

Changes in regulated electricity retail prices from 1 July 2012

Electricity — Final Report
June 2012

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1 Executive summary

The Independent Pricing and Regulatory Tribunal (IPART) is responsible for regulating electricity prices for around half of all residential and small business customers in NSW. These are the prices that EnergyAustralia, Integral Energy and Country Energy – the Standard Retailers in this State¹ – charge customers who have not signed a market contract either with them or another retailer.²

In March 2010, we made a determination on the amount by which each of these retailers could increase its regulated prices on 1 July 2010. We also set out our approach and process for conducting annual reviews to determine how each retailer could increase these prices on 1 July 2011 and 2012.

In line with this approach and process, we have conducted our 2012 annual review and have made a final decision on the regulated price increases. This final report explains our final decision. It also analyses the impact of our final decision on electricity customers, and recommends changes to government policy and customer assistance measures to limit electricity price increases in the longer term and alleviate their impact on the most vulnerable customers in the short term.

1.1 How will electricity prices change on 1 July 2012?

Average regulated retail electricity prices will increase by 18.1% across NSW on 1 July 2012 – or by between 11.8% to 20.6% in the Standard Retailers' individual supply areas (Table 1.1). These increases come on top of increases of 10% and 17% across NSW in 2010/11 and 2011/12 respectively.

¹ On 1 March 2011, TRUenergy bought EnergyAustralia and Origin Energy bought both Integral Energy and Country Energy. The new owners continue to use the existing brand names (EnergyAustralia, Integral Energy and Country Energy) and we use these brand names in this report.

² We set regulated retail prices paid by customers who have not signed a contract with an electricity retailer or who have chosen to return to the regulated price. Customers who are currently on a market contract with retailers pay unregulated prices. However, these market-based prices are influenced by changes in the regulated price, so often these prices change at the same time as the regulated price.

Table 1.1 IPART's final decision on average regulated retail electricity price increases from 1 July 2012 (nominal, %)

EnergyAustralia	20.6
Integral Energy	11.8
Country Energy	19.7
NSW average	18.1

Note: The increases in regulated retail electricity prices are based on average network price increases which have been approved by the Australian Energy Regulator. The NSW average price increase is a volume weighted average.

1.2 Why are electricity prices increasing again?

Over the past 2 years, the main reasons for the increases in average regulated electricity prices were rising network costs (the costs of using the transmission and distribution networks to transport electricity to customers' premises) and rising green scheme costs (the costs of complying with Commonwealth and State Government schemes aimed at mitigating growth in carbon emissions, including the Renewable Energy Target scheme).

This year, the increases are primarily driven by:

- ▼ The continuing rise in network costs, which is responsible for nearly half of the average 18% price increase.
- ▼ The introduction of a carbon pricing mechanism, which is responsible for the other half.

The other costs that contribute to regulated retail electricity prices will decline slightly, or remain fairly stable (Figure 1.1).

The main reason for the difference in the Standard Retailers' individual average price increases is that they face different increases in their network costs (Table 1.2).

While these price increases are significant, our final decision meets our terms of reference and ensures the Standard Retailers remain financially viable.

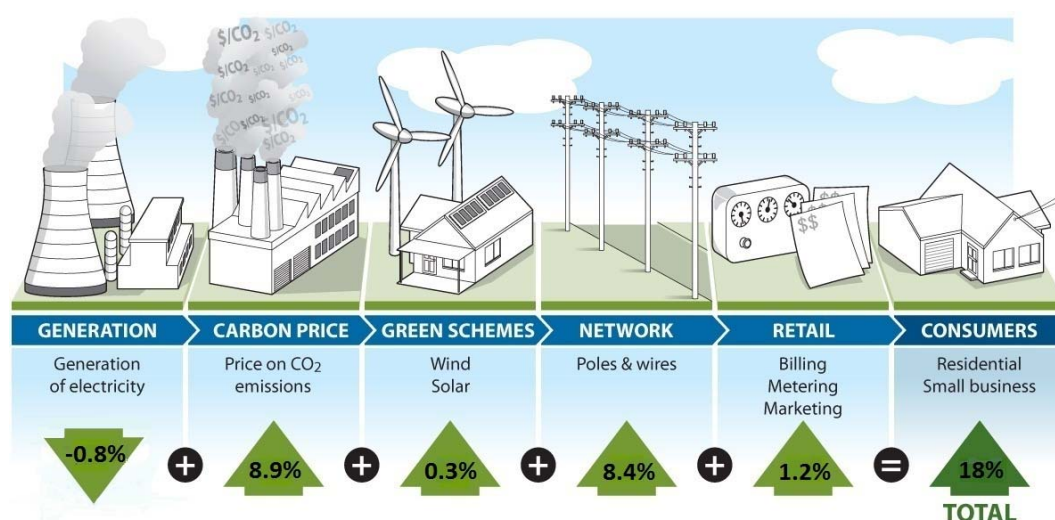
The average price increase of 18.1% is higher than the 16.4% that was indicated in our draft report, reflecting updated analysis and inputs, including an updated estimate of inflation. Retailers submitted that there would be less vigorous marketing to customers as a result of declining margins in NSW under our draft report. They argued for larger price increases reflecting:

- ▼ Higher costs of financing generation and retailing businesses than we included in our draft report (a higher weighted average cost of capital (WACC)). We have further considered this issue given the unusual market conditions and decided to increase our estimate of the WACC from our draft report.
- ▼ Higher coal and gas prices. We have maintained the approach to determining fuel costs as outlined in our draft report.

- ▼ Higher operating costs arising from the introduction of the carbon price. We have not included higher operating costs because it is not within the scope of this annual update. However, our determination provides for the Standard Retailers to apply for a cost pass through for regulatory and taxation changes.

In addition, we have updated our estimates of inflation, energy loss factors and network prices.

Figure 1.1 Drivers of increase in average regulated retail electricity prices on 1 July 2012, across NSW (nominal, %)



Note: 'Green Schemes' include all of the Commonwealth and NSW Government schemes designed to reduce greenhouse emissions except for the Commonwealth Government's carbon pricing mechanism.

Table 1.2 Drivers of the increase in average regulated retail electricity prices on 1 July 2012, by Standard Retailer (nominal, %)

	EnergyAustralia	Integral Energy	Country Energy	NSW average
Network costs ^a	10.8	1.9	10.3	8.4
Carbon price costs	9.4	9.4	7.9	8.9
Wholesale energy costs	-1.1	-0.9	-0.3	-0.8
Other green scheme costs	0.1	0.5	0.6	0.3
Retail costs and margin	1.4	0.9	1.3	1.2
Total cumulative increases on 1 July 2012	20.6	11.8	19.7	18.1

^a The network service providers in EnergyAustralia's and Integral Energy's supply area are Ausgrid and Endeavour Energy respectively. The network service provider in Country Energy's supply area is Essential Energy.

Note: 'Other green schemes' include all of the Commonwealth and NSW Government schemes designed to reduce greenhouse emissions except for the Commonwealth Government's carbon pricing mechanism. While the \$/MWh cost of carbon is similar between the Standard Retailers, the proportionate increase is smaller for Country Energy because their total retail prices are larger. The increases in regulated retail electricity prices are based on network prices approved by the Australian Energy Regulator in June 2012.

1.2.1 Rise in network costs

The continuing rise in the Standard Retailers' network costs will add around 8% to average regulated electricity prices across NSW in 2012/13.³ These costs reflect the prices retailers must pay to use the transmission and distribution networks to transport electricity to their customers. These network prices are regulated by the Australian Energy Regulator (AER).

The AER bases its decisions on each network service provider's costs, which have increased significantly in recent years. The network service providers' cost increases are being driven by their major capital investment programs to:

- ▼ cope with growing loads and meet rising peak demand as the state's population grows and patterns of energy use change
- ▼ replace aging assets
- ▼ meet more rigorous licensing conditions intended to improve network security and reliability.

In EnergyAustralia and Country Energy's supply areas, the network service providers' costs are increasing more significantly than those of the network service provider in Integral Energy's supply area.⁴ Therefore, their network costs are increasing more significantly than Integral Energy's (Table 1.2 above).

In making our decisions on regulated electricity prices, we allow each Standard Retailer to pass through its actual network prices, since it cannot avoid or control this cost. However, we are concerned that network prices are higher than they need to be, due to certain aspects of the current regulatory framework, including the economic regulation of networks under the National Electricity Rules (NER) and the standards for network reliability and security. We are participating in reviews to address these policy concerns.

1.2.2 Introduction of carbon pricing mechanism

The introduction of the Commonwealth Government's carbon pricing mechanism, which commences on 1 July 2012 with a fixed price of \$23 per tonne of CO₂ emissions⁵, will add 9% to average regulated retail electricity prices across NSW in 2012/13.

³ The increases in regulated retail electricity prices are based on network prices approved by the Australian Energy Regulator in June 2012.

⁴ The network service providers in EnergyAustralia's and Integral Energy's supply area are Ausgrid and Endeavour Energy respectively. The network service provider in Country Energy's supply area is Essential Energy.

⁵ <http://www.cleanenergyfuture.gov.au/clean-energy-future/carbon-price/#content01>

The carbon pricing mechanism, which is primarily aimed at mitigating growth in carbon emissions, will increase wholesale electricity costs. These costs are a major component of the Standard Retailers' energy costs (along with green scheme compliance costs, discussed below).

In calculating the impact of the carbon price on regulated electricity prices, we complied with the terms of reference provided by the former NSW Government for our determination. These terms of reference required us to determine each Standard Retailer's energy purchase costs using the Long Run Marginal Cost (LRMC) of electricity generation as the floor price.

Based on this methodology, we calculated that the impact of the carbon price on regulated prices will be around \$170 for a typical household in NSW in 2012/13.⁶

While retailers in the NSW market may face higher costs as a result of the carbon pricing mechanism, our total energy cost allowance with the LRMC floor more than compensates for the increase in these costs.⁷

1.2.3 Small decline in other wholesale electricity costs

If we exclude the impact of the carbon pricing mechanism, we estimate that the Standard Retailers' wholesale electricity costs will decline slightly in nominal terms in 2012/13. This cost decrease will subtract 0.8% from average regulated electricity prices across NSW.

In our draft report, we indicated that the wholesale electricity costs would reduce by 2.3%, predominately because of a decline in the weighted average cost of capital (WACC). Retailers raised concerns with the WACC that we included in our draft report, stating that the assumed cost of equity financing was not a reasonable estimate for generators given the unusual market conditions. After further consideration we have formed the view that in current market circumstances there is some evidence to suggest that expectations for the market risk premium have risen as bond yields have fallen. However, it is difficult to measure these short-term variations in expectations for the market risk premium. To guide our decision-making on the point estimate for the WACC we estimated the long term averages of the risk free rate, debt margin, inflation adjustment and the market risk premium. We selected a point estimate towards the upper end of the range of values after considering the long term WACC estimates. As a result the WACC has increased from 6.5% to 7.1% (pre-tax, real) between our draft and final reports, with the wholesale electricity costs (excluding carbon) now falling by only 0.8%.

⁶ This figure includes the impact of energy losses, GST and inflation.

⁷ In Chapter 3 we calculated that the impact of the carbon price on regulated retail electricity prices will be around \$20 per MWh in 2012/13 (excluding the impact of energy losses, GST and inflation). However, we estimate that the impact of the carbon price on market retail electricity prices will be around \$26 to \$28 per MWh (excluding the impact of energy losses, GST and inflation).

Retailers also argued that our estimates of coal and gas prices were not high enough and did not reflect recent market developments. We considered public sources of information on coal and gas prices (as well as other generation costs) but did not find a suitable, complete source of information. We decided to maintain our approach of indexing the ACIL report that we relied on for our 2010 determination and 2011 update. We consider that this approach captures movements in the relevant cost drivers.

As we did for the 2010 determination, we calculated each retailer's energy purchase costs based on our estimate of the LRMC of electricity supply. The terms of reference, issued by the then Minister for Energy, require IPART to set regulated retail prices from 2010 to 2013 based on either the LRMC of electricity supply, or the market-based purchase costs, **whichever is the greater**.

We note that setting the allowance for energy purchase costs in line with the LRMC in 2012/13 results in an allowance that is between \$17 to \$19/MWh higher than it would be if set in line with the market-based purchase cost. This flows through to prices, and results in customer bills being around 7.1% to 9.3% higher than they would be if the allowance were set in line with the market-based purchase cost.

However, the market-based cost is sensitive to the supply-demand balance and can move significantly from year to year. As a result, for some years the market price can be significantly above the LRMC of generation, for example, during the tightening of the supply-demand balance. Therefore, this large divergence between the LRMC and market prices that exists at present may not occur in future years. Over the longer term, we would expect the market price to reflect the LRMC of generation.

1.2.4 Little change in green scheme compliance costs

The Standard Retailers' costs of complying with green schemes such as the Commonwealth Government's Renewable Energy Target scheme and the NSW Energy Savings Scheme, and contributions to the NSW Climate Change Fund have increased significantly over the past 2 years. In the coming year, the costs of some schemes will go down while others will go up, but total green scheme costs will remain fairly stable.

The Renewable Energy Target (RET) scheme's compliance costs will increase marginally on 1 July 2012. As the costs of wind generation are predominately capital costs, our estimate of the cost of complying with the RET scheme has increased since our draft report, reflecting the increase in the WACC.

The RET scheme continues to be a substantial cost to electricity retailers and their customers. In 2012/13, they will be required to surrender renewable energy certificates equivalent to 33.1% of their total electricity sales, which is significantly more than the overall target, which is to ensure that 20% of Australia's electricity supply comes from renewable sources by 2020. The Standard Retailers have also applied to pass through costs in relation to changes in their liability under the RET scheme and this will add to prices from 1 July 2012. In our view, the design of the RET scheme could be improved to minimise its cost impact on electricity customers.⁸

The mandatory contributions by network businesses to the NSW Climate Change Fund will increase on 1 July 2012. This is due to the NSW Government's decision to fund the costs of its Solar Bonus Scheme via an increase to the Climate Change Fund levy. The Solar Bonus Scheme offered generously subsidised feed-in tariffs to customers who installed small-scale solar panels for all the electricity they generate. The very high take-up of the scheme resulted in higher than expected costs. Although the Government closed the scheme to new participants in 2011, these costs are ongoing until the scheme terminates in 2016.

Retailers' obligations under the NSW Energy Savings Scheme will remain stable in 2012/13, and so the costs of this scheme will not add significantly to regulated electricity prices. This scheme adds less than 1% to electricity prices. Their obligations under the NSW Greenhouse Gas Reduction Scheme (GGAS) will cease on 30 June 2012, as GGAS will terminate when the carbon pricing mechanism begins.

1.3 Recommendations to mitigate future electricity price increases

We are concerned that inappropriate policy settings have increased costs to retailers and led to electricity prices being higher than necessary. To mitigate price increases over the longer term, we consider that:

- ▼ The National Electricity Rules (NER) should be changed to remove the bias towards higher network prices and inefficient outcomes, and the governance of the NSW electricity businesses should be improved.
- ▼ The National Electricity Law (NEL) should be changed to require the review body to consider decisions in the context of the whole determination, and not be confined to the specific item(s) contested by the business or interveners and make the process fairer for customers.
- ▼ Reliability standards should be set with reference to the costs and benefits, and determined with reference to customers' preferences. Further, reliability standards should be set on an output basis to allow least-cost delivery of those standards.

⁸ IPART, *Strengthening the Foundation for Australia's Energy Future*, IPART's submission to the Draft Energy White Paper 2011, March 2012, pp 3 & 14.

- ▼ Green schemes should be reviewed to ensure that they are efficient and cost effective. Those not complementary to the carbon pricing mechanism should be terminated. The design of the Renewable Energy Target scheme should be improved.
- ▼ Where subsidies are appropriate, they should be closely monitored by Governments to ensure sufficient scrutiny of the costs and value of schemes.

We have made recommendations in line with the above in this report. We have also made recommendations aimed at ensuring the package of customer assistance measures provided by the NSW Government are complementary, comprehensive and well-targeted. In particular, we consider the current emergency assistance program, the Energy Accounts Payments Assistance (EAPA) scheme is an important scheme that requires reform in terms of its design and administration so that sufficient support is targeted to customers in need.

1.4 How will the price increases affect annual electricity bills?

We cannot calculate how the average increase in regulated prices will affect individual customers' annual electricity bills, because this will depend on how much electricity they use in a year, which of their retailer's regulated prices they are on, and how these prices change.⁹ However, to illustrate the potential impact, we calculated an indicative annual electricity bill for residential customers with average electricity usage in each supply area under our final decision (Table 1.3).

This analysis shows that for these customers, the price increase will add around \$210 to \$430 to their annual bill. Customers with larger than average electricity usage will experience larger impacts.

Table 1.3 Indicative annual bill for residential customers with average electricity usage in each standard supply area (\$ nominal)

	2011/12 (current)	2012/13	Change
EnergyAustralia	1,763	2,127	364
Integral Energy	1,764	1,972	208
Country Energy	2,163	2,590	427

Note: Bills include GST, Climate Change Fund levy and forecast inflation of 1.6%. Bills calculated using 7,000 kWh of consumption per year and, for each business, an indicative price based on the average cost per kWh of supplying all regulated customers.

⁹ Electricity prices vary considerably across NSW, primarily reflecting differences in the cost of transporting electricity to customers. However there are also differences within locations as a result of price structures (for example, some customers in the EnergyAustralia supply area pay higher prices as their electricity use increases).

We also calculated an indicative annual electricity bill for typical small business customers consuming 10 MWh per year in each supply area (Table 1.4). Like residential customers, these customers will experience bill increases in dollar terms, ranging from around \$270 to \$555 per year.

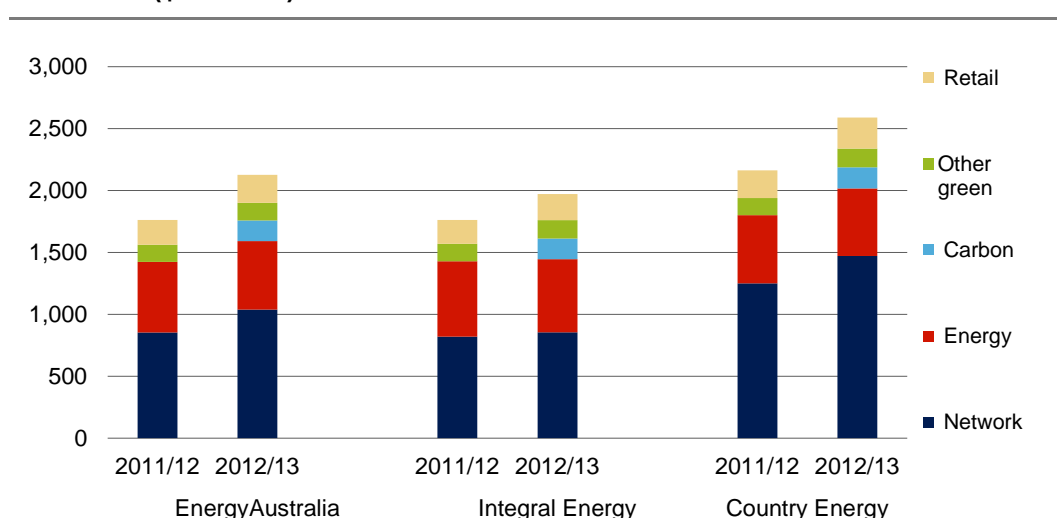
Table 1.4 Indicative annual bill for business customers with 10 MWh electricity usage in each standard supply area (\$ nominal)

	2011/12 (current)	2012/13	Change
EnergyAustralia	2,290	2,762	472
Integral Energy	2,291	2,561	270
Country Energy	2,809	3,364	555

Note: Bills exclude GST and include Climate Change Fund levy and forecast inflation of 1.6%. Bills calculated using 10,000 kWh of consumption and, for each business, an indicative price based on the average cost per kWh of supplying all regulated customers.

