but who are not eligible for a CPCC.

### **MCE CSO Framework**

In 2008 the MCE developed nine high level principles to underpin the design of energy concession schemes implemented by jurisdictional governments. The high level principles are non-binding.<sup>330</sup> In its policy statement on the issue the MCE considered that energy CSOs are services that governments require energy businesses to provide to sections of the community to fulfil government social policy objectives.<sup>331</sup>

1. Energy CSOs should only be used if the service would not be in the commercial interests of an energy business to provide, or if it would only be provided commercially at higher prices than would be consistent with government and social welfare policies.
2. The obligation to provide the community service would be clearly specific by the government in publicly available documents.
3. Energy CSOs should be delivered transparently.
4. Wherever possible energy CSOs should be directly funded by governments.
5. CSOs should be designed to achieve their social policy objectives in a cost-effective manner.
6. An energy CSO should not be delivered by a mechanism employing cross-subsidies from one set of consumers to another.
7. CSOs should not materially impede competition, particularly in upstream (generation and gas production) and downstream (including retailing and demand side response) markets.
8. Energy CSOs should target identified sections of the community and minimise their effect on general consumption patterns.
9. Governments should conduct regular, transparent reviews of the performance of the provision of energy CSOs and of the continued need for individual CSOs.

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<sup>330</sup> See the Ministerial Council on Energy website for more information:  
[http://www.ret.gov.au/Documents/mce/\\_documents/MCE\\_Energy\\_Community\\_Services\\_Obligation20080929151353.pdf](http://www.ret.gov.au/Documents/mce/_documents/MCE_Energy_Community_Services_Obligation20080929151353.pdf)

<sup>331</sup> The MCE note that this definition of a CSO is based on a definition used in a 2002 National Competition Council staff discussion paper *Competitive Neutrality: scope for enhancement*. See <http://www.ncc.gov.au/pdf.PIRcN-001.pdf>, p31

**Table C.1 Jurisdictional energy concession schemes including eligibility and levels of compensations**

<b>Jurisdiction</b>	<b>Concession</b>	<b>Eligibility</b>	<b>Calculation</b>	<b>\$ Concession</b>
<b>Queensland</b>	Electricity Rebate	CPCC, VAPCC, DVA Gold Card, QLD Government Seniors Card		<b>\$282.54 per year</b>
<b>Queensland</b>	Medical Cooling and Heating Electricity Concession Scheme	Person cannot self-regulate body temperature and holds and is a Queensland resident. Applicant or legal guardian of a minor with a qualifying medical condition must hold either CPCC, HCC, VAPCC.		<b>\$282.54 per year</b>
<b>Queensland</b>	Home Energy Emergency Assistance Scheme	Eligible customers must have either a concession card or maximum base income that is no more than the Commonwealth Government's maximum income rate for part-age pensioners	Scheme can provide up to \$720 per eligible household per year. Assistance can be provided for a maximum of two consecutive years.	<b>\$720 per year</b>
<b>Queensland</b>	Electricity Life Support Concession Scheme	Receive medical equipment from Queensland health and hold either CPCC, VACC, HCC, QLD Government Seniors Card, Child Disability Allowance	Scheme offers a monthly concession (paid quarterly).	<b>Between \$32.11 and \$47.95 per month</b>
<b>New South Wales</b>	Low Income Household	CPCC, HCC, DVA Gold Card	Increased by 10 per cent for consumers in retirement	<b>\$225 per year for 2013/14. Rises to \$235 per year in</b>

Jurisdiction	Concession	Eligibility	Calculation	\$ Concession
	Rebate		villages or caravan homes.	<b>July 2014</b>
<b>New South Wales</b>	Family Energy Rebate	Receive Family Tax Benefit A or B.	Increased by 10 per cent for consumers in retirement villages or caravan homes	<b>\$125 per year for 2013/14. Rises to \$150 per year in July 2014</b>
<b>New South Wales</b>	Medical Energy Rebate	Person cannot self-regulate body temperature and holds CPCC, DVA Gold Card, HCC.		<b>\$225 per year for 2013/14. Rises to \$235 per year in July 2014</b>
<b>New South Wales</b>	Life Support Rebate	People who use certain approved medical equipment at home that is necessary to sustain life.	Amount payable determined by equipment type.	<b>\$0.05 to \$1.66 per day</b>
<b>New South Wales</b>	Energy Accounts Payment Assistance Scheme	Households struggling to pay their energy bills due to a crisis or emergency situation.	Scheme delivered through vouchers that provide part-payment of electricity and natural gas bills. Community Welfare Organisation assesses situation for eligibility for vouchers.	<b>Each voucher is \$50</b>
<b>Australian Capital Territory</b>	Energy Concession	CPCC, HCC, VAPCC	Calculated on daily basis; 48.38cents per day (1 Nov to 31 May) and 177.93 cents per day (1 June to 31 October)	<b>\$292.82 per year</b>
<b>Australian Capital Territory</b>	Utility Concession	CPCC, HCC, VAPCC	Rebate added to existing energy concession.	<b>\$82 per year (\$374.82 max combined value of both allowances)</b>