Both residential and business customers in Country Energy's supply area will face the largest bill increases (in absolute dollar terms). This is largely because Country Energy has higher network costs than the other Standard Retailers (due to the greater distances electricity must be transported in its area), and these costs will increase by more than 10% in 2012/13. This can be seen in Figure 1.2 and Table 1.5, which show the relative impact of increases in the Standard Retailers' individual cost components on an indicative annual electricity bill for typical residential customers.

Figure 1.2 Indicative annual bill for residential customers in each standard supply area – the components and how they will change over the next year (\$ nominal)



Note: Bills include GST, Climate Change Fund levy and forecast inflation of 1.6%. Bills calculated using 7,000 kWh of consumption per year, and, for each business, an indicative price based on the average cost per kWh of supplying all regulated customers. Other green costs include the estimated contribution to the Climate Change Fund levy.

Source: IPART analysis.

Table 1.5 Indicative annual bill for residential customers in each standard supply area – the components and how they will change over the next year (\$ nominal)

	EnergyAustralia		Integral Energy		Country Energy	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
Network	852	1,039	820	854	1,249	1,472
Energy	571	552	607	591	551	544
Carbon	0	166	0	165	0	171
Other green	138	143	141	150	138	151
Retail	202	226	195	211	225	253
Total	1,763	2,127	1,764	1,972	2,163	2,590

Note: Bills include GST, Climate Change Fund levy and forecast inflation of 1.6%. Bills calculated using 7,000 kWh of consumption per year, and, for each business, an indicative price based on the average cost per kWh of supplying all regulated customers. Other green costs include the estimated contribution to the Climate Change Fund levy.

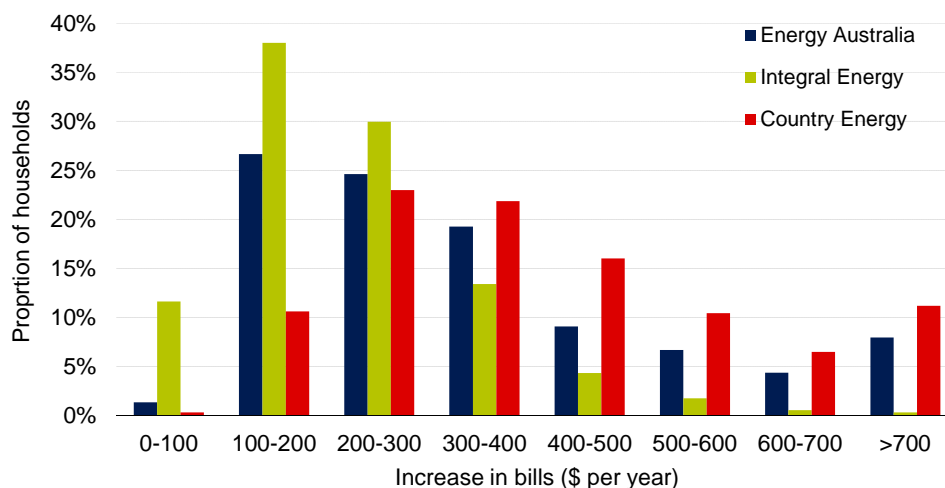
Source: IPART analysis.

1.5 How will the price increases affect households in NSW?

As section 1.4 discussed, the impact of the 2012 price increases on the annual bills of households with average electricity usage ranges from \$208 to \$427, or by 11.8% to 20.6%. However, our household surveys show that electricity usage varies widely in NSW, and is strongly influenced by a household's characteristics – such as the number of household members, the type of dwelling, and how it uses electricity.

We estimate that the actual impact of the 2012 price increase on annual household electricity bills may range from less than \$100 to over \$700 (Figure 1.3). Bills are likely to increase by more than \$400 for more than a quarter of customers.

Figure 1.3 Increases in residential electricity bills for NSW standard supply areas, 2011/12 to 2012/13



Note: Bills include GST and are net of rebates. Increases assume an unchanged price structure.

Data source: IPART Household survey 2010, Country Energy data, IPART calculations.

1.5.1 Impact on the proportion of income spent on energy

The increases in regulated retail electricity price from 1 July 2012 are significant, and follow significant price increases in 2010/11 and 2011/12. These increases – and the prospect of further increases in coming years – have prompted concerns about the proportion of income that households are spending on electricity.

To assess the impact of the 2012 price increases on households we examined the proportion of household disposable income likely to be spent on energy¹⁰ under our final decision. This is a useful measure of affordability, as it takes into account movements in annual household incomes¹¹ – including government assistance such as the Commonwealth Government’s Household Assistance Package¹² and increases to the NSW Government’s Low Income Household Rebate¹³ – as well as movements in annual energy bills. We also used information from our household surveys to help us identify which customers will be most affected by the price increases.

While energy consumption has decreased modestly, we found that the proportion of income that households are spending on electricity has increased over the past several years and the 2012 price increases continue this trend.¹⁴ But, as Figure 1.4 shows, for the majority of households in Sydney and surrounding areas – where we conduct our household surveys – spending on energy will still represent less than 5% of their disposable income. The median spending on energy among these households will be about 4%. An increase in energy bills as a share of disposable income does not necessarily mean that households are worse off overall.

¹⁰ Including electricity and gas bills. We included gas because some households use gas instead of electricity for the same purpose.

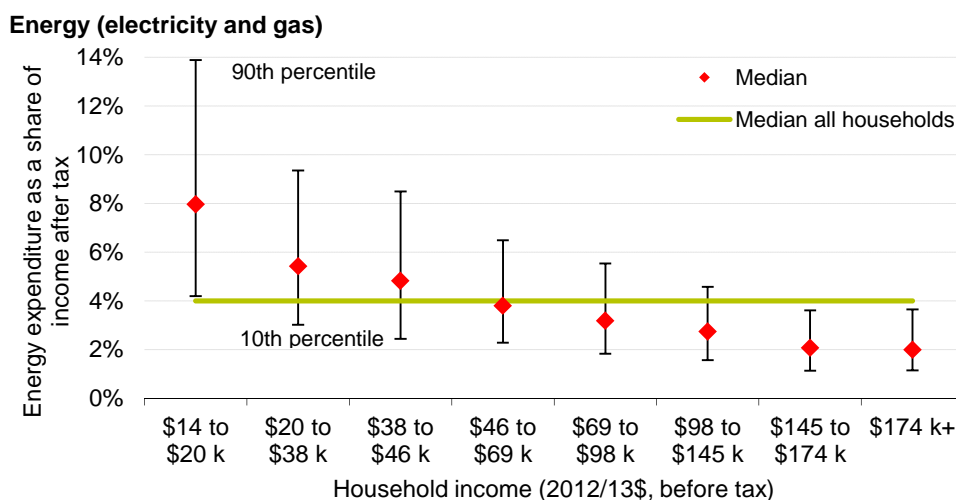
¹¹ To calculate disposable household incomes for our analysis, we have assumed income growth of 3.5% in 2012/13 based on NSW Treasury forecasts. See page 19 of the 2011-12 Half-Yearly Budget Review:
http://www.treasury.nsw.gov.au/__data/assets/pdf_file/0012/21432/2011-12_Half-Yearly_Budget_Review.pdf

¹² The Commonwealth Government’s Household Assistance Package is designed to compensate low and middle income households for the impact of the carbon pricing mechanism through additional government payments and tax reforms.

¹³ Our analysis does not include the NSW Government’s Family Energy Rebate of up to \$75 in 2012/13.

¹⁴ Our analysis assumes that energy consumption has been constant. While data provided to us by network businesses indicates that average household consumption has been falling, this fall is insufficient to offset the rise in electricity prices. See Appendix F for more information.

Figure 1.4 Annual spending on energy as a share of disposable household income — Sydney and surrounding regions, 2012/13



Note: The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2007/08. Income for each band is inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Distributions are presented without weighting survey responses. Customer bills are net of the Low Income Household Rebate. We have assumed that gas prices will increase by 14% on 1 July 2012. For more information, see IPART, *Changes in regulated retail gas prices in NSW from 1 July 2012*, June 2012.

A **percentile** is the value below which a certain percentage of observations fall. For example, the 10th percentile is the value below which 10% of the observations are found. In the above diagram, 10% of customers in each income band would fall below the bottom of the vertical line (paying less than that amount) and 10% of customers would pay more than the top of the vertical line.

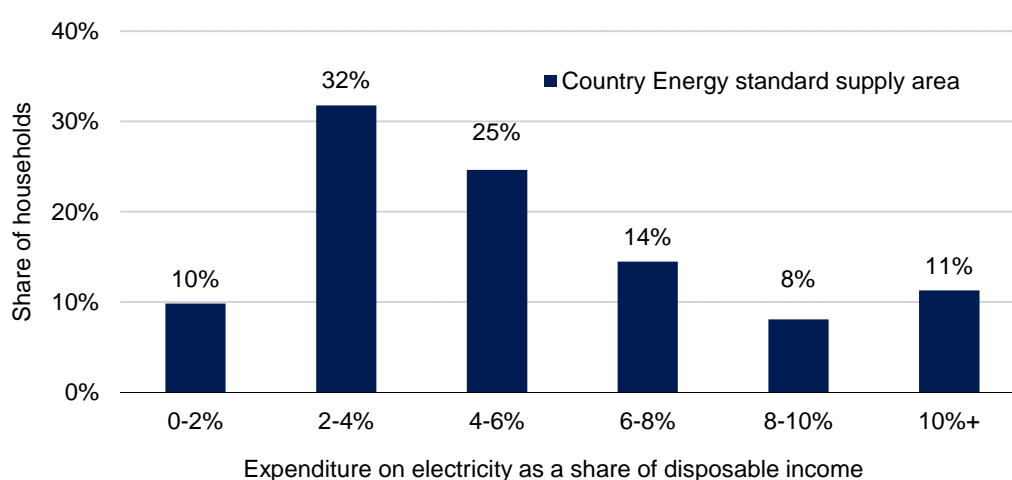
Data source: IPART Household Surveys, 2008 and 2010.

Figure 1.4 also shows that energy spending as a proportion of household disposable income varies substantially within specific income categories. For example, in the lowest income category, median households are likely to spend almost 8% of their disposable income on energy. However, depending on household energy usage and the specific regulated price they are on, their spending ranges from around 4% to almost 14%.¹⁵

¹⁵ Those in the 10th percentile will spend around 4%, and those in the 90th percentile will spend almost 14% on energy.

Because we have not conducted our household survey outside Sydney and the surrounding areas, we estimated the likely spending on electricity as a proportion of household income in Country Energy's supply area by combining information on median electricity use and median disposable income across each postcode in this area.¹⁶ As Figure 1.5 shows, this analysis suggests that around 11% are likely to spend more than 10% of their disposable income on electricity under our final decision.¹⁷

Figure 1.5 Distribution of annual spending on electricity as a share of disposable household income — Country Energy's supply area, 2012/13



Note: Distribution based on Sydney energy distribution adjusted to reflect median income and median electricity bills in each postcode in Country Energy's standard supply area.

Data source: ABS Census 2006, Table B02, item B112; Country Energy billing data; ABS Catalogue No. 6302.0: Average weekly earnings, Australia, November 2011; IPART analysis.

¹⁶ For Country Energy's standard supply area we are not able to consider expenditure on electricity and gas. Gas is a much less used fuel outside of Sydney as access to gas distribution networks is limited.

¹⁷ The distribution of customers by expenditure on income for country areas is based on applying the shape of the distribution for Sydney with adjustments for each postcode according to its median bill and median income.

1.5.2 Households types likely to be most affected by price increases

We have identified that certain households will be most affected by the price increase on 1 July 2012. These households are those that have low household incomes and that:

- ▼ Have high energy usage which is difficult to reduce – for example, because they have a larger household size, live in a ‘family sized’ detached house, live in an area with more extreme temperatures, and/or have older inefficient fixtures and appliances.
- ▼ Live in Country Energy’s supply area - because electricity prices are higher in Country Energy’s supply area as a result of the higher costs of transporting electricity to customers.
- ▼ Have higher housing costs – because they are still paying off their home or renting.

1.6 We will not conduct a special review for a potential price change on 1 January 2012

When we made our determination in March 2010, the Commonwealth Government had introduced legislation to implement the Carbon Pollution Reduction Scheme (CPRS). The CPRS had a proposed fixed price in 2011/12 before moving to a market-based price on 1 July 2012. To account for the uncertainty about the level of the market carbon price in 2012/13, our determination included a mechanism for a limited review of the carbon price only in January 2013 (special review).

The CPRS bill subsequently lapsed in the Senate. Last year, the Commonwealth Parliament passed the *Clean Energy Act 2011* (Cth). This Act implements a carbon pricing mechanism from 1 July 2012, which begins with a fixed carbon price for the first 3 years. This fixed-price phase includes the 2012/13 year that the special review was intended to cover.

Because the carbon price is fixed in 2012/13, we will not undertake the special review in January 2012.

1.7 The future of retail price regulation in NSW

Our current determination expires on 30 June 2013, making this the last annual review and price change under the current terms of reference. Whether or not to deregulate retail prices is a matter for the NSW Government.

1.8 What does the rest of this report cover?

The rest of this report is structured as follows:

- ▼ Chapter 2 discusses our approach and process for the review.
- ▼ Chapter 3 discusses the annual review of the total energy cost allowance and explains how we estimate the retailers' energy purchase costs and other associated costs, including those related to renewable energy and other green schemes and loss factors.
- ▼ Chapter 4 discusses the retailers' applications to pass through costs associated with changes to the retailers' liability under the Commonwealth Government's RET scheme.
- ▼ Chapter 5 presents the total cost allowances for each Standard Retailer and the resulting regulated retail price controls (R values).
- ▼ Chapter 6 analyses the impacts of our review on customers.
- ▼ Chapter 7 presents recommendations to governments to improve electricity affordability.

Appendices A to H provide additional background information:

- ▼ Appendix A Terms of Reference.
- ▼ Appendix B Parameters of the Weighted Average Cost of Capital (WACC).
- ▼ Appendix C The impact of carbon on electricity prices
- ▼ Appendix D The Renewable Energy Target scheme
- ▼ Appendix E Further information on low-income households
- ▼ Appendix F Changes in energy bills and income since 2006/07
- ▼ Appendix G The Household Assistance Package
- ▼ Appendix H Retailers' customer hardship programs and EAPA

2 IPART's approach and process for this review

As Chapter 1 noted, when we made the 2010 determination we estimated the amounts by which the Standard Retailers could increase their average regulated electricity prices on 1 July 2011 and 2012. We indicated that we would conduct an annual review in these years to determine the precise amounts by which the retailers could increase these prices, and set out the analytical approach we would use for determining these amounts.

Since we made the determination, there have been a number of major policy, market and regulatory developments in the electricity sector. Some of these developments, including the introduction of the carbon pricing mechanism, have resulted in significant changes to the energy industry structure and the renewable energy market and will affect retail electricity prices in 2012/13 and beyond.

However, the developments do not affect our analytical approach for determining the increase in each retailer's average regulated prices from 1 July 2012. The sections below set out this approach, and our process for conducting the 2012 annual review. Box 2.1 provides more information on the key developments in the electricity sector.

2.1 Our approach for determining average price increases from 1 July 2012

Our approach for determining the maximum amount by which each Standard Retailer can increase its average regulated prices from 1 July 2012 is consistent with the approach set out in the 2010 determination. It includes the following key steps:

1. Conducting the annual review of the total energy cost allowance, including updating the allowances for:
 - a) energy purchase costs
 - b) costs associated with 'green' energy schemes, and
 - c) costs associated with energy losses.
2. Considering the Standard Retailers' applications to pass through unforeseen costs resulting from an eligible regulatory or taxation event via the cost pass through mechanism.
3. Confirming the average increase in network prices from 1 July 2012 approved by the Australian Energy Regulator and passing them through into regulated retail prices.

4. Calculating the change in the retail component of prices (R values), using the decisions at steps 1 and 2 and confirmation of network prices (N values) at step 3 to recalculate the retail margin as set out in the 2010 determination (ie, calculated as 5.4% on the N+R values).
5. Determining revised R values to be used by the retailers in submitting their annual pricing proposals.
6. Analysing the impacts of these increases in average regulated prices on customers, and considering what steps can be taken to improve the regulatory and policy settings to reduce the pressure on electricity prices and what measures might be required to provide assistance to the most vulnerable groups within the community.

We note that step 1 updates the costs the retailers are forecast to incur in 2012/13. However, step 2 assesses the incremental and efficient costs incurred over 2011/12 resulting from eligible regulatory or taxation changes.

Standard Retailers must submit pricing proposals consistent with our decision. Once the proposals are approved, the retailers can make one set of price changes on 1 July 2012. We considered this to be preferable to having multiple price changes in 2012.

2.2 Our process for conducting the review

Our process for conducting this annual review includes consultation and analysis. To date, we have:

- ▼ Released fact sheets in December 2011, which explained the purpose, process and approach for the reviews and set out the opportunities for stakeholders to participate in the review.
- ▼ Liaised with stakeholders on affordability and customer issues in February 2012.
- ▼ Received the Standard Retailers' cost pass through applications in March 2012.
- ▼ Engaged Frontier Economics to provide expert advice on the annual review, and made its draft report available on our website.¹⁸
- ▼ Released a draft report and draft decision on 12 April 2012.
- ▼ Held a public hearing on 30 April 2012.
- ▼ Considered submissions, which were due on 10 May 2012
- ▼ Considered Frontier Economics' final report.

The process and timetable for completing this review are summarised in Table 2.1.

¹⁸ www.ipart.nsw.gov.au

Table 2.1 Process and timetable for completing our review of prices from 1 July 2012

What	When
Released fact sheets	December 2011
Released draft report	12 April 2012
Held stakeholder roundtable on draft report	30 April 2012
Received submissions on draft report	10 May 2012
Release final decision and Frontier's final report	13 June 2012
Receive annual pricing proposals from Standard Retailers	Mid- June 2012
Approve annual pricing proposals	late June 2012
New regulated retail prices to take effect	1 July 2012

2.3 Changes since the 2011 price change

Since we made our decision in 2011, there have been a number of major policy, market and regulatory developments in the electricity sector. While some of these developments will affect the level of electricity prices in 2012/13 and beyond, they do not affect our approach to determining the maximum increase in each retailer's average regulated prices from 1 July 2012.

Box 2.1 outlines the major developments in the electricity sector.

Box 2.1 Major developments in the electricity sector

Since we made our decision in 2011 there have been several major developments in the electricity sector including:

- ▼ **Introduction of a carbon price** – In November 2011 the Commonwealth Government passed legislation to introduce a carbon price on 1 July 2012. There will be a fixed price period from 1 July 2012 starting at \$23/tonne, before transitioning to a market price in 2015/16. Around 500 large emitters will need to pay the carbon price, including carbon-emitting electricity generators. The carbon price will increase the cost of generating electricity, which will increase wholesale electricity prices, and the retail price of electricity.^a
- ▼ **Review of the National Electricity Rules** – In October 2011 the Australian Energy Market Commission (AEMC) began a review of the National Electricity Rules (NER) in response to a rule change proposal from the Australian Energy Regulator.^b The NER govern the operation of the National Electricity Market (NEM) and the rule change requests seek to change the way revenues are set for electricity and gas network businesses. The AEMC intends to complete its review by October 2012 allowing any changes to apply to the AER's review of NSW distribution network prices from 1 July 2014.
- ▼ **Review of the distribution network reliability standards in NSW** – On 30 August 2011 the Ministerial Council on Energy (MCE) requested the AEMC to review approaches to setting reliability in the NEM distribution networks and to review the costs and benefits of different levels of reliability in the New South Wales (NSW) electricity distribution system. The AEMC recently released their draft report.^c
- ▼ **Proposed merger of the 3 state-owned distribution network supply businesses** – In March 2012 the NSW Government announced that it will merge the 3 distribution networks into a single corporate structure. A new State Owned Corporation (SOC) will be created to own and operate the electricity distribution network.^d
- ▼ **Additional green scheme obligations** – The number of certificates that retailers will be required to purchase in 2012 under the Small-scale Renewable Energy Scheme (SRES) has increased from the number previously estimated. This additional obligation results from a significant take up of solar PV and solar hot water in 2011 and will increase the cost that retailers incur in complying with the SRES in 2012. This will increase retail prices for electricity in 2012/13.^e
- ▼ **Closure of NSW GGAS** – The NSW Government has announced that GGAS will cease on 30 June 2012, given the commencement of the carbon pricing mechanism on 1 July 2012.^f
- ▼ **Increase in the Climate Change Levy** – The NSW Government announced that it will recover the costs of the Solar Bonus Scheme through a levy on network electricity prices – the Climate Change Fund levy – which will be increased to recover an additional \$100 million in 2012/13 (bringing the total contributions to \$250m), increasing by a further \$150 million (to \$400 million) per annum from 2013/14 – 2016/17.^g

a <http://www.cleanenergyfuture.gov.au/wp-content/uploads/2011/07/Consolidated-Final.pdf>

b <http://www.aemc.gov.au/Media/docs/Consultation%20Paper-66848dfa-0c7b-43e7-a580-00ce43c65860-0.PDF>

c <http://www.aemc.gov.au/News/Whats-New/draft-advice-for-nsw-government-on-reliability-options-for-electricity-distribution.html>

d <http://www.trade.nsw.gov.au/energy/electricity/networks/reforms>

e <http://ret.cleanenergyregulator.gov.au/Latest-Updates/2012/February/3>

f <http://greenhousegas.nsw.gov.au/Documents/Media-Closure-Apr12.pdf>

g NSW Budget 2011/12 – Budget Paper 2, chapter 5, p 3.

3 Annual review of the total energy cost allowance

To supply their customers, electricity retailers must purchase wholesale electricity through the National Electricity Market (NEM), and meet a range of other associated costs, most notably the costs of complying with green schemes. These costs – their total energy costs – represent around 40% of their total cost base.

In making the 2010 determination, we estimated each Standard Retailer's total energy costs in each year of the determination period, and set its total energy cost allowance for each year in line with this estimate. We indicated we would review this allowance in 2012 to manage several uncertainties that could affect the level and volatility of wholesale electricity prices and some of the associated costs. In particular, we indicated we would review and update our decisions on the following components of the total energy cost allowance:

- ▼ the energy purchase cost allowance (EPCA), including the impact of the carbon price
- ▼ the 'green' cost allowances, including those for:
 - the Renewable Energy Target scheme, which is now divided into the Small-scale Renewable Energy Scheme (SRES) and the Large-scale Renewable Energy Target (LRET), and
 - the Energy Savings Scheme (ESS)
- ▼ the allowance for energy losses.

We also specified the approach we would use for the annual review of the total energy cost allowance.

We applied this approach to make our final decisions on the total energy cost allowance in 2012/13. The sections below provide an overview of these decisions and estimates, and discuss our findings and analysis on the key components of the allowance.

3.1 Overview of final decisions on total energy cost allowance

IPART's final decision on each Standard Retailer's total energy cost allowance for 2012/13 is shown in Table 3.1

Table 3.1 Final decisions on total energy cost allowance for 2012/13 (\$2011/12 \$/MWh)

	2011/12 ^a (current)	Final Decision 2012/13
EnergyAustralia		
Energy purchase cost allowance	67.66	85.37
LRET	2.67	4.43
SRES	6.15	5.37
ESS	1.11	1.51
NEM fees and ancillary services ^b	0.83	0.85
Energy losses	5.15	6.33
Total energy cost allowance	83.57	103.86
Integral Energy		
Energy purchase cost Allowance	70.98	89.02
LRET	2.68	4.46
SRES	6.18	5.52
ESS	1.11	1.51
NEM fees and ancillary services ^b	0.83	0.85
Energy losses	6.52	7.67
Total energy cost allowance	88.30	109.03
Country Energy		
Energy purchase cost allowance	63.60	82.05
LRET	2.69	4.44
SRES	6.25	5.61
ESS	1.11	1.51
NEM fees and ancillary services ^b	0.83	0.85
Energy losses	6.88	9.71
Total energy cost allowance	81.36	104.17

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

^b NEM fees and ancillary services are not reviewed as part of this annual review, and therefore unchanged in real terms since 2010 determination.

Note: The Energy Purchase Cost Allowance has been calculated as the higher of the LRMC and market-based energy purchase cost per MWh of forecast regulated load. Totals may not add due to rounding.

We made these final decisions after considering the expert advice we received from our consultant, Frontier Economics (Frontier), and the issues raised in consultation on our draft report. We are satisfied that our final decisions update the key input cost assumptions as required by the 2010 determination, and are consistent with the terms of reference for the 2010 determination.

3.2 Energy purchase cost allowance

IPART's final decisions on the energy purchase cost allowance for 2012/13 are as shown in Table 3.2

Table 3.2 Final decisions on the energy purchase cost allowance (\$2011/12 \$/MWh)

	2011/12 ^a (current)	Final decision 2012/13
EnergyAustralia	67.66	85.37
Integral Energy	70.98	89.02
Country Energy	63.60	82.05

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

To reach these final decisions, we used the same methodology and the same regulated load forecasts as we used in making the 2010 determination, and updated the key input cost assumptions as provided for in the determination. The methodology was designed to meet the terms of reference for the 2010 determination, which required us to:

- ▼ calculate the long run marginal cost (LRMC) of electricity generation and the market-based cost of purchasing electricity
- ▼ include the costs of complying with the carbon pricing mechanism in these costs for 2012/13, and
- ▼ set the energy purchase cost allowance in line with the higher of the LRMC and market-based cost.

The sections below explain our final decisions on the energy purchase cost allowance in more detail, and cover:

- ▼ how we updated key input cost assumptions, including the capital costs of generation, fuel costs and other operating costs of generation
- ▼ how we took account of the carbon pricing mechanism in setting the energy purchase cost allowance
- ▼ Frontier's updated estimates of the LRMC of generation and the market-based purchase cost, and
- ▼ our conclusions on these estimates, and the implications of this for retail prices.

3.2.1 How we updated key input cost assumptions

In making our 2010 determination, we indicated that in updating the LRMC and market-based purchase cost components, we would update only the input cost assumptions that are major drivers of energy purchase costs, and had an element of uncertainty over the determination period. These included:

- ▼ the capital costs of generation
- ▼ fuel costs
- ▼ other operating costs of generation (taking into account the operating characteristics of generation).

We also indicated we would update carbon prices; this is discussed in section 3.2.2.

For our draft decision, we considered publicly available data on the costs and operating characteristics of generation, including the Australian Energy Market Operator's (AEMO's) modelling of the National Electricity Market (NEM) transmission network done as part of its 2011 National Transmission Network Development Plan (NTNDP).¹⁹

Consistent with our findings in the 2011 annual review²⁰, in our draft decision we found that AEMO's 2011 NTNDP modelling was not sufficient for updating the energy purchase cost allowance. This modelling was not intended to identify the most likely future state of the world in each year of the modelling period. Rather, it was intended for use in a 'what if' analysis, to test the transmission network in different ways. For this reason, we found that the NTNDP data was not appropriate for regulatory pricing purposes.

We made a draft decision to continue to rely on the ACIL Tasman 2010 draft report for the Queensland Competition Authority (QCA).²¹ As noted in our 2011 annual review we considered this report to be the most suitable source of data for the purpose of updating the energy cost allowance for the following reasons:

- ▼ The report's input cost assumptions are intended to calculate the energy costs most likely to prevail, rather than under a range of potential scenarios.
- ▼ We are not aware of any report that has published updated cost estimates using an approach consistent with the assumptions in ACIL's 2010 draft report for the QCA.

¹⁹ AEMO published its second NTNDP in December 2011. The NTNDP is designed to provide a long term view of future power system requirements under a range of possible socio-economic scenarios.

²⁰ IPART, *Changes in regulated electricity retail prices from 1 July 2011 – Final Report and Determination*, June 2011, p 27.

²¹ ACIL Tasman, *Calculation of energy costs for 2011-12 BRCI, Draft Report, Prepared for the Queensland Competition Authority*, December 2010. In its final report to the QCA in 2011, ACIL changed its approach and adopted input assumptions from AEMO's NTNDP process.

- ▼ Cost input cost assumptions in ACIL's draft 2010 report for the QCA have been updated in a consistent manner with the ACIL Tasman's 2009 report to the Inter-regional Planning Committee, which we used in our 2010 determination.²²

In our draft decision, we escalated the cost inputs to take into account movements in inflation.²³ We had previously indicated that in the absence of an expert report that provides the required input assumptions for the 2012 annual review on a basis that is consistent with that used for the 2010 determination, we would consider indexing our input assumptions by CPI and any other reasonable or consistent approach to that set out in our 2010 determination.²⁴ Instead of escalating new entrant coal prices by the CPI, we used the 10-year average annual change in the coal mining components of the Producer Price Index.²⁵ Our reason for using this approach is discussed later in this section.

Electricity retailers submitted that our approach for updating fuel (coal and gas) input cost assumptions in our draft decision did not reflect developing market conditions. They suggest that coal and gas input costs have been rising more rapidly on the back of a strong coal export market and LNG developments.²⁶ Retailers asserted that using fuel input cost assumptions that are too low, all else equal, understates the LRMC of generation.

The theoretical basis for the LRMC approach needs to be considered when determining the most appropriate fuel input cost assumptions. We estimate the LRMC on a 'stand-alone' or 'greenfield' basis which considers the least cost theoretical build of generation to meet the regulated load. That is, if the entire system was built from scratch, what is the least cost build of generation plant to meet the regulated load. Therefore, we consider the costs facing a **new entrant** generator and not the costs facing existing generators in, for example, the Hunter or Central Coast. New entrant costs are primarily capital costs and new entrant fuel costs. The LRMC model is designed to source the lowest new entrant fuel price in NSW.

²² ACIL Tasman, *Fuel resource, new entrant and generation costs in the NEM*, Final Report, Prepared for the Inter-Regional Planning Committee, April 2009.

²³ The input assumptions from ACIL's report for the QCA are expressed in 2010/11 dollars. As the modelling underpinning the 2012 annual review is expressed in 2011/12 dollars, we escalated each of the input assumptions in ACIL's report for the QCA by 1.6%, which is the Consumer Price Index (CPI) calculated using the methodology set out in our 2010 determination.

²⁴ IPART, *Changes in regulated electricity retail prices from 1 July 2011 - Final Report and Determination*, June 2011, p 26.

²⁵ We used the same approach to escalate new entrant coal prices in our 2011 annual review.

²⁶ For example, see submissions from AGL, May 2012, pp 3-6; Origin, May 2012, pp 3-5; and TRUenergy, May 2012, pp 2-3.

Electricity industry planning reports indicate that the lowest cost fuel source capable of providing coal-based generation in NSW has typically been in south-west NSW.²⁷ In this area, coal export prices at current levels do not have a large influence on the cost of coal for a new entrant generator. This is because in this area the cost of mining and transporting coal for export is too high relative to current export prices (that is, the discounted export price is lower than the costs of mining). Instead, what is more important for driving coal prices is the cost of coal mining.²⁸ For this reason we do not consider that changes in coal export prices are the best indicator for our coal input costs. Instead, we escalate new entrant coal costs by the 10-year average annual change in the coal mining components of the Producer Price Index.

With regards to gas, we agree there has been considerable investment in LNG and once exports commence it is possible that gas prices will rise. We note, however, that LNG exports from these developments are not scheduled to commence until 2014/15.²⁹ Until then, if anything, there is likely to be a surplus of gas supply due to the ramp gas associated with the coal seam gas wells being developed to support LNG exports. There is evidence to support the view that there is a surplus of gas at the moment, for instance, in recent times prices in the short term trading market have been around \$3 to \$4/GJ.³⁰ In this context, we consider our current gas price estimate of around \$5 to \$6/GJ to be reasonable for the purposes of modelling the LRMC of generation for 2012/13.

We note that AEMO has commenced consultation on the 2012 NTNDP. As part of this process, AEMO developed a baseline scenario designed to reflect the best estimate of the future of the energy industry.³¹ As stated above, one of the main reasons we had not relied on NTNDP data in our recent decisions is that there was no baseline scenario. The latest data had therefore overcome this problem.

²⁷ For example, see ACIL Tasman, *Fuel resource, new entrant and generation costs in the NEM*, Final Report, Prepared for the Inter-Regional Planning Committee, April 2009, p 73, and ACIL Tasman, *Fuel cost projections – Natural gas and coal outlooks for AEMO modelling – Draft Report* (in support of AEMO's 2012 NTNDP modelling), December 2011.

²⁸ This is also the approach used by ACIL Tasman to determine new entrant coal costs. See ACIL Tasman, *Fuel resource, new entrant and generation costs in the NEM*, Final Report, Prepared for the Inter-Regional Planning Committee, April 2009, p 10.

²⁹ For example, see BREE 2011, *Australian energy projections to 2034–35*, BREE report prepared for the Department of Resources, Energy and Tourism, Canberra, December 2011, p 53.

³⁰ AEMO provide data on prices in the Short Term Trading Market on their website: <http://www.aemo.com.au/en/Gas/Operational-Data/STTM-Data>

³¹ AEMO, 2012 Scenarios Descriptions, January 2012, p.13, available at http://www.aemo.com.au/en/Electricity/Planning/~/_media/Files/Other/planning/2418-0005%20pdf.ashx

We carefully considered the 2012 NTNDP data as a source for updating our input cost assumptions. We note the 2012 NTNDP is still undergoing consultation and will be finalised later in 2012. We also note that the generation technologies included in the 2012 data is a subset of those considered in 2011, and in 2012 AEMO has not provided costs for certain technologies that we require to update our modelling (for example coal without carbon capture and storage, open cycle gas turbine and biomass). There has been changes in the capital cost estimates from the 2011 report, but these have not been accompanied with a detailed explanation of the changes.

As certain technologies are not considered in the 2012 NTNDP, we could not solely rely on this report to update our analysis. Using different sources of data may mean that the relative cost of certain technologies could be distorted if the relevant data and assumptions are not internally consistent.

Given the above, we found that the 2012 NTNDP data was not suitable for use in our final decision.³²

Our final decision is to update input cost assumptions using the same approach as our draft report. This approach involves escalating the input costs used in our 2011 annual review, which are based on the ACIL Tasman 2010 draft report for the QCA. We have indexed these costs using the CPI, with the exception of new entrant coal costs which were escalated by 4.3%, which is the 10-year average annual change in the coal mining components of the Producer Price Index.

Frontier's final report provides further detail on the updated input assumptions used for this annual review, including our approach to establishing new entrant coal cost assumptions.³³ Frontier's report also details the updated operating characteristics of generation considered in updating the other operating costs of generation, which were also sourced from the ACIL draft report for the QCA. To enhance the transparency of our decisions, we have provided the full set of key modelling assumptions used by Frontier in its modelling on our website.³⁴

³² Notwithstanding the issues raised above, we asked Frontier Economics to model the LRMC of generation using data from the 2012 NTNDP. Where data was missing from the 2012 report, Frontier used data from scenario 3 of the 2011 NTNDP report (AEMO advised us that this scenario most closely reflects the baseline scenario in 2012). The results of this modelling showed that the LRMC of generation would be around \$4/MWh lower under the combined NTNDP input assumptions, relative to our final decision. For more information see Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012, pp 30-33.

³³ Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

³⁴ www.ipart.nsw.gov.au

3.2.2 How we took account of the proposed carbon pricing mechanism in setting the energy purchase cost allowance

As Chapter 2 discussed, in November 2011 the Commonwealth Government passed legislation to introduce a carbon pricing mechanism starting on 1 July 2012.

The proposed carbon pricing mechanism will place a price on carbon emissions. The carbon price will increase the cost of generating electricity, which will increase wholesale electricity prices, and thus the retail price of electricity. This is intended to send price signals to high emission-intensive generators, and facilitate the transition to a low emission-intensity energy sector. In addition, a price on carbon will send price signals to electricity consumers about the environmental impact of their consumption. (See Appendix C for more details on how the carbon price will impact electricity prices.)

Our approach to including a carbon price was set out in our 2010 determination and involves incorporating the cost of carbon in both estimates of the LRMC of generation and the market-based cost using a carbon inclusive approach.³⁵

This approach factors the costs of carbon into a generator's short run marginal costs (SRMC) consistent with the way a generator considers the cost of fuel.

For the market-based cost, these carbon costs feed into the bidding decisions made by generators in relation to the price and quantity of electricity they are willing to sell into the National Electricity Market. Ultimately, the carbon costs faced by different generators are reflected in the price of wholesale electricity.

For the LRMC of generation, these carbon costs are considered alongside other short run and long run costs (such as capital costs) in building a theoretical generation system that is able to supply the regulated load at least cost.

We have previously noted that using a carbon inclusive approach avoids making assumptions about the extent to which a carbon price will be reflected in wholesale electricity prices.³⁶ We have observed that the pass through assumptions made by other organisations have been highly variable depending on the characteristics of the market and the timeframe over which the impact of carbon is considered. Rather, under our carbon-inclusive approach the impact of carbon on a retailer's energy purchase costs is an output of the modelling. The impact is typically lower under the LRMC approach compared to the market-based cost (for more detail refer to section 3.2.4)

³⁵ The carbon cost of each generation plant is determined by taking the legislated carbon price of \$23 tonne/ CO₂ (adjusted to reflect financial years in \$2011/12, providing a price of \$22.37 tonne/CO₂) and multiplying by the emissions intensity of the generation plant.

³⁶ IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, p 81.

In updating our modelling of the LRMC and market-based cost for this annual review, we made a final decision to use the legislated carbon prices in the modelling of the energy purchase cost allowance for 2012/13.

3.2.3 Updated estimates of the LRMC of generation

Frontier updated its estimates of the LRMC of generation using the same methodologies it used for the 2010 determination, and the updated input cost assumptions that we decided upon as discussed above. It identified the least-cost mix of existing and new generation plant to meet the forecast regulated load. It made this calculation on a stand-alone basis, rather than an incremental one. This means Frontier calculated the LRMC by building and pricing a whole new theoretical generation system to supply each Standard Retailer's regulated load for the least cost (without taking account of the current mix of generation plant in the NEM).

In relation to the discount rate, we instructed Frontier to use a pre-tax real discount rate of 7.1% in its modelling. We calculated this rate by:

- ▼ updating the market parameters of the Weighted Average Cost of Capital (WACC) used for the 2010 determination, and
- ▼ making a decision to choose a point above the midpoint in the range.