Jurisdiction	Concession	Eligibility	Calculation	\$ Concession
South Australia	Energy Bill Concession	DVA Gold Card, HCC, Commonwealth Seniors Health Care Card, receive eligible Centrelink allowance.	Concession deducted from electricity account or in some cases by cheque.	<b>\$165 per year</b>
South Australia	Medical Heating and Cooling Concession	DVA Gold Card, HCC, Commonwealth Seniors Health Care Card, receive eligible Centrelink allowance and cannot self-regulate body temperature	Introduced 1 January 2012. No further information provided.	<b>\$165 per year</b>
Victoria	Annual Electricity Concession	CPCC, HCC, DVA Gold Card	Discount of 17.5 per cent off household electricity costs all year round. From 1 July 2012 the concession will not apply to the first \$171.60 of a concession card holder's annual electricity bill. If annual electricity cost is larger than \$2,763 per year an excess energy concession application must be made.	<b>17.5 per cent discount per year</b>
Victoria	Service to Property Charge Concession	CPCC, HCC, DVA Gold Card	The concession provides a reduction on the supply charge for concession households with low electricity consumption.	<b>The concession is applied if the cost of electricity used is less than the supply (or service) charge. The charge is then reduced to the same price as the electricity usage cost.</b>
Victoria	Non-mains Energy	CPCC, HCC, DVA Gold	The amount of the rebate	<b>Range: \$44 - \$484</b>

Jurisdiction	Concession	Eligibility	Calculation	\$ Concession
		Card. Non-mains customers who use an alternatives fuel and/or are individually metered for electricity but who pay caravan park or accommodation proprietor.	depends on the annual amount of non-mains energy purchased and the rebate amount is increased annually in line with inflation.	
<b>Victoria</b>	Medical Cooling Concession	CPCC, HCC, DVA Gold Card	Discount on summer electricity costs where a consumer has medical condition that affects the body's ability to regulate temperature.	<b>17.5 per cent of summer costs</b>
<b>Victoria</b>	Controlled Load Electricity Concession	CPCC, HCC, DVA Gold Card	Provides a 13 per cent reduction on the controlled load tariff rates on all quarterly electricity bills.	<b>13 per cent per year of controlled load costs</b>
<b>Victoria</b>	Electricity transfer fee waiver	CPCC, HCC, DVA Gold Card	Full waiver of the fee that is normally payable to the electricity retailers when there is a change of occupancy at a property.	<b>Removal of transfer fee</b>
<b>Victoria</b>	Life Support Machine Electricity Concession	CPCC, HCC, DVA Gold Card with qualifying medical equipment.	Qualifying machines are those that use at least 1,880 kilowatt hours per annum.	<b>Full cost of 1,880kWh per year.</b>
<b>Tasmania</b>	Electricity Concession	CPCC, HCC, VAPCC	Rebate increases in line with electricity price increases. Aurora Pay As You Go Customers do not pay fixed	<b>Approx. \$458.84 per year (1 Jul 2013)</b>