Therefore, the WACC of 7.1% for generation is above our draft report WACC of 6.5%. As discussed in Appendix B, we have updated the WACC after considering the issues raised in submissions and the unusual market conditions. We have provided a comprehensive summary of our consideration in making this final decision in Appendix B.

Frontier's updated estimates of the LRMC of generation indicate that the LRMC of generation to meet the Standard Retailers' regulated load in 2012/13 is between \$82 and \$89 per MWh (Table 3.3).

Table 3.3 Frontier Economics' updated estimates of the LRMC of generation to meet each Standard Retailer's regulated load (\$2011/12 \$/MWh)

	2011/12 ^a (current)	2012/13
EnergyAustralia	67.66	85.37
Integral Energy	70.98	89.02
Country Energy	63.60	82.05

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012, p 24.

Frontier's final advice on the LRMC of generation is around \$18 per MWh higher than the LRMC for 2011/12. This is driven by the introduction of the carbon price, but is partially offset by a decrease in the discount rate, which reduces the amortised annual capital costs that need to be recovered.

As a comparison, Table 3.4 shows Frontier's calculation of the LRMC of generation under a no carbon scenario (ie, excluding the forecast impact of the carbon pricing mechanism). A comparison of Tables 3.3 and 3.4 suggest that the impact of the carbon pricing mechanism will add around \$20/MWh to the LRMC estimate in 2012/13. (See Frontier Economics' final report for more information on its view of the impact of the carbon pricing mechanism on the LRMC of generation, and how this compares to the impact on the market-based costs.)

Table 3.4 Frontier Economics' advice on the LRMC of generation to meet each Standard Retailers' regulated load, excluding the forecast impact of the carbon pricing mechanism (\$2011/12)

	2011/12 ^a (current)	2012/13
EnergyAustralia	67.66	65.44
Integral Energy	70.98	69.37
Country Energy	63.60	62.21

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

3.2.4 Updated estimates of the market-based energy purchase cost

Frontier updated its estimates of the market-based energy purchase cost using the same methodologies as it used for the 2010 determination. That is, it used a portfolio optimisation model to estimate optimal combinations of contract cover and spot price exposure for given levels of risk for each Standard Retailer, and then calculated efficient frontier curves. It used game theory techniques to forecast spot price outcomes in the NEM. In addition, we instructed Frontier to:

- ▼ use a point in time estimate rather than a rolling average of contract prices
- ▼ base the market-based cost on the conservative point on the efficient frontier curve
- ▼ include a volatility allowance in the market-based cost.

TRUenergy and Australian Power and Gas (APG) submitted that our point in time approach for pricing hedging contracts does not reflect how retailers would actually hedge their portfolio.³⁷ Our approach to pricing hedging contracts was considered in our 2010 determination. At this time we considered stakeholder submissions and explained our reasons for deciding on a point in time approach.³⁸ This approach is locked in for this determination period.

³⁷ APG submission, May 2012, pp 4-5; TRUenergy submission, May 2012, p 3.

³⁸ IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, pp 93-94.

However, for Frontier to apply these modelling techniques, we had to make a series of final decisions. These included decisions to use modelled forward price data and, in modelling this data to:

- ▼ assume that growth in electricity demand in the NEM will be consistent with the low growth scenario in the AEMO's 2011 Statement of Opportunities, and
- ▼ assume cost input assumptions consistent with the ACIL draft report for the QCA.

These decisions are consistent with our draft report. The sections below discuss each of these decisions, and set out Frontier's updated estimates of the market-based purchase cost.

Assuming growth in electricity demand in the NEM will be consistent with the low growth scenario in the 2011 ESOO

To update Frontier's modelling of forward price data to calculate the market-based cost we needed to update our assumptions for certain inputs, including the forecast rate of growth in electricity demand in the NEM over 2012/13.

In the 2010 determination, we noted that in most circumstances, we considered the medium growth scenario to be the most appropriate case to use.

Since then, AEMO has published an update to the 2011 Electricity Statement of Opportunities (ESOO), which contains updated information on peak demand for electricity in the NEM. The updated document acknowledges that both energy use and peak demand projections have decreased considerably since the publication of the 2011 ESOO, primarily due to mild weather coupled with weaker economic growth and a stronger Australian dollar.

Despite noting that energy use and peak demand projections are likely to be overstated, the 2011 ESOO update did not include revised energy forecast for 2013 or any subsequent years.

Given that AEMO have not published revised forecasts, we have made a final decision to use the low growth scenario in the 2011 ESOO. This is in line with AEMO's view about economic growth and electricity demand expressed in the 2011 ESOO update.

Assuming cost input assumptions consistent with the ACIL draft report for the QCA

As discussed in section 3.2.1, we found that the ACIL Draft Report for the QCA was the most suitable source of data for the purpose of updating the energy cost allowance. Therefore, we made a final decision to use input cost assumptions from that report in updating the modelled forward price data.

Using modelled forward price data

There are several possible sources of forward price data, including modelled or simulated data, publicly available market data (such as d-Cypha data or the AFMA curve) and retailers' actual forward costs. In our 2010 determination, we noted that publicly available forward price data are an important source of information for estimating the market-based purchase costs, and that we would consider this information as part of our annual review.

We have made a final decision to use modelled forward price data, as we did for the 2011 annual review, after considering Frontier's updated modelled data and comparing these to publicly available data from d-Cypha. We note there are significant differences between the updated modelled forward price data for 2012/13 and the original modelled forward price data for this year used in the 2011 annual review. However, we are satisfied that these differences are reasonable, and are due to the following factors:

- ▼ Our final decision to assume a carbon price of \$23/tonne of CO₂-e in 2012/13, rather than a price of zero as we did for the 2011 annual review. This decision, which is discussed in section 3.2.2 above, resulted in significantly higher forward price data.
- ▼ Our final decision to use the low growth scenario in the 2011 ESOO rather than the medium growth scenario in the 2010 ESOO as we did for the 2011 annual review. This decision, which is discussed in the section below, led to a lower forecast peak energy demand for 2012/13.

We also note that Frontier's updated modelled forward price data for 2012/13 are broadly consistent with the d-Cypha data.

Table 3.5 Frontier Economics' updated estimates of the market-based energy purchase costs for 2012/13 – Modelled forward prices vs d-Cypha price data (\$2011/12 \$/MWh)

	Modelled forward prices (including volatility allowance)	d-Cypha data (including volatility allowance)
EnergyAustralia	66.38	65.25
Integral Energy	70.66	69.57
Country Energy	65.04	63.56

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

Updated estimate of the market-based energy purchase cost

Frontier's updated estimates of the market-based energy purchase cost for 2012/13 indicate that this cost is between \$65 and \$71 per MWh (Table 3.6).

Table 3.6 Frontier Economics' updated estimate of the market-based energy purchase cost, including a volatility allowance (\$2011/12 \$/MWh)

	2011/12 ^a (current)	Final decision 2012/13
EnergyAustralia	48.82	66.38
Integral Energy	50.76	70.66
Country Energy	46.52	65.04

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

As a comparison, Table 3.7 shows Frontier Economics' calculation of the market-based cost under a no carbon scenario (ie, excluding the forecast impact of the carbon pricing mechanism). A comparison of Table 3.6 and Table 3.7 suggests that the impact of the proposed carbon pricing mechanism on the market-based cost will be around \$26 to 28/MWh in 2012/13, significantly more than the impact of the carbon pricing mechanism on the LRMC of generation in 2012/13 (around \$20/MWh).

Table 3.7 Frontier Economics' advice on the market-based energy purchase cost for the 2012 annual review, excluding the forecast impact of the carbon pricing mechanism (2011/12\$/MWh)

	2011/12 ^a (current)	2012/13
EnergyAustralia	48.82	39.66
Integral Energy	50.76	42.30
Country Energy	46.52	38.60

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

The higher impact of the carbon pricing mechanism on the market-based cost reflects the higher 'pass through rate'³⁹ under a market-based approach. This is due to the relative difference in the mix of investment and dispatch (and higher resultant emissions intensity) in the market-based approach relative to the LRMC approach to calculating energy purchase costs. The stand-alone LRMC of generation is a theoretical system in which investment is able to respond immediately to the carbon price. As it constructs a least cost mix of generation in each year, the introduction of a carbon price leads to a significant change in the proportion of gas fired generation plant over the determination period. Gas fired generation plant has a lower emissions intensity and therefore contributes to a lower carbon 'pass through' rate overall. However, this does not reflect the functioning of the market.

³⁹ The carbon 'pass through' rate refers to the extent to which the cost of carbon is passed through by generators into wholesale electricity prices. The higher the pass through rate the more the costs of carbon are passed through into wholesale electricity prices. The extent to which generators 'pass through' their costs will depend on a range of factors, including the emissions intensity of the marginal plant (before and after the introduction of the carbon pricing mechanism), the existing mix of generation technologies in each NEM region, and the competitiveness or market dynamics of the NEM.

In contrast, the market-based approach reflects the actual mix of investment and dispatch in the NEM where there is a lower proportion of gas-fired generation plant, contributing to a higher average emissions intensity and therefore a higher carbon 'pass through' rate overall. In short, under the market-based approach investment is not able to respond immediately to the carbon price. However, over time new investment is likely to enter the market. This is likely to lower the average emissions intensity of the NEM.

The impact of carbon on the market-based cost for 2012/13 is \$11-12 lower than the estimated impact of the Carbon Pollution Reduction Scheme modelled in our 2010 determination. The lower cost in the 2012 annual review is due to:

- ▼ The legislated carbon price for 2012/13 being lower than the carbon price assumed in the 2010 determination.⁴⁰
- ▼ A lower carbon pass-through rate resulting from lower demand in the NEM resulting in a different mix of marginal generators (which set the carbon pass through for that half-hour) and less strategic bidding opportunities.

3.2.5 Our conclusions on the updated Energy Purchase Cost Allowance

After considering Frontier's advice on the LRMC of generation and the market-based energy purchase cost, we have decided to accept Frontier's advice on both costs.

As Table 3.8 shows, the LRMC is the higher of these costs. Therefore, we have set the energy purchase cost allowance (EPCA) for each Standard Retailer in 2012/13 in line with Frontier's updated estimates of this cost for this year, as required by our terms of reference.

⁴⁰ The 2010 determination assumed a carbon price of \$27.29 (\$2011/12).

Table 3.8 Comparison of Frontier Economics' updated estimates of the LRMC of generation and the market-based energy purchase cost (\$2011/12 \$/MWh)

	2011/12 ^a (current)	2012/13
LRMC		
EnergyAustralia	67.66	85.37
Integral Energy	70.98	89.02
Country Energy	63.60	82.05
Market-based cost		
EnergyAustralia	48.82	66.38
Integral Energy	50.76	70.66
Country Energy	46.52	65.04

^a The 2011/12 cost allowances are those included in our 2011 annual review, and indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

We note that setting the EPCA in line with the LRMC in 2012/13 results in an EPCA that is around \$17 to \$19/MWh higher than it would be if set in line with the market-based purchase cost (which has been determined using a point in time approach). This flows through to prices, and results in customer bills in 2012/13 being around 7.1% to 9.3% higher than they would be if the EPCA were set in line with the market-based purchase cost.

While the loosening of the supply-demand balance in 2012/13 accentuates the difference between the LRMC of generation and the market-based energy purchase cost, this is partly offset by the smaller impact of the carbon price on the LRMC of generation. (See section 3.2.4 for detail.)

3.3 Green energy cost allowances

IPART's final decisions on the cost allowances for complying with the Large-scale Renewable Energy Target, Small-scale Renewable Energy Scheme, and the NSW Energy Savings Scheme (ESS) in 2012/13 are as shown in Table 3.9.

Table 3.9 Final decisions on cost allowances for complying with LRET, SRES and ESS (\$2011/12 \$/MWh)

	2011/12 ^a (current)	2012/13
EnergyAustralia		
LRET	2.67	4.43
SRES	6.15	5.37
ESS	1.11	1.51
Integral Energy		
LRET	2.68	4.46
SRES	6.18	5.52
ESS	1.11	1.51
Country Energy		
LRET	2.69	4.44
SRES	6.25	5.61
ESS	1.11	1.51

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

In line with our terms of reference, we have set these allowances based on our estimates of the efficient costs each Standard Retailer will incur in meeting its obligations under present and future national and state renewable energy, and energy efficiency schemes.

We note that these allowances do not include any costs related to:

- ▼ the carbon pricing mechanism (see section 3.2.2 for detail)
- ▼ cost pass through applications submitted by the Standard Retailers (see Chapter 4 for detail).

Rather this section considers the efficient costs associated with complying with the green energy schemes that are imposed on retailers in 2012/13.

3.3.1 Cost of complying with the Large-scale Renewable Energy Target

When we made the 2010 determination, there was a single Renewable Energy Target (RET) scheme, and a target that 20% of Australia's annual electricity consumption (or 45,000 GWh) would come from renewable sources by 2020. Since then, the Federal Government has made changes to this scheme splitting it into 2 parts:

- ▼ the Large-scale Renewable Energy Target (LRET), and
- ▼ the Small-scale Renewable Energy Scheme (SRES).⁴¹

The LRET is essentially the same as the RET scheme. However, it has new legislated annual targets which require at least 41,000 GWh of electricity per year to come from large-scale renewable electricity generation by 2020.⁴² Under the LRET, electricity retailers are obliged to surrender a certain number of Large Scale Certificates (LGCs) per year, each of which represents 1 MWh of renewable energy generation from large-scale technology. This number is determined by the Renewable Power Percentage (RPP) published by the Clean Energy Regulator (CER) each year, which is derived from the legislated target for that year. The price of the certificates is determined by the market.

In updating the modelling of the costs of complying with the LRET scheme, we need to make assumptions about this price for each year to 2020. A carbon price will lower the costs of complying with the LRET (all else being equal).⁴³

We made a final decision to include the legislated carbon prices in the modelling from 2012/13 to 2014/15, and the Commonwealth Treasury's forecast of carbon prices in the modelling from 2015/16 to 2019/20.⁴⁴ We acknowledge that it is difficult to validate assumptions about carbon prices after 2015 at this stage. However, we consider the Commonwealth Treasury's forecasts of carbon prices are currently the best available data.

To update our decisions on the cost allowances for complying with the RET scheme, we asked Frontier to estimate the cost each Standard Retailer is likely to incur in 2012/13 in complying with the LRET.

⁴¹ For more information see the Department of Climate Change and Energy Efficiency website: <http://www.climatechange.gov.au/government/initiatives/renewable-target.aspx>

⁴² <http://www.climatechange.gov.au/en/government/initiatives/renewable-target/fs-enhanced-ret.aspx>

⁴³ A carbon price will increase the black costs of energy as the costs of carbon emissions become part of a generator's marginal costs. All else being equal, increasing the black costs of energy will lower the marginal cost of a Renewable Energy Certificate (REC) by reducing the subsidy renewable generators need to cover their costs.

⁴⁴ SGLP core scenario from the Commonwealth Treasury's, *Strong growth, low pollution: modelling a carbon price* report, September 2011. http://www.treasury.gov.au/carbonpricemodelling/content/chart_table_data/chapter5.aspx

Estimating each Standard Retailer's costs in complying with the LRET in 2012/13 involves:

- ▼ estimating the cost of 1 LGC in each year
- ▼ determining the number of LGCs the retailer will be obliged to surrender in each year based on the relevant RPP
- ▼ calculating the cost of compliance per MWh by multiplying this cost by the relevant RPP.

Estimating the cost of one LGC

In making the 2010 determination, we used a cost-based approach to estimate the cost of one Renewable Energy Certificate (REC) in each year of the determination period. This involved estimating the cost of one REC (for 1 MWh of renewable generation) based on the LRMC of meeting the overall national target for the relevant year.⁴⁵

To estimate the cost of one LGC in 2012/13 for this annual review, we used the same approach and:

- ▼ used the new large-scale renewable energy targets for these years
- ▼ excluded small-scale technologies from contributing to the target (ie, only large-scale technologies such as wind are included)
- ▼ updated the estimates of existing LGCs created (ie, certificates that have already been created but not surrendered)
- ▼ used updated input cost assumptions, as discussed in section 3.2.1.

The cost of a Large Scale Certificate rose from \$38.24/LGC in the draft report to \$45.48/LGC in the final report. This is the result of the increase in the WACC, which increases the amortised annual capital cost of generation. As meeting the LRET target requires significant amounts of new wind investment (and the total cost of wind plant is mostly capital, with little operating costs), increasing the WACC from 6.5% to 7.1% increases the incremental cost of meeting the LRET.

Table 3.10 Frontier Economics' final estimate of the cost of one LGC (\$2011/12)

	2011/12 ^a (current)	2012/13
Estimated cost per LGC	37.20	45.48

^a The 2011/12 cost estimates are those included in our 2011 annual review, and indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

⁴⁵ The LRMC of meeting the RET is calculated as an output from Frontier Economics' total cost optimisation model. The RET is imposed as a 'constraint' on the model which optimises thermal (non-renewable) and renewable markets concurrently. This means it accounts for any interaction between the wholesale pool price and the Renewable Energy Certificate (REC) price. This ensures that the costs associated with the RET are not double-counted.

Further, the higher cost per LGC in 2012/13 is also due to a reduction in electricity demand which decreases the 'black' cost of electricity. This is partly offset by the introduction of a carbon price, which increases pool prices and all else being equal, reduces the subsidy required to meet the cost of building renewable generation to meet the scheme targets.

Frontier's final report provides further detail on its modelling of LGC prices.

Estimating the number of LGCs that retailers will be obliged to surrender

The annual LRET for 2012 to 2020 are specified in the legislation. CER determines the RPPs which determine the number of certificates that retailers must surrender per year based on these targets.⁴⁶

The RPP for 2012 was recently published at 9.15%.⁴⁷ The RPP for 2012 is slightly higher than the estimated 2012 RPP used in the 2011 annual review. This is because the 2012 RPP was revised in December 2011 to allow for an increase in the target to account for Waste Coal Mine Gas becoming eligible to create LGCs.⁴⁸

We converted the published RPP for 2012 and estimated RPP for 2013 to a financial year basis using a simple average. Table 3.11 shows the final 2012/13 RPP and compares it to the RPP estimated in the 2011 annual review.

Table 3.11 Renewable Power Percentages

	RPP used in the 2012 annual review	RPP used in the 2011 annual review
2012/13	9.78%	9.34%

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012; IPART, *Changes in regulated electricity retail prices from 1 July 2011 – Final Report and Determination*, June 2011.

⁴⁶ The RPP is published in the *Renewable Energy (Electricity) Regulations 2001* (Cth) (regulations) prior to 31 March of the year in which it applies. This allows liable entities time to plan their LGC acquisition strategies. If the RPP for a year is not published prior to 31 March then the default formula in section 39(2)(b) of the *Renewable Energy (Electricity) Act 2001* (Cth) applies and is used to determine the default RPP for the given year.

⁴⁷ This is equivalent to 10.6 million LGCs as a proportion of total estimated electricity consumption for the 2011 calendar year.

⁴⁸ The number of GWh specified under the subsection 40(1) of the Act were increased by 425 GWh for 2012 and 850 GWh for 2013 to 2020. Source: <http://ret.cleanenergyregulator.gov.au/For-Industry/Liable-Entities/Renewable-Power-Percentage/rpp>

Calculating the cost of complying with the LRET

Using the inputs set out in Tables 3.10 and 3.11 above, we calculated each Standard Retailer's cost of complying with the LRET (Table 3.12). This cost is around \$1.80/MWh higher than the cost of complying with the RET in 2011/12. This is primarily due to:

- ▼ the higher RPP in 2012/13 as a result of the higher targets specified in the legislation, and
- ▼ the higher estimated cost of one LGC, primarily due to an increase in the WACC.

Table 3.12 Estimates of the cost of complying with the LRET (\$2011/12 \$/MWh)

Financial Year	2011/12 ^a (current)	2012/13
EnergyAustralia	2.67	4.43
Integral Energy	2.68	4.46
Country Energy	2.69	4.44

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

We have considered Frontier's calculations, and the reasons for the increase in the cost of complying with the LRET. We have made a final decision to set each Standard Retailer's cost allowance for complying with the LRET in 2012/13 in line with Frontier's estimate of this cost.

3.3.2 Cost of complying with the Small-scale Renewable Energy Scheme

The SRES is a new obligation on retailers since the 2010 determination. Under this scheme, retailers are obliged to surrender Small-scale Technology Certificates (STCs) from households and small businesses that take up small-scale technologies like solar panels and solar hot water heaters.

Each STC represents 1 MWh of renewable energy from small-scale generation (except for the Solar Credits multiplier effect).⁴⁹ The number of STCs that retailers must surrender per year is not capped – rather it depends on the extent to which customers take up small-scale technologies. While the price of each certificate is determined by the market, certificates can be sold through a clearing house for a set price of \$40.⁵⁰

⁴⁹ The Solar Credits multiplier allows more STCs to be created than MWh of renewable energy produced. This means that the number of certificates created exceeds the renewable energy generated.

⁵⁰ CER manages the STC Clearing House. See <http://ret.cleanenergyregulator.gov.au/About-the-Schemes/sres>

Estimating each Standard Retailer's costs in complying with the SRES in 2012/13 involves:

- ▼ deciding on the appropriate cost per STC
- ▼ deciding on the retailers' obligations in relation to surrendering STCs
- ▼ calculating the cost of compliance using these decisions.

Deciding on the appropriate cost per STC

Rather than estimate the resource cost of a certificate (as we did with the LGC), we have made a final decision to set the cost per STC in line with CER's fixed price of \$40 (nominal) for 2012/13.

Our reasons for setting the cost per STC in line with CER's fixed price of \$40 (nominal) for 2012/13 are as follows:

- ▼ This is consistent with the approach adopted in our 2011 annual review.
- ▼ It is problematic to determine a cost-based estimate consistent with our approach to the LRET.
- ▼ It is problematic to forecast the market price of certificates over 2012/13 given that it is an emerging market and there are a range of factors that affect the supply that are difficult to forecast including government policy and market participants carrying costs.
- ▼ While market prices are currently below \$40 this reflects a short term mismatch between supply and demand. It is likely that certificates sold at low prices reflect some participants' cost of carry.
- ▼ Over the longer term we would expect market prices to be consistent with the fixed clearing house price of \$40 given that one of the stated objectives of the SRES is to provide households that have placed their certificates in the clearing house a fixed price of \$40 per certificate. CER aims to achieve the \$40 fixed price over the longer term by including a 'catch up' element in future binding STPs that equates demand with supply.

In a confidential submission from Sunwiz Consulting, we were provided with SRES certificate purchases, sales and ownership data. It was suggested that this data could be used to produce a more suitable estimate of STC prices. However, after considering this information we found that it was not suitable for a long-term view of certificate prices. This is because the data was historical, and provides no indication of forward looking prices. In addition, using this data to determine STC prices would represent a change in methodology which we have locked in over this determination period.

Deciding on retailers' obligations to surrender STCs

The binding Small-scale Technology Percentage (STP) prescribed for 2012 is 23.96%, which is equivalent to 44.8 million STCs as a proportion of total estimated electricity consumption for that calendar year.⁵¹ On 30 March 2012, CER updated its indicative non-binding STPs of 7.94% for 2013, which is equivalent to 15.07 million STCs.

These STPs, in addition to the RPPs for the LRET, represent significantly larger liabilities on retailers than the liabilities that applied in 2011. For example, retailers will be required to surrender certificates equivalent to around 33% of their eligible load⁵² under the combined LRET and SRES in 2012.⁵³ This is significantly larger than the liability under these schemes of around 20% in 2011. These changes impose large costs on electricity retailers, and ultimately customers.

We have used the binding and non-binding STPs in Table 3.13.

Table 3.13 Small-scale Technology Percentages used in making final decision (% of eligible load)

Calendar Year	STP
2012	23.96%
2013	7.94%

Source: *Renewable Energy (Electricity) Regulations 2001* (Cth).

Calculating the cost of complying with the SRES

The compliance obligations for surrendering STCs are based on calendar year quarters, and are weighted towards the first 2 quarters of each year. That is, retailers are obliged to surrender around 35% and 25% of their total year's obligation in Q1 and Q2 of 2012.

Using the final decisions discussed above, we calculated these quarterly costs and tallied them into financial years (Table 3.14). The resulting cost of complying with the SRES is around \$5 to \$6/MWh in \$2012/13.

⁵¹ The STP is published in the *Renewable Energy (Electricity) Regulations 2001* (Cth) (regulations) prior to 31 March of the year in which it applies.

⁵² Eligible load is the estimated total amount of electricity acquired in the year minus the estimated total number of partial exemptions to be claimed in that year.

⁵³ This includes an STP of 23.96% in 2012 and a RPP of 9.15% in 2012.

Table 3.14 Estimate of the cost of complying with the SRES (\$2011/12 \$/MWh)

Financial Year	2011/12 ^a (current)	2012/13
EnergyAustralia	6.15	5.37
Integral Energy	6.18	5.52
Country Energy	6.25	5.61

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

Source: Frontier Economics, *Energy costs - annual review for 2012/13, A final report prepared for IPART*, June 2012.

In addition to the allowances included in Table 3.14, Standard Retailers have made cost pass through applications seeking to recover additional SRES costs incurred in 2011/12. These additional costs are discussed in Chapter 4.

We note that the cost of complying with the SRES is a significant additional cost to retailers,⁵⁴ and will directly lead to higher retail electricity prices. We welcome announcements over the past year by the Commonwealth and NSW Governments to reduce the level of subsidies paid to customers who install solar PV. All else being equal, these changes will reduce the costs of complying with the SRES in the future. However we have made a number of additional recommendations that will further help to reduce the costs of complying with the SRES in future years and reduce the pressure on retail electricity prices (refer to Chapter 7).

3.3.3 NSW Energy Savings Scheme

Our 2010 determination included allowances for the cost of complying with the NSW Energy Savings Scheme (ESS). We set this allowance based on the penalty price of \$24.50 per MWh as a proxy for the price of Energy Savings Certificate (ESC) because:

- ▼ the problems involved in estimating the cost of overcoming barriers to the take-up of energy efficiency projects made it difficult to use a cost-based approach to estimate this cost
- ▼ the absence of historic ESC prices made it difficult to use a market-based approach.

We have committed to maintaining this methodology, and have updated the penalty price to \$26.45/MWh consistent with the CPI methodology outlined in the *Electricity Supply Act 1995*. This equates to an after-tax price of \$37.79/MWh.

⁵⁴ CER estimated 44.8 million small scale certificates will need to be surrendered across Australia in 2012. At a cost of \$40 per certificate the cost of complying with the SRES across Australia in 2012 will be approximately \$1.79bn.

The ESS targets are defined in proportion of liable annual NSW electricity sales. Using the same methodology adopted in the 2011 annual review, we estimated that the cost of complying with the ESS in 2012/13 is \$1.51/MWh. This cost is similar to the allowances for 2012/13 included in the 2011 annual review, given that the ESS targets have not changed and the penalty price has been increased by the CPI as specified in the legislation.⁵⁵

3.4 Energy losses

IPART's final decision on the cost allowance for each Standard Retailer's energy losses in 2012/13 are as shown in Table 3.15.

Table 3.15 Relevant energy loss factors and final decisions on cost allowances for energy losses (% and \$2011/12 \$/MWh)

	2011/12 ^a (current)	2012/13
EnergyAustralia		
%	6.57	6.49
\$/MWh	5.15	6.33
Integral Energy		
%	7.97	7.57
\$/MWh	6.52	7.67
Country Energy		
%	9.23	10.28
\$/MWh	6.88	9.71

^a The 2011/12 cost allowances are those included in our 2011 annual review indexed to \$2011/12 using inflation of 1.6%.

We have included allowances for the costs Standard Retailers incur when some of the energy they purchase in the NEM is lost as it moves via the transmission and distribution networks to their customers' premises. Retailers charge their customers based on the energy consumption recorded at the customer's meter, but must buy more than this amount of energy to account for losses of transporting this energy to customers. Therefore, they incur costs equivalent to the total energy they purchase minus the total energy they bill customers for.

To calculate these costs we use the appropriate loss factor in percentage terms (including both transmission and distribution losses), and apply this to the sum of our decisions on the EPCA, NEM fees and green energy cost allowances to determine an allowance in \$/MWh.

⁵⁵ In the 2011 annual review the estimated cost of complying with the ESS in 2012/13 was \$1.51 in \$2011/12.

We have updated these allowances to account for the most recent loss factors published by AEMO.⁵⁶

⁵⁶ See AEMO, *Distribution Loss Factors for the 2012/12 Financial Year*, (April 2012) and *List of Regional Boundaries and Marginal Loss Factors for the 2012-13 Financial Year*, (May 2012).

4 Cost pass through applications

Since we completed our 2011 annual review, Standard Retailers' liability under the Small-scale Renewable Energy Scheme (SRES) has changed. This is because the binding Small-scale Technology Percentage (STP), which determines Standard Retailers' liability under SRES, has been prescribed for 2012. The binding 2012 STP is higher than the STP estimated for 2012, which we used in our SRES allowance for 2011/12 as part of the 2011 annual review.

Origin Energy has applied on behalf of Country Energy and Integral Energy to pass through from 1 July 2012 additional costs that the Standard Retailers have incurred in 2012 as a result of the higher binding 2012 STP. TRUenergy has also submitted a cost pass through application on behalf of EnergyAustralia.⁵⁷

The cost pass through mechanism in our 2010 determination allows Standard Retailers to pass through material, unforeseen changes in costs arising from eligible events. Last year, we indicated that we would assess cost pass through applications concurrently with our annual review of price changes from 1 July 2012.⁵⁸

The section below sets out our final decisions on the cost pass through applications and the amounts that the Standard Retailers can pass through to customers from 1 July 2012. The following sections explain how we assessed the applications and discuss our findings and decisions in more detail.

⁵⁷ We note that the Standard Retailers' applications met the notification requirements specified under Schedule 4, clauses 3.2 and 4.2 of the 2010 determination. The applications are available on our website at:
http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012

⁵⁸ IPART, *Changes in regulated electricity prices from 1 July 2011 – Final Report and Determination*, June 2011, p 45.

4.1 Overview of our final decisions on cost pass through applications

IPART's final decision is that the change in Standard Retailers' liability under SRES:

- 1 constitutes a Regulatory Change Event, and therefore a Pass Through Event, for the 2011/12 year, and
- 2 results in Positive Pass Through Amounts for the 2011/12 year for each Standard Retailer as set out in Table 4.1, which may be passed through to customers from 1 July 2012.

Table 4.1 Final decision on the pass through amounts for the changes to Standard Retailers' SRES liability (\$2011/12, \$MWh)

	Total pass through amount
EnergyAustralia	2.23
Integral Energy	2.19
Country Energy	2.13

Note: Pass through amounts include the retail margin, time value of money and energy losses.

Our final decision reflects updates to inflation, the WACC for electricity retail businesses and electricity loss factors. Since our draft report, we have also revised the way we apply the retail margin to the incremental costs arising from changes to the SRES. Overall, these changes have a small impact on the pass through amounts in Table 4.1 relative to the draft report.

In making the final decision on the pass through amount arising from the changes to Standard Retailers' liability under SRES, we considered:

- ▼ the difference between the binding 2012 STP and the STP estimated for 2012, which we used in our SRES allowance for 2011/12 as part of the 2011 annual review
- ▼ the cost pass through applications received from the Standard Retailers, and
- ▼ our methodology for determining the cost of complying with the SRES established in the 2011 Annual Review.

4.2 Assessment process for cost pass through applications

The process for assessing cost pass through applications is set out in the 2010 determination.⁵⁹ This process involves determining:

- ▼ whether the event qualifies as a Pass Through Event (ie, a Regulatory Change Event or a Taxation Change Event)
- ▼ whether the event results in materially higher or lower costs for the Standard Retailer (ie, the change in costs must pass the materiality threshold test), and

⁵⁹ Schedule 4, clauses 3.2 and 4.2 of the 2010 determination.

- ▼ the appropriate pass through amounts for the event.

In the following 2 sections, we outline the definition of a Pass Through Event and materiality threshold test.

4.2.1 What is a Pass Through Event?

The first step in the assessment process is to establish whether or not an event qualifies as a “Pass Through Event”. The 2010 determination defines a “Pass Through Event” to mean a “Regulatory Change Event” or a “Tax Change Event.” For the change in Standard Retailers’ liability under SRES, the “Regulatory Change Event” is the relevant definition.

An event is a Regulatory Change Event if it meets 2 requirements. The first requirement is that the event must be:

- ▼ a decision made by any Authority, or
- ▼ the coming into operation of an Applicable Law, or
- ▼ the coming into operation of an amendment to or revocation of an Applicable Law.

The second requirement is that the decision or change in Applicable Law must have the effect of substantially varying:

- ▼ the nature, scope, standard or risk of electricity services supplied by Standard Retailers, or
- ▼ the manner in which the Standard Retailer is required to undertake any activity in order to provide those services.

4.2.2 What is the materiality threshold test?

Once we are satisfied that a Regulatory Change Event has occurred, we conduct a materiality threshold test to determine whether the incremental costs arising from the event can be passed through to small retail customers.

The materiality threshold test requires the event to result in a Standard Retailer’s efficient, incremental and justified **average annual costs** incurred or saved (or likely to be incurred or saved) over the term of the determination exceeding 0.25% of the Standard Retailer’s total revenue arising out of regulated retail prices for the year in which the event occurs.

4.3 Our assessment of cost pass through applications

Based on our assessment of the cost pass through applications in respect of the change in Standard Retailers' liability under SRES, we determined that:

- ▼ this constitutes a Regulatory Change Event, and therefore a Pass Through Event in respect of the 2011/12 year for each Standard Retailer, and
- ▼ this Regulatory Change Event passes the materiality threshold test for each Standard Retailer.

The sections below discuss our assessment in detail.

4.3.1 The change in Standard Retailers' SRES liability is a Regulatory Change Event

Standard Retailers have notified IPART that a Positive Pass Through Event has occurred.⁶⁰ The event relates to the Standard Retailers' liability under SRES in 2011/12.

As explained above, a Standard Retailer's liability under SRES is determined by the Small-scale Technology Percentage (STP). We determine an SRES cost allowance for each financial year based on the STP. The STP is a percentage of liable electricity purchases for which certificates must be surrendered. Legislation requires a binding STP to be prescribed in the Regulations for each calendar year.⁶¹ It is scheduled to be announced by the Clean Energy Regulator (CER)⁶² by 31 March of the year to which it applies, otherwise a default STP is determined under a formula in the legislation. By 31 March, the CER must also publish non-binding estimates of the STP for the following 2 years.

There is a timing issue in relation to our determination of the SRES cost allowances. The binding STP is set for a calendar year, but IPART determines prices on a financial year basis. As a result, the SRES cost allowance we determined for 2011/12 used 6 months of the **binding** 2011 STP and 6 months of a **non-binding (or estimated)** 2012 STP (since the binding 2012 STP was not yet prescribed). This means our annual reviews are always 6 months out of step with the binding STPs.

⁶⁰ For a Standard Retailer, a Positive Pass Through Event is a Pass Through Event which results in that Standard Retailer incurring materially higher costs in providing Pass Through Services than it would have incurred but for that event. See Schedule 4, clause 2(a) of the 2010 determination.

⁶¹ The *Renewable Energy (Electricity) Act 2000* (Cth), s40A requires the STP to be prescribed in the *Renewable Energy (Electricity) Regulations 2001* (Cth).

⁶² The Clean Energy Regulator has responsibility for the functions previously held by the Office of the Renewable Energy Regulator.

Recently, the binding 2012 STP was prescribed in the Regulations.⁶³ At 23.96%, the rate of liability for 2012 is significantly higher than the estimated rate (16.75%) which we used in setting the 2011/12 SRES cost allowance in our 2011 Annual Review. We have previously indicated that if the binding 2012 STP is materially different from the obligation assumed in our 2011 Annual Review, the cost pass through mechanism may be used to account for this change.⁶⁴

Our final decision is that the change in Standard Retailers' liability under SRES which results from the prescription of the binding 2012 STP qualifies as a Regulatory Change Event. This is because:

- ▼ The prescription of the binding 2012 STP involved an amendment to the Regulations.⁶⁵ This constitutes the coming into operation of an amendment to an Applicable Law for the purposes of the 2010 determination.
- ▼ The binding 2012 STP substantially varies the manner in which Standard Retailers have to undertake an activity in order to provide Pass Through Services (ie, in complying with compulsory SRES obligations).

4.3.2 What are the incremental costs as a result of the change in Standard Retailers' SRES liability?

To establish the efficient, incremental costs arising from the change in Standard Retailers' liability under SRES, we:

- ▼ recalculated the cost of complying with SRES in 2011/12 and 2012/13 (using the same methodology as the 2011 annual review and holding all modelling input assumptions constant, other than updating for the binding 2012 STP)
- ▼ subtracted the cost of complying with SRES from the 2011 annual review from the revised cost of complying with SRES calculated above, to determine the incremental SRES costs, and
- ▼ adjusted the incremental SRES costs for a retail margin and the time value of money.

In the 2011 annual review, we calculated the costs of complying with SRES in 2010/11 dollars. We have adjusted these costs to 2011/12 dollars using updated inflation of 1.6%.

⁶³ *Renewable Energy (Electricity) Regulations 2001* (Cth).

⁶⁴ IPART, *Changes in regulated electricity retail prices from 1 July 2011 – Final Report and Determination*, June 2011, p 45.

⁶⁵ The *Renewable Energy (Electricity) Regulations 2001* (Cth), clause 23A was amended by the *Renewable Energy (Electricity) Amendment Regulation 2012 (No.2)* (Cth) to insert the binding 2012 STP (accessible at <http://www.comlaw.gov.au/Details/F2012L00400>).

Incremental costs of complying with SRES

Our approach for determining the cost of complying with SRES for the cost pass through mechanism is the same as our approach in our annual reviews. This is discussed in detail in section 3.3.2 of this report. Appendix D also contains more information about how Standard Retailers' liability is determined under SRES.

In summary, the cost of the complying with SRES is determined from the number of certificates a retailer is required to surrender, multiplied by the certificate price:

$$\text{Obligation (\$m)} = [\text{relevant acquisitions}^{66} (\text{MWh}) \times \text{STP (\%)}] \times \text{certificate price}$$

We have held all modelling assumptions constant with those that we used in the 2011 annual review, with the exception of the binding 2012 STP.⁶⁷ This ensures that the incremental costs that we determine relate only to the prescription of the binding 2012 STP.

The incremental costs of complying with SRES are outlined in Table 4.2 below. These are the incremental costs before adjusting for a retail margin and the time value of money.

Table 4.2 Final decision on the incremental costs of complying with SRES (\$2011/12, \$m)

	2011/12	2012/13	Average annual cost
EnergyAustralia	11.7	6.4	9.0
Integral Energy	6.4	3.7	5.1
Country Energy	8.7	5.5	7.1

Note: Figures may not add up due to rounding.