Jurisdiction	Concession	Eligibility	Calculation	\$ Concession
			charge.	
Tasmania	Heating Allowance	CPCC, VAPCC. Must not have more than \$1,750 in cash assets; married de facto partners must not have more than \$2,750.	Payments of \$28 made in May and September.	<b>\$56 per year</b>
Tasmania	Life Support Machine Rebate	Eligible on medical grounds and have a life support machine installed, or lives with someone who uses a life support machine.	Approved life support systems and per day discounts as at 1 July 2013 range from 33 – 175 cents per day.	<b>Range: 33 – 175 cents per day</b>
Tasmania	Medical Cooling Discount	Discount for people who need medical cooling as part of their health condition.		<b>\$137 per year</b>
Western Australia	Account Establishment Fee Rebate - Electricity	CPCC, HCC, DVA Gold Card	One-off rebate when establishing a new electricity account.	<b>Offsets the cost of establishing a new electricity account</b>
Western Australia	Cost of Living Assistance (CoLA) Payment - Energy	CPCC, HCC, DVA Gold Card, commonwealth or WA seniors card	Payment divided over 12 months and credited directly to electricity retailers	<b>\$208 per annum</b>
Western Australia	HUGS (Hardship Utility Grant Scheme)	Households having difficulty paying electricity costs who are at risk of supply being disconnected	Grant size differs depending on geographic location.	<b>Up to \$1,228</b>
Western Australia	Dependent Child Rebate	CPCC, HCC, DVA Gold Card, with dependent	Help concession holders with dependent children	<b>1 child: 69.28 c/day 2 children: 87.44 c/day</b>

Jurisdiction	Concession	Eligibility	Calculation	\$ Concession
		children		<b>3 children: 105.60 c/day</b> <b>4 children: 123.76 c/day</b>
<b>Western Australia</b>	Air Conditioning Rebate	CPCC, HCC, permanent resident of a caravan park or dependent child rebate	Months available dependant on location	<b>\$47.07 per available month</b>
<b>Western Australia</b>	Life Support Equipment Electricity Subsidy	CPCC, HCC, with qualifying medical equipment.	Subsidy depending on medical equipment type	<b>Between \$40 and \$1,035 per year</b>
<b>Western Australia</b>	Thermoregulatory Dysfunction Energy Subsidy Scheme	CPCC, HCC, person cannot self-regulate body temperature		<b>\$567 per year</b>
<b>Northern Territory</b>	Northern Territory Pensioner and Carer Concession Scheme	CPCC, DVA Gold Card, receive carer's allowance, seniors		<b>Daily rate concession and reduced consumption charge</b>
<b>Commonwealth</b>	Utilities Allowance	Recipients of the Disability Support Pension, partner allowance, widow allowance.		<b>\$577.60 per year</b>

## D Range of pricing structures available or being trailed

Tariff	Description
<i>Single rate tariff</i>	Sometimes referred to as flat tariff. Rate where the charge is same regardless of time of day of use. This is the most common tariff.
<i>Block Tariff</i>	Consumption is split into different blocks based on consumption level. Each consumption block is charged at a different rate. Any consumption beyond the cap of one block is charged at the rate of the next block.
<i>Seasonal Tariff</i>	Similar to an inclining block tariff except consumption in different periods of the year incur different rates.
<i>Off peak tariff</i>	Also known as a controlled load tariff. A cheaper rate is used for consumption at certain times, such as late at night. Generally only available for certain appliances such as electric hot water heaters.
<i>Time-of-use (TOU)</i>	<p>A rate with different unit prices for usage during different times the day. In a basic TOU tariff the day is divided into peak and off peak (with a higher price during peak period). The tariff can be expanded to include shoulder periods between the off-peak and peak periods; and seasonal peaks (a higher price for summer and winter peak periods).</p> <p>These tariffs tend to reflect only the average cost of generating and delivering electricity to consumers during those times of the day.</p>
<i>Critical Peak Pricing (CPP)</i>	<p>CPP is a real-time rate that is applied during periods when supply and demand conditions become very tight. Typically, such a rate gives consumers a predictable price (flat or TOU) during all but a limited number of hours per year, when (much higher) rates (the CPP) would be charged.</p> <p>Generally, consumers are notified about a CPP event in advance through various communication media tools – telephone, e-mail, SMS and messages in home displays. Notification can be 2 hours to 24 hours before the CPP is called. In this way the consumer can choose to avoid the higher prices by reducing their consumption during those times.</p>
<i>Variable Peak Price (VPP)</i>	A variation on CCP where the CCP is not a fixed price but the real time price applying during the critical peak period.