Source: IPART.

Adjusting the incremental SRES costs for a retail margin and holding costs

The Standard Retailers have applied for the following items to be included in the incremental costs arising from SRES:

- ▼ a retail margin, and
- ▼ the time value of money.

⁶⁶ Relevant acquisitions are large purchases of electricity by retailers – see Sections 31 and 32 of the *Renewable Energy (Electricity) Act 2000* (Cth).

⁶⁷ A submission from Sunwiz suggested that we use a different STC price. However, for the purpose of the cost pass through decision, we update the STP only.

Including a retail margin

In our 2010 determination, we set a 5.4% retail margin which applied to all the Standard Retailers' costs, including energy purchase costs (which incorporates costs of complying with SRES), network costs and retail costs. In our draft report, we applied the 5.4% margin to the incremental costs arising from SRES using the following formula: incremental cost \times (1 + 5.4%). This was also the approach taken by the Standard Retailers in their cost pass through applications.⁶⁸

In our final report, we have applied the 5.4% margin using the formula: incremental cost / (1 - 5.4%). This method is consistent with how the retail margin is normally applied in our pricing determinations and ensures the dollar amount of the margin is equivalent to 5.4% of total costs.⁶⁹ Applying the retail margin in this way results in a small increase to the pass through amount relative to the approach in the draft report.

Including the time value of money

The Standard Retailers have submitted that they should be compensated for the delay between incurring their additional liability under SRES and when they are able to recover these costs.

Providing compensation for the time value of money is appropriate because Standard Retailers incur their additional SRES liability during the second half of 2011/12 but recover their costs over 2012/13. It is difficult to determine when retailers will recover their costs due to different customer billing cycles. We have not based the compensation on a full year as costs will start to be recovered from the beginning on 2012/13. Instead, we have assumed there will be a 9-month delay in cost recovery. This is consistent with how we assessed cost pass throughs in our draft report and the 2011 annual review.⁷⁰

We have calculated the time value of money using an updated WACC. We have calculated a real pre-tax WACC for an electricity retailer of 8.0%, which is higher than the WACC of 7.6% used in our draft report (see Appendix B for more information about the WACC).

⁶⁸ Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Country Energy Standard Retail Contracts*, March 2012, p 6; Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Integral Energy Standard Retail Contracts*, March 2012, p 6; TRUenergy, *Positive Pass Through Event Application*, March 2012, p 3.

⁶⁹ For more information about how the retail margin is applied, see IPART, *Review of regulated retail tariffs and charges for electricity 2010 – 2013 – Final Report*, March 2010, p 129.

⁷⁰ IPART, *Changes in regulated electricity retail prices from 1 July 2011 – Final Report and Determination*, June 2011, p 60.

Standard Retailers submitted that the time value of money should be determined using a 9 month holding period, but using a higher WACC.⁷¹ The WACC proposed by Standard Retailers was either that from our 2010 determination (9.1%) or from the 2011 annual review (8.9%). However, we have used an updated WACC as this more accurately reflects current holding costs.

In summary, we have accounted for the time value of money by:

- ▼ assuming a 9-month delay between when their additional SRES liability is incurred and when costs are recovered, and
- ▼ using a real pre-tax WACC for an electricity retailer of 8.0% (see Appendix B).

Table 4.3 shows the incremental costs for each Standard Retailer which include the retail margin and time value of money.

Table 4.3 Final decision on incremental SRES costs including margin and time value of money (\$2011/12, \$m)

	2011/12	2012/13	Average annual cost
EnergyAustralia	13.1	6.8	9.9
Integral Energy	7.1	3.9	5.5
Country Energy	9.7	5.9	7.8

Note: Figures may not add up due to rounding.

Source: IPART.

The incremental costs submitted by Standard Retailers are slightly different to our final decision in Table 4.3.⁷² This is because the Standard Retailers have determined their SRES liability using different relevant acquisitions (MWh) to what we have used. Consistent with our 2011 annual review, we have used the forecast regulated load measured at the distribution connection point for the relevant calendar year.⁷³ In addition, as discussed above, the WACC proposed by the Standard Retailers for calculating the time value of money is higher than the WACC we have used.

⁷¹ Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Country Energy Standard Retail Contracts*, March 2012, p 6; Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Integral Energy Standard Retail Contracts*, March 2012, p 6; TRUenergy, *Positive Pass Through Event Application*, March 2012, p 3.

⁷² Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Country Energy Standard Retail Contracts*, March 2012, p 6; Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Integral Energy Standard Retail Contracts*, March 2012, p 6; TRUenergy, *Positive Pass Through Event Application*, March 2012, pp 2-3.

⁷³ For more information see Frontier Economics, *Energy costs – annual review for 2011/12 and 2012/13 – A Final Report prepared for IPART*, June 2011, pp 50-51.

4.3.3 The change in Standard Retailers' SRES liability satisfies the materiality threshold test

Our final determination is that the changes to Standard Retailers' liability under SRES satisfies the materiality threshold and therefore qualifies as a Positive Pass Through Event for each Standard Retailer.

Table 4.4 shows that the average annual incremental costs range between 0.5% to 0.6% of Standard Retailer's notional revenue for 2011/12. This exceeds the materiality threshold set in the 2010 determination of 0.25% of total revenue for the relevant year.

Table 4.4 Materiality threshold test for the change in Standard Retailers' SRES liability (\$2011/12)

	Average annual incremental cost (\$m)	Notional revenue for 2011/12 (\$m)	Proportion of total revenue (%)
EnergyAustralia	9.9	1,804.3	0.5
Integral Energy	5.5	1,000.0	0.6
Country Energy	7.8	1,463.1	0.5

Note: Figure may not add up due to rounding.

4.3.4 The efficient and incremental costs of the change in Standard Retailers' SRES liability incurred in 2011/12 to be passed through in 2012/13

The incremental costs for 2011/12 set out in Table 4.3 will be passed through to customers in 2012/13 prices. To determine the amount in \$/MWh passed through to retail prices we need to divide the aggregate dollar figures in Table 4.3 by the load forecast for 2012/13. The Positive Pass Through Amounts that we have determined for each Standard Retailer are set out in Table 4.5. These Positive Pass Through Amounts may be passed through to customers from 1 July 2012.

Table 4.5 Final decision on the pass through amounts for the change in Standard Retailers' SRES liability (\$2011/12, \$MWh)

	Pass through amount
EnergyAustralia	2.23
Integral Energy	2.19
Country Energy	2.13

Note: Pass through amounts include the retail margin, time value of money and energy losses.

The Positive Pass Through Amounts in Table 4.5 are different to those submitted by Standard Retailers.⁷⁴ This is because the load forecasts we have used for 2012/13 are different to those used by the Standard Retailers. We have used the load forecasts consistent with those used in making the 2010 determination. These load forecasts are measured at the customer's premises, allowing for the value of energy losses. We have updated the loss factors since our draft decision to reflect the transmission and distribution loss factors approved by AEMO.

⁷⁴ Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Country Energy Standard Retail Contracts*, March 2012, p 6; Origin Energy, *Cost Pass Through Application to the Independent Pricing and Regulatory Tribunal for Customers on Integral Energy Standard Retail Contracts*, March 2012, p 6; TRUenergy, *Positive Pass Through Event Application*, March 2012, p 3.

5 | Average price increases from 1 July 2012

We regulate retail prices using a weighted average price cap (WAPC) that allows the Standard Retailers to set individual regulated retail prices subject to this cap. Under this approach we determine the maximum average percentage by which a Standard Retailer can increase its regulated prices (weighted by the relevant quantity) in each year of the determination period.

The WAPC is calculated using N values which are based on actual network prices imposed by the network businesses and approved by the AER, and R values (or retail price controls) that we determine. The retailers must use these N and R values to calculate the maximum annual amount by which they can increase their regulated retail prices under the WAPC form of regulation.

Please note that the N values in the WAPC are set to allow each Standard Retailer to fully recover the actual costs it incurs in paying the network fees and levies. These network prices are approved by the AER and are not affected by our 2010 determination.

The R values within the WAPC are set to allow each Standard Retailer to fully recover the total efficient costs that we have allowed in the 2010 determination and this update (Chapter 3). There are separate R values for the fixed and variable components of regulated prices. The fixed R values are expressed as \$ per customer, while the variable R values are expressed as c per kWh.

This chapter sets out:

- ▼ Our final decisions on the updated R values for each Standard Retailer for 2012/13. These R values replace those that were included in the 2010 determination.
- ▼ Approved network prices.
- ▼ The resulting average increases in regulated retail electricity prices from 1 July 2012.

5.1 Overview of final decision on the R values

IPART's final decision is to set the regulated retail price controls (R values) as shown in Table 5.1

Table 5.1 Final decision on the R values for 2012/13 (\$2012/13)^a

	2011/12	2012/13
EnergyAustralia		
Fixed R - \$ per customer	99.92	101.5
Variable R - c per kWh	10.10	12.27
Integral Energy		
Fixed R - \$ per customer	99.92	101.5
Variable R - c per kWh	10.59	12.69
Country Energy		
Fixed R - \$ per customer	99.92	101.5
Variable R - c per kWh	10.16	12.63

^a The R values have been escalated from \$2011/12 to \$2012/13 using forecast inflation of 1.6%.

5.1.1 How we set the R values

Our final decision on the R values in Table 5.1 reflects the increases resulting from:

- ▼ Our final decisions on the total energy cost allowance (see Chapter 3).
- ▼ Our recalculation of the retail margin on the updated cost allowances and average change in network prices forecast for 2012/13.
- ▼ The escalation of the R values from \$2011/12 to \$2012/13 using forecast inflation of 1.6%.⁷⁵

Our 2010 determination set the retail margin as a fixed percentage of each retailer's total costs (retail and network) for the determination period. We calculated this allowance in dollar terms for the purpose of setting the R values, and made a decision to update this calculation at each annual review to reflect updates in total costs. We have therefore recalculated the allowance for the retail margin to provide a margin in dollar terms equal to 5.4% of the updated retail and network costs.

In determining the R values we disaggregated each of the efficient cost allowances into their fixed and variable components, and calculated the cost per unit for each group of components. This approach to setting the R values is consistent with the 2010 determination.

⁷⁵ To inflate prices from \$2011/12 to \$2012/13 the Determination requires us to use an inflation forecast as measured as by the CPI March Quarter 2012/March Quarter 2011.

In submitting their annual pricing proposals the Standard Retailers will need to use:

- ▼ the R values we determine in our final report and the relevant AER approved N values
- ▼ approved cost pass through amounts.

5.2 Network component (N values or prices)

As noted above, the WAPC is calculated using the:

- ▼ N values which are based on actual network prices imposed by the network businesses and approved by the AER. Therefore, the N values in the WAPC are set to allow each Standard Retailer to fully recover the actual costs it incurs in paying the network fees and levies. These network fees are determined by the AER and are not affected by our final decisions on the total energy cost allowance. The AER approved network prices in June 2012.
- ▼ R values which are based on the efficient retail cost allowances that we determine (see Section 5.1).

Table 5.2 shows that the average nominal increases in network prices for small customers⁷⁶ from 1 July 2012 are significant, ranging from 4% to 21.9%.

Table 5.2 Estimate of average nominal increases in network prices (%)

	2012/13
EnergyAustralia	21.9
Integral Energy	4.0
Country Energy	17.6

Note: This includes average increases in network prices approved by the AER. Forecast inflation used by the AER is 3.39% for 2012/13 for the purposes of setting network prices. These network price increases exclude the increase in the Climate Change Fund levy.

Source: EnergyAustralia, Integral Energy, Country Energy.

The rises in network costs are the largest driver of the price increases from 1 July 2012 for EnergyAustralia and Country Energy customers. Network prices are increasing by a lower amount in the Integral Energy area because the capital and operating expenditures required to maintain and operate Endeavour Energy's network (the network service provider in that area) are not increasing at the same rate compared to the other NSW network service providers.

⁷⁶ Small customers are defined as those consuming less than 160 MWh per annum.

While we are concerned about the significant increases in network prices it is important that we pass through these actual network prices into retail prices. This will ensure that retailers, who must pay these prices to the network businesses, are able to fully recover these costs.

5.2.1 Solar Bonus Scheme and Climate Change Fund

The NSW Government offered financial incentives to households that have installed solar PV panels via its Solar Bonus Scheme ('feed-in' tariff). While this scheme is closed to new participants, existing participants will continue to receive either 60c or 20c for each kWh they generate and export to the grid.⁷⁷

The NSW Government has decided to recover some of the costs of the Solar Bonus Scheme by utilising funds in the Climate Change Fund and by increasing the Climate Change Fund levy. This levy is added to network prices and is paid by all electricity customers.

The 2011/12 NSW Budget papers indicated that the Climate Change Fund levy will recover an additional \$100 million in 2012/13 bringing the total contributions to \$250m in that year.⁷⁸ The 2012/13 NSW Budget has revised the annual contributions to apply between 2013/14 and 2016/17. The annual contributions have been revised from \$400 million (estimated in the 2011/12 Budget) down to \$309 million per annum. This reflects recent data on the actual costs of the Solar Bonus Scheme, and the decision by the NSW Government to require electricity retailers to contribute to the costs of the Solar Bonus Scheme.⁷⁹

The increase in the Climate Change Fund levy will increase regulated retail electricity prices from 1 July 2012 by around 0.5% to 0.9%. The total contribution to the Climate Change Fund levy will add around \$32 to \$36 to an indicative regulated retail customer's bill in 2012/13.

5.3 Overview of average increases in regulated electricity prices (N+R)

Table 5.3 shows the nominal average increases in regulated retail prices from 1 July 2012. These increases range from 11.8% for Integral Energy to 20.6% for EnergyAustralia.

⁷⁷ <http://www.trade.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme/customers>

⁷⁸ NSW Budget 2011/12 – Budget Paper 2, chapter 5, p 3.

⁷⁹ NSW Budget 2012/13 – Budget Paper 2, chapter 5, p 15.

Table 5.3 Average nominal increases in regulated retail electricity prices from 1 July 2012 (%)

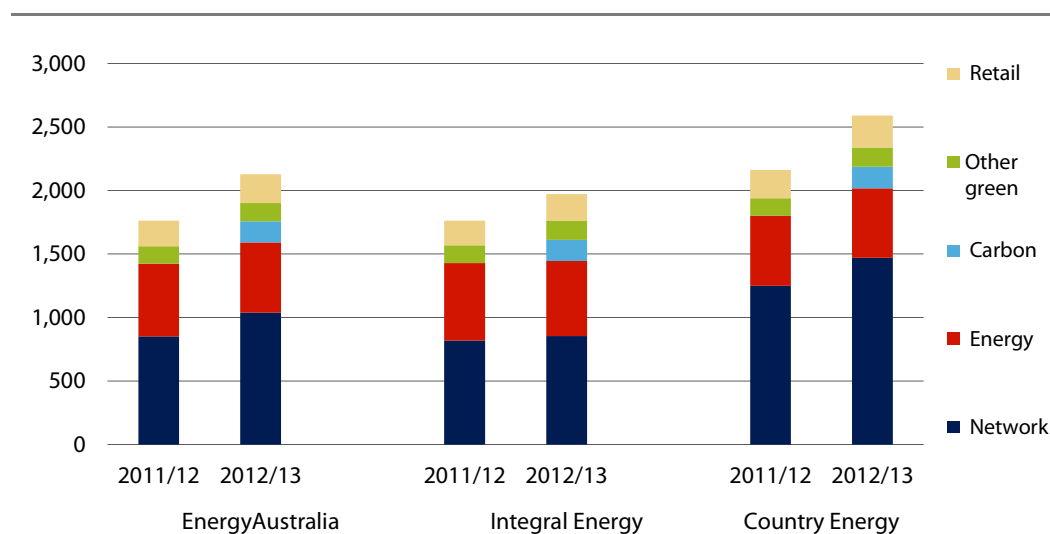
	2012/13
EnergyAustralia	20.6
Integral Energy	11.8
Country Energy	19.7

Note: Forecast inflation is 1.6% for 2012/13. These price increases include the increase in the Climate Change Fund levy as well as the pass through of additional SRES costs.

It is important to emphasise that these are *average* increases in prices. Under the WAPC Standard Retailers are able to change their individual prices, or components of prices (such as the fixed charge and variable usage price) as long as the average increase in their prices does not exceed the WAPC (for example, increase prices for business customers by more than the prices for residential customers). Therefore, an individual customer's prices (and their bills) may increase by more or less than this average amount.

Figure 5.1 shows the estimated increase in customer's bills from 2011/12 to 2012/13. It shows that:

- ▼ the increases in network prices lead to the largest increase in dollar terms for EnergyAustralia and Country Energy customers
- ▼ the increases in green scheme costs (including the impact of the carbon price) are the fastest growing in percentage terms.

Figure 5.1 Indicative annual bill for residential customers in each standard supply area – the components and how they will change over the next year (\$ nominal)

Note: Bills include GST, Climate Change Fund levy and inflation of 1.6%. Bills calculated using 7,000 kWh of consumption per year, and, for each business, an indicative price based on the average cost per kWh of supplying all regulated customers. Other green costs include the estimated contribution to the Climate Change Fund levy.

Table 5.4 summarises our final decisions on the updated retail allowances, including the network costs to be passed through into retail prices, and compares these final decisions to the allowances for 2011/12 included in our 2011 determinations.

Table 5.4 Changes in the cost components of regulated retail electricity prices from 2011/12 to 2012/13 (\$2011/12, \$/MWh)

	EnergyAustralia		Integral Energy		Country Energy	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
Electricity purchase cost	69.6	86.2	73.0	89.9	65.5	82.9
Green costs	10.1	11.3	10.1	11.5	10.2	11.6
Energy losses	5.2	6.3	6.6	7.7	7.0	9.7
Retail operating cost allowance	14.1	14.4	13.2	13.5	14.3	14.6
Network costs	113.1	136.8	109.3	113.8	164.7	192.5
Total retail + network costs	212.2	255.1	212.3	236.3	261.8	311.2
Retail margin (EBITDA 5.4% of total costs)	12.1	14.6	12.1	13.5	14.9	17.8
Pass through amount ^a	4.7	2.2	4.6	2.2	4.2	2.1
Total retail price	229.0	271.9	229.1	252.0	280.9	331.1

^a The cost pass through amount includes a 5.4% retail margin. Therefore, the retail margin reported in this table is 5.4% of total retail costs less the pass through amount. The retail margin reported in this table plus the retail margin on the pass through amount total 5.4% EBITDA. The energy purchase costs reported in this table include NEM fees. Green costs exclude the contribution to Climate Change Fund levy.

Note: This table provides a breakdown of the final retail price in 2011/12- 2012/13 in real terms (\$2011/12). Customer bills are typically expressed as c/kWh (ie, divide the \$/MWh figures above by 10). Typical residential consumption is 7,000 kWh (7 MWh) per annum. Numbers may not add due to rounding. The cost allowances for 2011/12 have been escalated from \$2010/11 using inflation of 3.3%.

6 Impact of price increases on customers

The impact of the increases in regulated electricity price from 1 July 2012 on individual customers will vary – depending on factors such as their electricity usage and Standard Retailer, the regulated price they are on, and how they respond to the price increases (eg, whether they can reduce their usage to manage their bills).

Given this, we conducted a set of analyses to explore the likely range of impacts on customers. In particular, we analysed:

- ▼ the impact of our final decision on annual electricity bills for typical residential and small business customers for each Standard Retailer
- ▼ energy bills as a proportion of household disposable income, and how it varies for different households across NSW
- ▼ which types of household are likely to be most affected by the 2012/13 regulated price increases
- ▼ the impact of the Commonwealth Government's Household Assistance Package.