Tariff	Description
<p><i>Peak Time Rebates (PTR)</i></p>	<p>Only relevant for networks. Least time varying option. Consumers generally receive an incentive payment in the form of a \$ per Kwh rebate for reducing energy use during peak periods.</p> <p>Typically, consumers are assured that their bill will not increase, and that there is no risk of incurring higher prices if they fail to reduce their use in response to a peak period dispatch event, hence can be more appealing to consumers for take up.</p> <p>For PTR there is need to verify each consumer's load reduction by comparing their half hourly usage during a peak demand dispatch event to a 'baseline' usage profile. This option is therefore more complex to implement, and issues arise with respect to how to calculate the baseline.</p>
<p><i>Capacity or demand based charge</i></p>	<p>This charge applies to networks only. A capacity or demand charge means setting a price that reflects the peak demand or utilisation at a particular point in time.</p> <p>There are different types of capacity charges in use that have different implications for metering. They can be based on a consumers own maximum demand (kw or KvA) recorded during the peak period over a working week day or on use by that consumer at times of system peaks:</p> <ul style="list-style-type: none"> <li>• For example, the charge could be based on a kW/MW or KVA recorded during the peak period of 5 nominated working weekdays over the previous 12 months or in a particular month (consumer peak demand); or alternatively the average half-hourly max demand when system demand was highest between 11am and 7 pm during previous 12 months (system peak approach).</li> <li>• A variation of the system peak approach option is for the charge to reflect the consumer's use during the "expected" peak period (that is, known in advance). This charge would be more forward looking.</li> </ul>

## **E Overview of the National Electricity Market, the Western Australian Wholesale Electricity Market and the Northern Territory power system.**

### **E.1 National electricity market**

#### **E.1.1 Governance structures and objectives**

The National Electricity Market (NEM) is the interconnected power system that services the eastern states and territories of New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory.<sup>332</sup> Western Australia and Northern Territory are not participants in this electricity market system and their individual systems are described separately below.

The overarching legal framework of the NEM, the National Electricity Law (NEL), sets out the responsibilities of the various NEM institutions as well as a National Electricity Objective (NEO).

The governments of the individual NEM jurisdictions have different levels of involvement in electricity service provision within their jurisdictions, including, in some cases, oversight of the setting of retail price regulation and network reliability standards.

Beneath this high level governance structure, the main regulatory institutions are:

- The Australian Energy Market Commission (AEMC) is the market institution responsible for assessing changes to the National Electricity Rules (NER), which is the general statutory framework under the NEL which describes NEM functions. The AEMC is also responsible for market development and provides policy advice to the SCER.<sup>333</sup>
- The Australian Energy Regulator (AER) is responsible for the economic regulation of the non-competitive sectors of the NEM, including electricity distribution and transmission networks as well as some gas networks. The AER is also responsible for the enforcement of compliance with the NER and NERR.
- The Australian Energy Market Operator (AEMO) operates the power system as well as the retail and wholesale gas markets of south eastern Australia. AEMO is also responsible for long term planning of the interconnected power system, including forecasting demand and supply scenarios and network development. AEMO is also responsible for implementing changes to the rules made by the AEMC.

All of the NEM market regulatory bodies are guided by the NEO, which is the main statutory objective and is set out in section 7 of the NEL. The NEO is to promote

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<sup>332</sup> Note that while six jurisdictions participate in the NEM, there are only five NEM regions, as the Australian Capital Territory is included in the New South Wales NEM region.

<sup>333</sup> The AEMC is not empowered to itself make changes to the Rules, other than for administrative purposes or to make a non-material change. Rule changes may be proposed to the Commission by any individual, including market participants, the SCER or by any member of the public.

efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –

1. price, quality, safety, reliability, and security of supply of electricity; and
2. the reliability, safety and security of the national electricity system.

It is important to note that the NEO refers to issues of economic efficiency: environmental and social issues are addressed in other legislation and specific government policies.

### **E.1.2 The physical NEM**

A primary physical characteristic which has shaped the NEM is the narrow but dispersed distribution of load and generation centres along the east coast of Australia. The NEM spans a geographic area over 5,000kms in length, from Port Douglas in north Queensland, to Port Lincoln in South Australia and Hobart in Tasmania.<sup>334</sup> The majority of load is concentrated in a relatively narrow band within 100km or so of the coast. Across this geographic spread there are markedly different climatic and environmental characteristics, driving very different energy consumption patterns across the system.

To serve such a widely distributed load, the NEM incorporates over 750,000 kms of distribution and 40,000kms of transmission infrastructure. As a comparison, in the United Kingdom there are around 800,000 kms of distribution and 25,000 kilometres of transmission infrastructure serving a population which is more than three times that served by the NEM.<sup>335</sup>

In 2011-2012 the NEM supplied over 199 terawatt-hours (TWh) of energy to around 10 million customers. This energy was supplied by 308 generators, with a total installed capacity of 48,311 MW.<sup>336</sup> Around 79 per cent of the energy consumed in the NEM is produced by coal fired generation, 11 per cent by gas fired generation and 7per cent by hydroelectricity. Wind generation is the primary non-hydro renewable and currently provides around 3 per cent of total energy consumed.<sup>337</sup>

The nature of the generation mix reflects the relative abundance of various fuel resources along the east coast of Australia. These resources include extensive black and brown coal deposits in South Australia, Victoria, Queensland and New South Wales; natural and coal seam gas in South Australia, Queensland, New South Wales and Victoria; and hydro resources in Tasmania, New South Wales, Victoria and Queensland. In more recent years, driven in part by the enhanced Renewable Energy

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334 [http://www.esaa.com.au/content/detail/australian\\_electricity\\_markets](http://www.esaa.com.au/content/detail/australian_electricity_markets)

335 Australian Government Productivity Commission, *Electricity Network Regulation Electricity: Issues Paper*, February 2012, p.8; United Kingdom Department of Climate Change, *The Current British Electricity Network*, accessed from [http://www.decc.gov.uk/en/content/cms/meeting\\_energy/network/network.aspx](http://www.decc.gov.uk/en/content/cms/meeting_energy/network/network.aspx), 12 March 2012.

336 Australian Energy Regulator, *State of the Energy Market 2012*, December 2012, p. 28.

337 Australian Energy Regulator, *State of the Energy Market 2012*, December 2012, pp. 31-32.

Target, there has been an increase in the entry of wind generation, which has been substantial in some jurisdictions.<sup>338</sup>

Given these relative resource endowments the NEM has, to date, utilised a mix of different fuel with varying capabilities: generally, black and brown coal fired generation has been used for base-load, black coal or combined cycle gas turbine (CCGT) for mid merit, open cycle gas turbine (OCGT) gas for peaking and OCGT gas or liquid fuel for super peaking.

### **E.1.3 NEM market mechanisms**

The NEM is an energy only, gross pool market, meaning that all energy is traded through a central clearing mechanism. A market clearing price is calculated for each half hour trading interval, based on the bids and offers of generators and consumers. A separate spot price is calculated in this way for each of the five regions of the NEM.

Spot prices in the NEM are capped by the application of the market price cap (MPC) of \$13,100/MWh, while a cumulative price threshold (CPT) limits total market exposure to price risk, and is currently set at a value of \$197,100.<sup>339</sup> When the sum of all spot prices in a seven day period exceeds this amount, an administered price period (APP) is triggered. During an APP, market prices are collared between two administered prices until the cumulative price has again dropped below the threshold limit. There is also a market price floor or -\$1,000/MWh.

To ensure that adequate financial incentives remain for continued maintenance of existing plant or the building of new generation facilities, the Reliability Panel of the AEMC sets the level of the MPC and the CPT. They are set such that the market price and cumulative price are capable of reaching levels which are sufficiently high for the most marginal generator which is required to deliver the reliability standard to earn revenue sufficient to cover its fixed and variable costs. The level at which the MPC and CPT are set therefore strikes a balance between sending efficient investment signals and mitigating the overall price risk faced by market participants.

Because electricity cannot currently be economically stored, and due to the tendency of consumers towards continuous consumption, generator output is required to match demand instantaneously in real time. For any given pattern of demand over time, there will be an associated optimal mix of generation, made up of:

- Baseload generation: the portion of demand that is relatively constant over time is most efficiently served by baseload generators. To date in Australia, this has been predominately coal-fired generation. Baseload technologies are characterised by high initial capital costs, long lead times for construction and relatively low operational costs. This means that they can be run continuously at a relatively low cost. However, because their output cannot easily be cycled up and down quickly, baseload generators are not very responsive to rapid changes in demand;

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<sup>338</sup> For example, in South Australia, total installed wind generation is approximately 24 per cent of total installed capacity: see Energy Supply Association of Australia, *Electricity and Gas Australia 2011*.