For most of our analysis, we assumed that each household will use as much energy in 2012/13 as it did at the time of our household surveys. However, electricity consumption per household has fallen by a modest amount in recent years. As a consequence, energy bills may be somewhat lower in 2012/13 than our analysis indicates. Appendix F provides information about how electricity usage has fallen, and what this may mean for energy bills.

The sections below summarise our key findings then discuss our analysis in detail.

6.1 Overview of key findings on the impact of the price increases on customers

Our final decisions are likely to increase the annual electricity bills of ‘typical customers’ – those with the median energy usage for their supply area – by about \$170 to \$410 for residential customers, and about \$290 to \$470 for small business customers in 2012/13.⁸⁰ Customers with larger than the median electricity usage will experience larger bill increases. Those in Country Energy’s supply area will face the largest bill increases, because these customers have higher network costs and typically use more electricity than other households in NSW.

While these bill increases are large in dollar terms, their impact on households will vary widely, depending on the individual household’s energy usage, income and location within NSW. A useful measure of electricity affordability is the proportion of household disposable income spent on energy. Our analysis indicates that for the majority of households energy bills will still represent less than 5% of their disposable income in 2012/13.

However, some low-income households will spend more than 6% of their disposable income on energy. Some of these households may find it difficult to accommodate the rising energy prices. The households most likely to be affected are those on low-incomes⁸¹ who also have one or more of the following characteristics:

- ▼ high energy usage that is difficult to reduce – for example, because they have a larger household size, live in a relatively large detached house, live in an area with more extreme temperatures, and/or have older inefficient fixtures and appliances
- ▼ live in Country Energy’s supply area – because energy is more expensive in this area
- ▼ higher housing costs – because they are still paying off their home or renting.

It is these households that are likely to require support such as ongoing income support, emergency assistance and energy efficiency measures.

⁸⁰ The typical customer bills estimated in this chapter differ from those presented in Chapter 1. In Chapter 1 we compare bills for customers consuming 7,000 kWh (the state average consumption for regulated residential customers). We also use an indicative price based on the average cost per kWh of supplying all regulated customers. However, the analysis in this chapter uses the median consumption within **each** territory and uses **actual** prices.

⁸¹ To simplify our analysis, we define low-income households as those with incomes below \$38,000 per year. However, large households with higher incomes may face similar financial circumstances. In particular, there are likely to be a number of these households in the \$38,000 to \$45,000 income band.

The Commonwealth Government's Household Assistance package (the assistance package) is designed to compensate low-income households for increases in their cost of living due to the carbon pricing mechanism.⁸² Commonwealth Treasury modelling estimated that 48% of the increase in average household expenditure will be due to increases in energy bills.⁸³ In conducting our impact analysis we have assumed that 48% of the assistance package is an offset for increases in energy bills.

Our analysis indicates that this share of the assistance package will adequately compensate the large majority of low-income households for the part of the increase in their energy bill that is due to the carbon pricing mechanism. We have identified some very specific household types that may not be fully compensated for energy use because they use a fairly large amount of energy for their household type. However, these households could use some of the remaining 52% of the assistance package income to offset the increase in their energy bills.

6.2 Impact of final decision on typical customer bills in each supply area

To analyse the impact of our final decision on customers' electricity bills, we estimated an annual bill for 3 types of typical customer in each Standard Retailer's supply area: residential customers with controlled load; residential customers without controlled load; and small business customers. We defined a 'typical customer' as one with the median annual electricity usage for that type in that supply area.

The results of this analysis (Table 6.1) indicate that:⁸⁴

- ▼ Typical residential customers with a controlled load (eg, off-peak hot water) will face an increase of between \$213 and \$408 in their annual electricity bill.
- ▼ Typical residential customers without a controlled load will face smaller increases of between \$173 and \$345 for 2012/13. This is because the median usage for customers of this type is lower than for customers with a controlled load – mainly because a larger proportion also use gas or live in semi-detached dwellings and apartments, which are associated with lower usage.
- ▼ Typical small business customers face increases of between \$291 and \$473.

⁸² The assistance package also provides assistance to middle-income households to help them meet the additional costs (see section 6.5).

⁸³ Treasury modeling estimated that electricity and gas account for \$4.80 per week of the \$9.90 in total increase in average weekly expenditure associated with the introduction of a carbon price. (Commonwealth Government Treasury, *Strong growth, low pollution. Modelling a carbon price*, July 2010, pp 135-137. Also see <http://www.treasury.gov.au/carbonpricemodelling/content/overview/page9.asp>)

⁸⁴ The increases in typical electricity bills do not take account of the rebates available to low and middle-income households from 1 July 2012. Low-income households holding a Pensioner Concession Card or a Health Care Card will be eligible to receive a Low Income Household Rebate on their bills of \$215 in 2012/13 (up from \$200 in 2011/12). In addition, the NSW Government will introduce a Family Energy Rebate, worth \$75 in 2012/13, to qualifying family households with incomes up to \$150,000 per year. When these rebates are taken into account, the 2012 annual bills for households receiving rebates will be lower than those shown in Table 6.1.

This analysis shows that among typical residential customers, those in the Country Energy supply area (which covers non-metropolitan NSW) face the largest dollar increases in their annual electricity bills. This is because these customers have higher network costs and typically use more electricity than other households in NSW (because a higher proportion of customers have controlled load).⁸⁵ As discussed above, customers can reduce the impact of price increases if they can reduce their electricity usage.

Table 6.1 Impact of final decision on indicative annual bills for typical customers (\$, nominal)

Distributor	Electricity usage MWh pa	Bill in 2011/12 \$ pa	Bill in 2012/13 \$ pa	Increase \$	Increase %
Residential					
With controlled load					
EnergyAustralia	8.0	1,678	2,024	346	20.6
Integral Energy	8.1	1,803	2,016	213	11.8
Country Energy	7.0	2,072	2,480	408	19.7
Without controlled load					
EnergyAustralia	4.7	1,258	1,517	259	20.6
Integral Energy	5.1	1,466	1,639	173	11.8
Country Energy	4.7	1,749	2,094	345	19.7
Business					
EnergyAustralia	9.6	2,295	2,767	473	20.6
Integral Energy	10.8	2,462	2,753	291	11.8
Country Energy	5.7	2,167	2,593	427	19.7

Note: Electricity bills are calculated based on regulated prices and assumes the price increase applies equally to the daily supply charge and the charge for the amount of electricity used. Figures are in nominal dollars. Forecast inflation is 1.6%. The volume for each supply area is the median consumption for the particular customer group in 2009/10. Residential customer bills include GST, and business customer bills exclude GST.

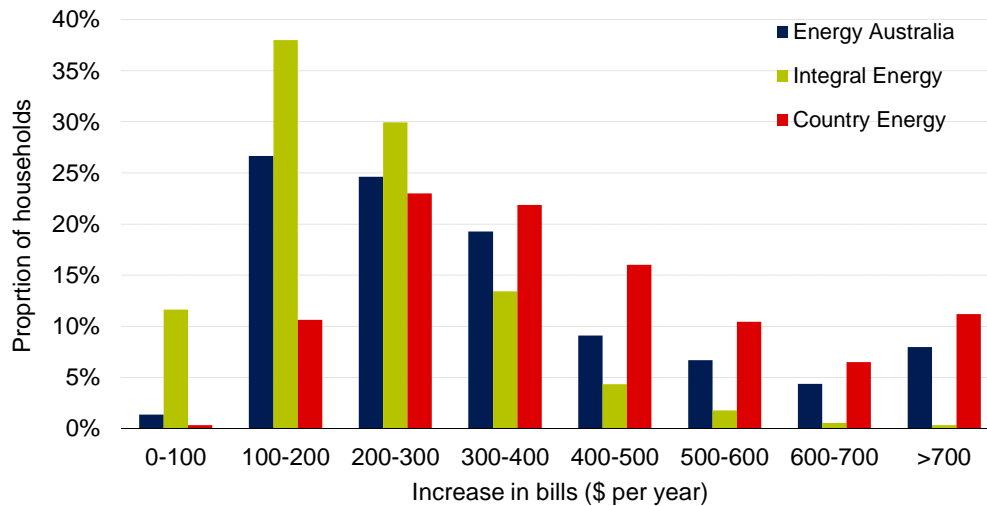
Source: EnergyAustralia, Integral Energy and Country Energy; IPART calculations.

Because household electricity usage varies widely in all supply areas, we also examined the distribution of annual bill increases across all residential customers (Figure 6.1). Most households use between 2 MWh and 10 MWh per year, but a considerable proportion use more than this. As a consequence, some households will face significantly higher dollar increases than the typical customers discussed above, while others will face lower increases. These increases vary from less than \$100 per year to more than \$700 per year. More than a quarter of customers will face increases of more than \$400 per year (after accounting for rebates)⁸⁶. Customers can reduce the impact of price increases if they can reduce their electricity usage.

⁸⁵ Around 70% of Country Energy's customers have controlled load prices compared to around 40% of both EnergyAustralia's and Integral Energy's customers.

⁸⁶ However, for low-income and middle-income households, the Commonwealth assistance package will provide assistance to help offset these electricity price increases.

Figure 6.1 Increases in residential electricity bills for NSW standard supply areas, 2011/12 to 2012/13



Note: Bills include GST and are net of rebates. Increases assume an unchanged price structure.

Data source: IPART Household survey 2010, Country Energy data, IPART calculations.

6.3 Impact of electricity price increases on energy bills as a proportion of disposable income

To consider the impact on households we focused primarily on household energy bills as a proportion of household disposable income, where disposable income means income after accounting for tax and Commonwealth Government's Household Assistance Package. This is a useful measure, as it takes into account movements in household incomes as well as energy bills. Box 6.1 explains how we took into account the Household Assistance Package.

In addition:

- ▼ We focused on energy bills – both electricity and gas – where possible. This is because some households use gas for hot water, space heating and/or cooking, whereas other households use electricity for these purposes. We also took into account rebates on energy bills.
- ▼ We focused our most detailed analysis on metropolitan NSW (Sydney, Blue Mountains, Illawarra, Hunter and Central Coast), because we have detailed information on energy usage, energy costs, and household characteristics from our Household Surveys in these areas. For country NSW, we conducted a simpler analysis using available information.

Appendix F provides information on how energy bills as a proportion of household disposable income have changed since 2006/07 – particularly among low-income households.

The sections below discuss the key factors that influence energy affordability and then discuss the key findings of each of our analyses.

Box 6.1 How we took into account the Household Assistance Package to calculate disposable incomes in 2012/13

The Commonwealth Government has a Household Assistance Estimator^a on its Clean Energy Future website. The Estimator shows households what will be the impact on their disposable income of the Household Assistance Package. The Estimator shows the impact for a range of household types and income levels. The 4 main household types are:

- ▼ one person households
- ▼ couples without dependent children
- ▼ one parent households, and
- ▼ couples with dependent children.

In total, there are 39 representative households, each with at least 35 levels of income.

We used this information to establish what would be the average impact of the Household Assistance Package for households in each of our income bands (in dollars per year). We did this in 2 steps:

- ▼ First, we calculated an average dollar amount for each of our income bands for one person households, couples without dependent children, one parent households and couples with dependent children.
- ▼ Second, for each income band we calculated the weighted average dollar impact, where the weights for an income band are the proportion of each household type in that band. We used our 2010 household survey data to calculate the weights.

^a <https://www.cleanenergyfuture.gov.au/helping-households/household-assistance-estimator/>

6.3.1 What factors influence energy bills as a proportion of disposable income?

There are many interrelated factors that influence what proportion of a household's disposable income its energy bills represent. The main factors are the size of a household's disposable income, as well as how much energy the household uses, and the prices it pays for energy.

Household income

Household income varies widely across NSW. For example, the median household income in some postcodes in Sydney exceeds \$100,000 per annum, while in other postcodes (particularly inland) it is under \$40,000 per annum.⁸⁷

⁸⁷ Based on the 2006 ABS Census, inflated to 2012/13 prices using the change in average weekly earnings until 2010/11 and for 2011/12 and 2012/13 using the NSW Treasury's forecast increase in the average wage index of 3.5%.

Energy usage

Household energy usage also varies widely. We know from our household surveys that some of the major drivers of this usage relate to a household's:⁸⁸

- ▼ **Characteristics.** For example, these include the number of people in the household, the household structure (eg, family with young children, or older adults with no children at home, etc), household income and dwelling type (eg, a detached house, or a semi-detached dwelling or apartment).
- ▼ **Location.** This is because different areas of NSW have different temperatures in winter and summer, which influences the amount of energy required for heating and cooling. In addition, housing stock differs across NSW. In inland areas it consists predominantly of detached houses, whereas the coastal areas tend to have more semi-detached dwellings and units.⁸⁹ Detached houses generally require more energy for heating and cooling.
- ▼ **Energy-using appliances and usage patterns.** For example, this includes the number, type and efficiency of the large energy-using appliances the household owns, and how often it uses them.

Energy prices

The prices a household pays for electricity depends mainly on which supply area it is located in, as this is a big driver of its retailer's costs in buying and transporting energy.

A household's energy prices also depend on whether or not it has a controlled load electricity supply (mainly used for off-peak hot water systems), because electricity that is on a controlled load price is cheaper than other types of energy.⁹⁰

In addition, these prices depend on whether or not the household uses gas as well as electricity, and if so, how many of its large-energy-using appliances run on gas. Households that use gas pay 2 service availability charges, and may therefore pay higher bills (see Appendix E). Households in metropolitan NSW are much more likely to use gas, as access to gas distribution networks is limited outside Sydney.

A household's final energy bill also depends on whether or not it receives a rebate.

⁸⁸ See IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011.

⁸⁹ For example, in Sydney and surrounding areas, detached dwellings made up 67% of the dwelling stock in 2006, while outside of Sydney these dwellings made up 84% of the dwelling stock.

⁹⁰ Analysis of our household survey data suggests that controlled load electricity is cheaper than gas. See IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011, pp 45-55.

6.3.2 How do energy bills as a proportion of disposable income vary across NSW?

To help understand whether households living in certain locations are likely to face more significant impacts than those living in other locations, we examined how energy usage, energy bills and income vary across NSW. We used information on the median household in each postcode area.⁹¹ Our analysis indicates that median households in inland areas tend to spend more of their disposable income on energy than do households in coastal areas. In a small number of these inland areas the median energy bill will represent more than 7% of the median disposable household income in 2012/13. This compares to no more than 4% in most areas in Sydney.

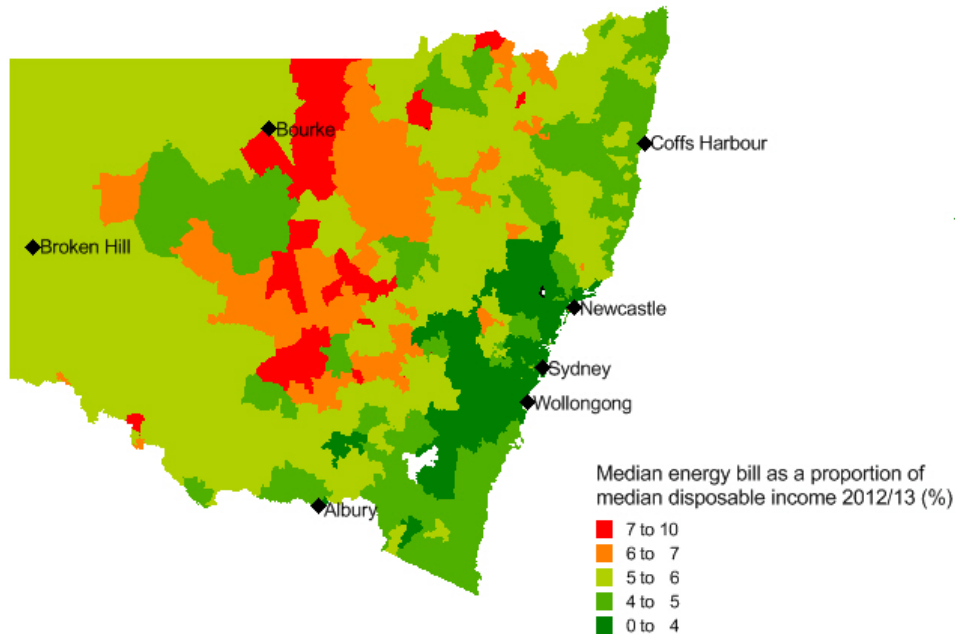
This is mainly because:

- ▼ median household energy usage tends to be higher in the inland areas
- ▼ energy (mainly electricity) prices in country NSW are higher than those in Sydney and surrounding areas, and
- ▼ median household income tends to be lower in inland areas compared to Sydney and surrounding areas.

This finding suggests that the impact of increasing electricity prices is likely to be more significant for households in inland areas than for those in coastal areas. We note that there are also factors in country NSW that may offset this impact, the most important being lower housing costs. However, even when housing costs are excluded from disposable incomes (using median housing costs from the 2006 Census), we found that median households in country areas will spend more of their remaining disposable incomes on energy.

⁹¹ For Sydney and surrounding areas, energy use and bills are for a single local government area or a statistical division rather than for each post code area.

Figure 6.2 Indicative energy bills as a proportion of household disposable income across NSW



Note: Median electricity use is used as a proxy for energy use in each postcode in Country Energy's standard supply area. Median energy use (electricity + gas) is used for larger regions in the EnergyAustralia and Integral Energy standard supply areas. Median energy bills in 2012/13 are adjusted for customer rebates and include GST. Median household disposable income is income from the 2006 ABS Census inflated to 2012/13 using the change in average weekly earnings until 2010/11 and for 2011/12 and 2012/13, the NSW Treasury's forecast increase in the average wage index of 3.5%. Disposable income is household income adjusted for income tax. Median household disposable incomes are also adjusted for the impact of the carbon compensation package.

Data source: Country Energy data, IPART Household Survey, ABS Census 2006, ABS Catalogue No. 6302.0: Average weekly earnings, Australia, November 2011, *NSW Government, 2011-12 Half-Yearly Review*, 15 December 2011, p 19.

6.3.3 How do energy bills as a proportion of disposable income vary in metropolitan NSW?

Our household surveys in the Sydney, Blue Mountains, Illawarra, Hunter and Central Coast areas provide a good profile of energy use according to different household characteristics and income categories in metropolitan NSW. Using these data and our final decision on regulated electricity prices, we found that almost 80% of all households in this area will spend less than 6% of their disposable income on energy bills in 2012/13.