<sup>339</sup> These values are adjusted annually in line with the CPI.

- Mid-merit generation: the proportion of demand which is more variable but is reasonably predictable, for example the periods of higher demand on weekday mornings and evenings, is most efficiently served by mid-merit plant such as CCGT plant. Such plant generally has lower capital costs but higher operational costs, than baseload generators; and
- Peaking generation: the final proportion of demand that is highly uncertain, for example the peak hours during the hottest summer day is most efficiently served by peaking plant such as OCGT plant which can alter its output up and down very quickly. These plants have low capital costs but high operating costs because of their relative technical inefficiency.

The different cost structures of the different plant play some part in their respective bidding strategies. In order to sell their energy into the wholesale market, generators submit offers to AEMO, the market operator. In addition to certain operational parameters, these offers detail the volume the generators are willing to generate at each of up to ten different prices. AEMO uses the offers to determine the most cost-effective way to meet the prevailing demand and frequency control requirements. Offers to generate are stacked in a "merit" order of rising price, and this merit order is then used by AEMO to dispatch generators, least cost first.

The point on the merit order at which demand is satisfied determines a single price for electricity in each region of the NEM: the Regional Reference Price (RRP). Generators within a region receive the RRP, adjusted to reflect losses on the transmission network, for the volume of generation for which they are dispatched.

#### **E.1.4 Wholesale prices in the NEM**

Spot prices tend to follow a typical pattern throughout each trading day: that is, they tend to be above the average price during periods of higher demand from mid-morning through to the early evening before dropping away during the later evening and into the early morning. This is generally true in all jurisdictions. These fluctuations reflect the common peak and off-peak demand patterns. While spot prices tend to follow an average pattern throughout most days of the year, at certain times they may also exhibit significant volatility reflecting, for example, seasonal/temperature fluctuations.

The capital intensive nature of generation businesses means that it is not feasible to base the revenue streams of such businesses around volatile spot market prices. Equally, retailers may be exposed to high pool prices from time to time, which they must cover in order to supply their customers. Accordingly, participants have developed a number of mechanisms to manage their exposure to this volatility, such as:

- the trading of hedging arrangements via a secondary market, which helps parties to address the volatility of prices that can occur in the gross pool. This contracting helps to provide a degree of cost and revenue certainty for both producers and consumers of electricity; and

- vertical integration between retail and generation businesses, an increasingly common arrangement in the NEM which allows a participant to develop a physical hedge against spot price fluctuations.

The mechanisms described above help participants to manage the price uncertainties inherent to electricity trading. In helping to manage these uncertainties, hedging arrangements also underpin the viability of investment in the NEM. The types of hedging arrangements that are traded reflect assessments of wholesale market outcomes, which in turn influence the type of generation investment favoured by investors.

## **E.2 Western Australia**

### **E.2.1 Overview**

Western Australia's electricity supply industry is comprised of several distinct systems, none of which are interconnected to the National Electricity Market.

The South-West Interconnected System (SWIS) is the largest interconnected electricity system in Western Australia and runs from Kalbarri in the north to Kalgoorlie in the east and Albany in the South, supplying to the more densely populated areas of the state.<sup>340</sup> The SWIS is the only system in Western Australia to support a wholesale electricity market (WEM). This was introduced into the SWIS in September 2006. This reform was designed to provide consumers with choice of competitively priced energy products and services, and to attract private investment into the market.

The transmission and distribution networks, covering approximately 96,000km, in the SWIS are operated by Western Power, with Synergy operating as the incumbent retailer, supplying to all residential customers.

Outside of the SWIS, there are 34 small, isolated electricity systems that power remote townships, and two small interconnected systems: one in the Pilbara, referred to as the North Western Interconnected System (NWIS), and one that connects the towns of Kununurra and Wyndham. Collectively, these are the responsibility of Horizon Power, which is a fully vertically integrated government owned entity. Horizon Power is responsible for the entire electricity supply process and its operations span generation/procurement of electricity, transmission, distribution and retailing activities. Except for Rottnest Island,<sup>341</sup> nearly all customers outside of the SWIS are serviced by Horizon Power.

### **E.2.2 Governance and market structure in the SWIS**

Several key governance bodies exist in the WEM:

- Independent Market Operator (IMO): the market operator which maintains and develops the Market Rules and procedures, registers Rule Participants and

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<sup>340</sup> Much of the information for this section was obtained from the Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012, Appendix B: Background to the electricity sector in Western Australia, page 128.

<sup>341</sup> The Rottnest Island Authority is the body responsible for the end to end electricity supply process on this island.

operates the Short Term Energy Market (STEM) and the Reserve Capacity Mechanism;

- System Management: a ring-fenced entity within Western Power responsible for operating the power system to maintain security and reliability;
- Economic Regulatory Authority (ERA): the jurisdictional regulator, responsible for economic regulation and market monitoring; and
- Market Advisory Committee: an industry and consumer group convened by the IMO to advise on changes to Market Rules and procedures.

In terms of market structure, while there are numerous registered market participants, the dominant participants in the market are:

- Verve Energy: this is the largest market generator in Western Australia. Verve Energy owns and operates four major power stations, and has interests in numerous others, including renewable energy. It has a total generation capacity of 2,967MW.<sup>342</sup> It is required to make its capacity available to System Management to provide ancillary services and must balance the entire SWIS in real time.
- Western Power networks: this is 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 reviewed every three years by the ERA.<sup>343</sup>
- Synergy: the incumbent retailer in the SWIS and is the only retailer allowed to serve customers that do not have an interval meter.

The Western Australian government has introduced legislation to merge Verve and Synergy to create a new vertically integrated business to reduce overheads. The new body will retain the brand of Synergy,<sup>344</sup>

### **E.2.3 Key WEM mechanisms**

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 incentives for long term investment in generation capacity.

#### *The capacity market*

The capacity market operates under the Reserve Capacity Mechanism and other instruments to ensure adequate generation capacity exists to meet expected demand in a given time period. The IMO sets the Reserve Capacity Requirement, which is the overall capacity required for each year that is sufficient to meet forecast annual peak demand even if the largest single generator was to become unavailable.

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<sup>342</sup> In 2010/2011 Verve Energy was responsible for 60 per cent of the generation in the SWIS: Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012, Appendix B: Background to the electricity sector in Western Australia, page 128.

<sup>343</sup> Ibid.

<sup>344</sup> department of Finance, *Merger of Synergy and Verve Energy*, <http://www.finance.wa.gov.au/cms/content.aspx?id=17335>, viewed 27 November 2013.

The Reserve Capacity Mechanism operates on a two year rolling cycle, providing a guarantee of payment to investors providing certified capacity, called capacity credits. The capacity payment is based on the Maximum Reserve Capacity Price, the value of which is proposed annually by the IMO and approved by the Economic Regulation Authority. In return for this payment, generators and demand management providers are required to offer their capacity into the market at all times, unless otherwise approved, for example for scheduled maintenance.

Retailers are assigned an Individual Reserve Capacity Requirement, which is based on their loads associated with peak usage. These are set annually and the total of these requirements matches the total Capacity Credits assigned annually to generators and demand side providers. Retailers are exposed to the Maximum Reserve Capacity Price if they have not purchased sufficient credits to meet their Individual Reserve Capacity Requirement.

### *The energy market*

The majority of the electricity traded in the WEM is through bilateral contracts which are negotiated privately between generators and retailers. The IMO has no interest in these, except to the extent that Market Participants are required to submit their bilateral schedule data to the IMO each day so that the transactions can be scheduled.

These bilateral trades are complimented by the operation of the STEM, which is a daily forward market for energy that allows Market Participants to make adjustments around their contracted energy position, allowing generators to sell their excess capacity and retailers to buy additional energy, producing a net contract position. The combined net bilateral position and STEM position of a Market Participant describes its net contract position.

Balancing refers to the settlement process to address the cost of the difference between the net contract position of Market Participants and their actual supply and consumption levels, allowing for dispatch instructions issued by System Management.

These market mechanisms are designed to operate together. Most energy is traded outside the IMO administered market via bilateral contracts between Market Customers and Market Generators. These bilateral contracts can have energy and capacity components. Market Customers and Market Generators can modify their bilateral energy position through trading in the STEM. Finally, buying or selling energy via the Balancing process is the last resort in the circumstances where actual energy supplied or consumed differs from that contracted in the day-ahead mechanisms. Further, System Management is required to secure ancillary services, the costs of these services are passed on to those participating in the market.

#### **E.2.4 Market Evolution Program**

The Market Evolution Program was designed to improve aspects of the WEM. The Market Rules Evolution Plan was endorsed by Market Participants on the Market Advisory Committee. Anticipated benefits include:

- more cost reflective balancing pricing and opportunities to provide competition for balancing services;
- an improved IT system;

- increased transparency of market information;
- price based dispatch; and
- enhanced volume of automated information exchange between System Management, the IMO and Market Participants.

In April 2011, the IMO board approved the new Balancing and Load Following Ancillary Services market arrangements. These new arrangements were implemented on 1 July 2012. While some residual issues may remain, these changes are viewed as providing a significant structural improvement to the WEM.<sup>345</sup>

### **E.3 Northern Territory**

The structure of the electricity market in the Northern Territory is greatly influenced by its remoteness from other electricity markets and by the geographic dispersion of the population throughout the Territory.<sup>346</sup> It consists largely of three separate, regulated systems that supply the regions of Darwin/Katherine, Alice Springs and Tennant Creek, together with a large number of stand-alone systems that supply the more remote communities. Other than Darwin and Katherine, no other regions are interconnected.

Due to the small scale of the market there are issues in establishing economies of scale in the Northern Territory. The supply side is dominated by Power and Water Corporation (PWC), which is a vertically integrated government owned corporation with generation, network and retail business units. The Northern Territory Government has established ring fencing legislation to ensure that the market dominance due to this extensive vertical integration is not used in an anti-competitive manner.

It should be noted that the regulatory framework does not make any distinction between the transmission and distribution networks, with both services being bundled under the general heading of 'network services'. Both the generation and network businesses of PWC are required to provide services to all retailers on a non-discriminatory basis.<sup>347</sup> Several smaller, independent generators also generate and supply under contract to Power and Water to these regions.

There is no wholesale electricity spot market with any central coordination; instead there is a bilateral contracting system, whereby prices are established between contracting parties themselves. This means that there is no wholesale reference price

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<sup>345</sup> <http://www.imowa.com.au/mep-overview>, viewed 27 November 2013.

<sup>346</sup> Information on the Northern Territory electricity market has been obtained from the *State of the energy market 2009*, Australian Energy Market Regulator, *Review of full retail contestability for Northern Territory electricity customers*, issues paper, August 2009, Northern Territory Utilities Commission, *Power system review 2009-2010*, March 2011, Northern Territory Utilities Commission, *Review of electricity system planning and market operation roles and structures*, final report, December 2011, Northern Territory Utilities Commission, Northern Territory submission on the draft energy white paper and Appendix A: Strategic overview of the Northern Territory's energy landscape, March 2012, Northern Territory Utilities Commission.

<sup>347</sup> Utilities Commission, 2014-19 network price determination, framework and approach consultation paper, June 2012. Power and Water Corporation also provide the water and sewerage services in the Northern Territory.

and limited information available on the cost of wholesale electricity in the Territory. Responsibility for system and market operation is given to PWC in its function as the System Controller, and generators are themselves responsible for dispatching sufficient energy into the system to meet their customers' requirements.

The Northern Territory Government commenced electricity market reforms in 2000 to meet National Competition Policy commitments, introducing full retail contestability to Northern Territory customers on a progressive basis since 2000. In 2010 all customer tranches were made fully contestable. It had a single entrant in generation and retail that year, NT Power, but that company withdrew from the market in 2002.

Since the initial activity following the opening up of the retail market, PWC has remained the sole retailer and the market has largely reverted, and continues, to operate under a monopoly structure. Network charging and generation is regulated by the Utilities Commission and retail tariffs for non-contestable customers are determined by the Northern Territory Government. The Northern Territory government has announced that it intends to split the market sections of PWC from the regulated businesses. All the separate businesses will be retained under government ownership.<sup>348</sup>

The market is currently open for other retailers to supply electricity to Northern Territory consumers. The Northern Territory Government is continuing to review market arrangements, with the Utilities Commission having completed a number of market reviews to this end. The underlying position in these reviews is for greater alignment, where possible, with principles adopted in the National Electricity Market, however the future direction of further market development is also dependent on the policies of the Territory Government. It is also notable that the Northern Territory Utilities Commission recently granted retail licences to new entrants, QEnergy in 2011, and ERM Power in 2012.

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<sup>348</sup> NT Government press release, 27 September 2013.