As Figure 6.3 shows, median household spending on energy across all income categories will be around 4% of disposable income.⁹² However, looking in different income categories, median household spending on energy varies quite widely:

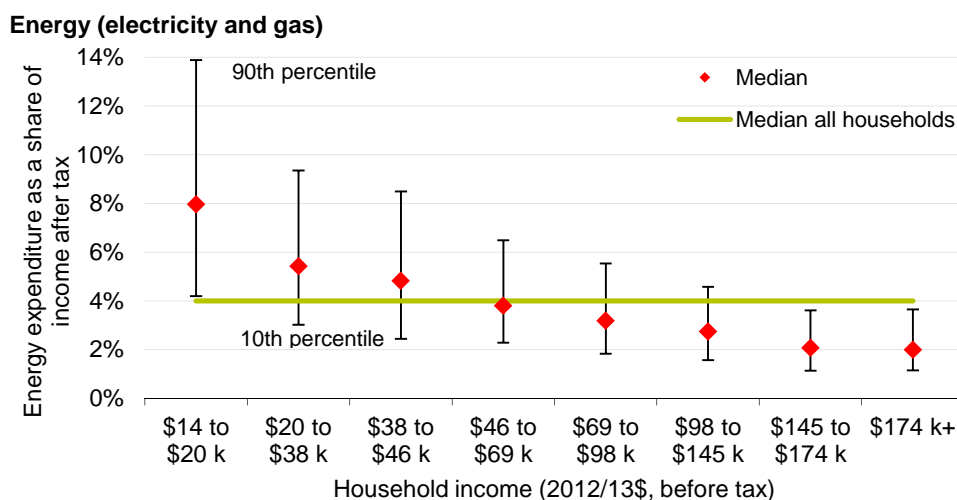
- ▼ In the middle and higher income categories (more than \$46,000 per year), median household spending on energy will range from about 2% to 4% of disposable income.
- ▼ In the 2 low-income categories (\$38,000 or less per year), median spending on energy will range from around 5.5% to 8% of disposable incomes.

Between households with similar disposable incomes in the lower income categories, there is substantial variation. For example, in the lowest income category households with median energy use are likely to spend about 8% of their disposable income on energy, while those in the 10th percentile will spend about 4%, and those in the 90th percentile will spend almost 14%. In the second lowest income category, median households will spend about 5.5% of their disposable income on energy, but those in the 90th percentile will spend more than 9% on energy.

Appendix E provides more information about why energy bills vary so much between low-income households in Sydney.

⁹² Note that the figures in this section cannot be directly compared to the figures reported in our 2011 report (IPART, *Changes in regulated electricity retail prices from 1 January 2011 – June 2011*, p 81). For this report we obtained more complete consumption data for Hunter, Gosford and Wyong area.

Figure 6.3 Annual spending on energy as a share of disposable household income — Sydney and surrounding regions, 2012/13



Note: The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2009/10. Income for each band is inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Distributions are presented without weighting survey responses. Customer bills are net of the Low Income Household Rebate. We have assumed that gas prices will increase by 14% on 1 July 2012. For more information, see IPART, *Changes in regulated retail gas prices in NSW from 1 July 2012*, June 2012. A **percentile** is the value below which a certain percentage of observations fall. For example, the 10th percentile is the value below which 10% of the observations may be found. In the above diagram, 10% of customers in each income band would fall below the bottom of the vertical line (paying less than that amount) and 10% of customers would pay more than the top of the vertical line.

Data source: IPART Household Surveys, 2008 and 2010.

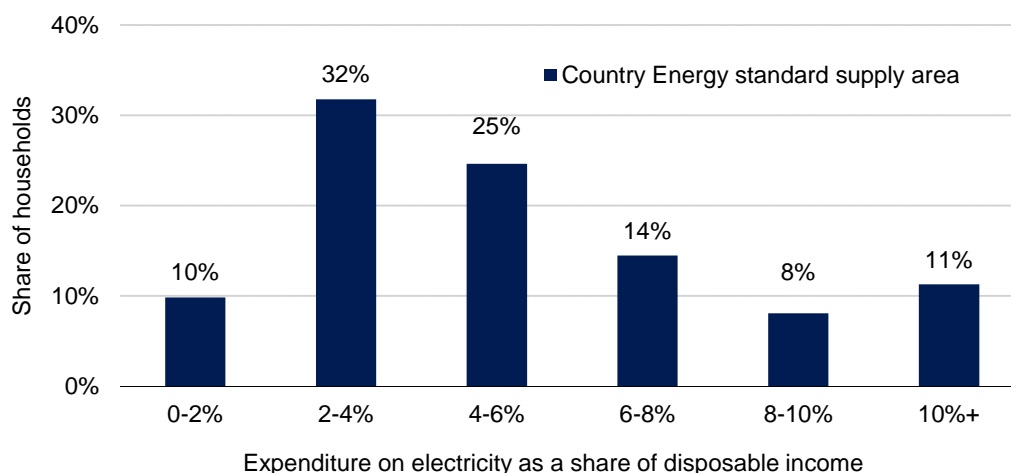
6.3.4 How do energy bills as a proportion of disposable income vary in country NSW?

Because we have not conducted household surveys in areas outside of metropolitan areas, we do not have detailed income and consumption data for households in country NSW. Also, as noted above, we have no information about gas usage in these areas. For these reasons, we have conducted a simpler analysis for country areas, using electricity bills as a proxy for energy bills.

We combined information on median household electricity use and median household disposable income across each postcode in the Country Energy standard supply area. We found that 66% of all households in country NSW will spend less than 6% of their disposable income on energy in 2012/13. In addition, around 11% of households in country NSW are likely to spend more than 10% of their disposable income on energy (Figure 1.4).⁹³

⁹³ The distribution of customers by expenditure on income for country areas is based on applying the shape of the distribution for Sydney with adjustments for each postcode according to its median electricity bill and median income.

Figure 6.4 Distribution of annual spending on electricity as a share of disposable household income — Country Energy's supply area, 2012/13



Note: Distribution based on Sydney distribution adjusted to reflect median income and median electricity bills in each postcode in Country Energy's standard supply area. Customer bills are net of the Low Income Household Rebate and medical rebates.

Data source: ABS Census 2006, Table B02; Country Energy data; ABS Catalogue No. 6302.0: Average weekly earnings, Australia, November 2011; IPART analysis.

6.4 Household types likely to be most affected by the 2012/13 increase in regulated electricity prices

As discussed above, despite the increases in regulated electricity (and gas) prices, almost 80% of households in metropolitan NSW will spend less than 6% of their disposable income on energy bills in 2012/13, and about half will spend less than 4%. This suggests that most households will be able to adjust their usage and/or other spending to accommodate the price increases.

However, our analysis suggests that some households may have some difficulty accommodating these price increases. These are households that have:

- ▼ low disposable incomes, and
- ▼ high electricity (or energy) use which is difficult to reduce.

A household's ability to reduce its energy usage in response to higher prices depends largely on what drives their current usage, and the extent to which this is within their control. For example, it may be difficult for low-income households to reduce usage if it is high for one or more of the following reasons:

- ▼ there are many people in the household⁹⁴
- ▼ the household has few occupants but lives in a 'family sized' detached house
- ▼ the dwelling and appliances are not energy efficient but the households has insufficient income to make improvements
- ▼ the landlord is unwilling to make a rented dwelling more energy efficient (for example, by replacing an old hot water system or an old stove)
- ▼ the household lives in an area with more extreme temperatures.

In addition, some low-income households pay a large part of their disposable income in housing costs.⁹⁵ These households are likely to be affected by higher electricity bills. For example, our 2010 household survey found that 24% of low-income households that are paying off mortgages had approached their electricity supplier because they had experienced financial difficulties paying their electricity bills over the past year.⁹⁶ For low-income renters, the corresponding figure was 18%, while only 5% of low-income households that have paid off their home had approached their electricity supplier.

6.5 The Commonwealth Government's assistance package for energy price increases due to the carbon price

As Chapter 1 discussed, between 7.9% and 9.4% of the increase in regulated electricity prices in 2012/13 is due to the introduction of the carbon pricing mechanism. The Commonwealth Government is providing an assistance package to compensate low and middle-income households for this part of the price increase.

We analysed the additional income provided to low-income households as part of this package and compared this with the increase in their energy bills (due to the carbon price). As previously indicated, Commonwealth Treasury modelling estimated that 48% of the increase in average household expenditure will be due to increases in energy bills. In conducting our impact analysis we have allocated 48% of the assistance package as an offset to increases in energy bills.

⁹⁴ The number of people in the household (particularly people aged 16 year or older) is one of the main reasons why low-income households use such different amount of energy. (See Appendix E.)

⁹⁵ For example, 17% of Sydney households in this income category were renting privately, and 5% were paying off their home in 2010 (IPART 2010, *Residential energy and water use in Sydney, the Blue Mountains and Illawarra: Results from the 2010 household survey, Electricity, Gas and Water – Research Report*, December, Appendix E, Table 1).

⁹⁶ IPART, *Residential energy and water use in Sydney, the Blue Mountains and Illawarra: Results from the 2010 household survey, Electricity, Gas and Water – Research Report*, December 2010, Figure 8.5, p 141.

We analysed the impact of the assistance package for a number of low-income households of different types, with average electricity usage for their household type and supply area. We found that for most low-income households the additional income provided as part of the package (ie, 48% of the total) is likely to exceed the increase in energy bills due to carbon. While some households types may experience energy bills that exceed the additional income provided, they are likely to represent only a small proportion of all low-income households. In addition, these households could use some of the remaining 52% of additional income to offset the increase in their energy bills.

6.5.1 How will the Household Assistance Package work?

The Household Assistance Package will increase the disposable income of low- and middle-income households in 2 ways. First, it provides government payments to low-income and middle-income households. For example, all households that receive a Centrelink pension or allowance will receive compensation payments, as will households that qualify for Family Tax Benefit A or B. These households will initially receive a one-off, lump sum payment before 1 July 2012. They will receive subsequent payments as part of (or at the same time as) their regular payments. Second, the package includes tax reforms targeted at low- and middle-income households.

The package has been designed so that:

- ▼ all low-income households will be eligible for assistance that at least offsets their expected average price impact from the carbon price
- ▼ middle-income households will be eligible for assistance that helps them meet their expected average price impact, and
- ▼ households with people who have a relevant concession card and face higher essential electricity costs due to medical condition or disability will be eligible for additional assistance.⁹⁷

⁹⁷ Federal Government's Clean Energy website at <http://www.fahcsia.gov.au/about/benefits/Pages/CleanEnergyFuture%E2%80%93HouseholdAssistancePackage.aspx>

6.5.2 The Household Assistance package compared with increases in energy bills

We compared the additional income provided to low-income households as part of the assistance package (48% of the total amount) with increases in energy bills (due to the carbon price). For this analysis, we focused on 3 sets of households:

- ▼ Those that will not benefit from the tax reforms in the package (because their private incomes are too low).
- ▼ Those that will benefit from these tax reforms.
- ▼ Those whose incomes are at the top of the Commonwealth Government's low-income range (between about \$30,000 for one person households and \$60,000 for a couple with 3 dependent children).

First, we estimated how much additional disposable income a household would receive from the package. Next, we estimated how much compensation a household would need to cover the increase in their 2012/13 electricity bill due to the carbon pricing mechanism. We estimated these for a variety of household types (eg, different household sizes and structures, different dwelling types and sizes, and different locations/climates). We assumed all households had average electricity usage for their household type.

To simplify our analysis, we also assumed that all households used only electricity to power their homes (not gas).

Finally, we compared our estimates of the additional disposable income and electricity bill increase for each household type to see whether the compensation amount is likely to fully cover the expected bill increase. Box 6.2 explains our methodology in more detail.

We found that the **large majority of low-income households** with average usage for their household type are likely to receive sufficient additional income to cover the increase in their bills – and often more. There are likely to be some exceptions – where the additional disposable income available to the household (ie, 48% of the assistance package) is not enough to fully cover the increase in their energy bills, due to their particular household characteristics. However, these are likely to represent a small proportion of all low-income households.

For example, looking at households that will not benefit from the tax reforms in the package (because their private incomes are too low), we found:

- ▼ Most households living in a coastal area (ie, where temperatures are mild) will be adequately compensated – and often have some to spare. The main exception is a 1 person non-pensioner household living in a 2 or 3 bedroom detached house. This is because the compensation amount targets income and the number of people in a household. It does not take account of additional usage associated with their dwelling type and size.

- ▼ More households living in inland areas (where temperatures are more extreme) may find that the energy related compensation amount does not fully cover their additional energy costs. This particularly applies to small households living in 3 or 4 bedroom detached houses (and therefore may have additional usage due to their dwelling type and size). However, these households are likely to represent only a small proportion of all low-income households, particularly as over 85% of the NSW population lives near the coast.⁹⁸
- ▼ Pensioner/self-funded retiree couples and couples with 2 or more children⁹⁹ will be adequately compensated regardless of where they live. Single parent families may be slightly worse off than couples with the same number of children, depending on their dwelling type and size (Table 6.2).

Looking at low-income households that will benefit from the tax reforms in the package, we found that most will be more than compensated for the increase in their bills due to the carbon pricing mechanism, particularly those at the lower end of the Commonwealth Government's low-income range (Appendix G, Table G.1).

However, the tax benefits begin to taper off once households reach the top of this income range (Appendix G, Table G.2).¹⁰⁰ Like some households whose private incomes are too low to benefit from the tax reforms, some of these households may find that the energy component of the compensation package does not fully cover the increase in their energy bills. However, these households could use some of the remaining 52% of the assistance package income to offset the increase in their energy bills.

⁹⁸ As at June 2010 over 85% of the NSW population lived in the Statistical Divisions of Sydney, the Hunter, Illawarra, Mid-North Coast and Richmond-Tweed (Australian Bureau of Statistics, <http://www.abs.gov.au/ausstats/abs@.nsf/Products/3235.0~2010~Main+Features~New+South+Wales?OpenDocument>)

⁹⁹ Each additional child (below 18 years old) will attract between \$69 and \$110 in compensation per year.

¹⁰⁰ The Commonwealth Government's low-income ranges are wider than ours for households with 2 or more occupants.

Table 6.2 Impact of the assistance package for low-income households that will not benefit from tax reforms (2012/13 \$pa)

Household type ^a	Income after tax \$'000	Compensation ^c	Increase in bill due to the carbon pricing mechanism			Surplus/-shortfall		
Dwelling type			house	house	unit	house	house	unit
No. bedrooms			2	3	1 or 2 ^b	2	3	1 or 2 ^b
Pensioner/self-funded retiree living alone								
Coastal	25	164	137	158	80	27	6	84
North West	25	164	157	184	95	7	-20	69
South West	25	164	171	202	105	-7	-38	59
Non-pensioner 1 person household								
Coastal area	18	106	134	155	77	-28	-50	29
North Western	18	106	154	181	92	-49	-75	14
South Western	18	106	168	199	102	-62	-93	4
Pensioner/self-funded retiree couple (70/30 income split)								
Coastal area	30	247	160	182	125	87	66	122
North Western	30	247	181	208	145	67	40	102
South Western	30	247	194	225	159	53	22	88
Non-pensioner couple (70/30 income split)								
Coastal area	30	189	160	182	125	29	7	64
North Western	30	189	181	208	145	8	-18	44
South Western	30	189	194	225	159	-5	-36	30
Single parent family, 1 child 5 - 7 years old								
Coastal area	30	207	157	178	na	50	29	na
North Western	30	207	177	204	na	30	3	na
South Western	30	207	191	222	na	16	-15	na
Single parent family, 2 children 8 -10 years old and 16-17 years old								
Coastal area	35	234	180	202	na	53	32	na
North Western	35	234	201	228	na	33	6	na
South Western	35	234	214	245	na	19	-11	na
Couple family, 1 child 5 - 7 years old (70/30 income split)								
Coastal area	35	238	180	202	na	57	36	na
North Western	35	238	201	228	na	37	10	na
South Western	35	238	214	245	na	23	-8	na
Couple family, 2 children 8 -10 years old and 16-17 years old (70/30 income split)								
Coastal area	40	290	204	225	na	87	65	na
North Western	40	290	224	251	na	66	39	na
South Western	40	290	238	269	na	52	22	na

^a The climate zones are represented by Sydney metropolitan area, Moree Statistical Local Area (SLA) and Deniliquin SLA respectively.

^b Lone person households live in a 1 bedroom unit and couples live in a 2 bedroom unit.

^c We assumed that 48% of the full compensation available to the household would be available to cover increases in energy bills.

Sources: Commonwealth Government Households Assistance calculator

(<https://www.cleanenergyfuture.gov.au/helping-households/household-assistance-estimator/>), 2010 IPART household survey and Essential Energy consumption data.

Box 6.2 How IPART compared the Household Assistance Package with increases in energy bills for low-income households
Step 1 - Establish the increase in household disposable income

We used the Commonwealth Government's Household Assistance Estimator^a to establish how much government assistance selected household types would receive, and what their tax benefit would be. The Estimator is available on the Clean Energy Future website and estimates the benefits for a range of household types. We assumed that 48% of the full compensation available to the household would be available to cover increases in energy bills.

Step 2 - Estimate how much electricity households in coastal areas use

For each selected household type, we estimated how much electricity the household would use if it were located in the Sydney area (a proxy for coastal), where the climate is mild. To do this, we used our 2010 household survey data and regression analysis to estimate how much additional electricity is, on average, associated with:

- ▼ each adult and each child
- ▼ each bedroom
- ▼ living in a detached house (rather than a semi-detached dwelling or a unit)
- ▼ household income.^b

Step 3 - Estimate how much electricity households in inland areas use

Next, we estimated how much additional electricity the household would use if it lived in an inland area where the climate was either hotter and/or colder than in coastal areas. We used Moree Statistical Local Area (SLA) (North Western) and Deniliquin SLA (South Western) to represent the NSW climate extremes.

- ▼ For each area, we estimated how much an 'average' household would use if it lived in Sydney instead of inland. To do this we used our regression coefficients and ABS census data about the average number of adults, children and bedrooms, income and housing.
- ▼ We then compared the 'Sydney-equivalent' average consumption with each area's actual average consumption.^c We ascribed the difference to the impact of climate. For example:

$$9,210 \text{ kWh pa (actual average)} - 7,587 \text{ kWh pa (Sydney equivalent for 'average' Deniliquin household)} = 1,623 \text{ kWh pa (Deniliquin climate premium)}$$

We used the 'climate premium' to adjust household consumption. We used the number bedrooms to decide how much additional electricity to allocate to each household type.

(Continued over the page)

Box 6.2 How IPART compared the Household Assistance Package with increases in energy bills for low-income households (continued)
Step 4 - Estimate the annual electricity bill increase due to the carbon pricing mechanism

We translated the amount of electricity used by each household to an increase in its bill using the carbon cost. (The carbon cost to the customer includes provision for losses, the additional retail margin and GST.) For example $7,000 \text{ kWh} \times 2.44\text{c/kWh} = \171 .

Step 5 - Compare compensation amount with annual bill increase

For household type, we compared the increase in household disposable income (48% of the full compensation) to the annual bill increase.

a <https://www.cleanenergyfuture.gov.au/helping-households/household-assistance-estimator/>

b We used the results of our previous regression study on the determinants of consumption. Specifically, we used the regression coefficients from the 'characteristics' model for electricity. See IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011, pp 17 – 20.

c We calculated the average for all households with consumption between 1,000 kWh pa and 25,000 kWh pa.

7 Recommendations to improve electricity policy and affordability

As previous chapters have discussed, regulated retail electricity prices will increase by an average of 18% on 1 July 2012. This brings the average increase in these prices to around 70% over the past 6 years (excluding the impact of inflation).

Over recent years, the major drivers of the price increases have been rising network and green scheme compliance costs. In IPART's view, at least some of the rise in these costs is due to inappropriate policy settings, which are making electricity prices higher than necessary.

We are making recommendations aimed at improving State and Commonwealth Government policy settings to ensure future electricity prices reflect efficient costs only, and customer assistance measures are effective and well-targeted.

7.1 Overview of recommendations

IPART considers that policy changes related to network regulation and green scheme design are needed to limit future cost increases to more appropriate levels. Action is required to lift the productivity of the energy sector – including improvements in economic regulation, network efficiency and infrastructure utilisation, and adjustments to network reliability standards. With the introduction of the carbon pricing mechanism, a review of other green schemes, including the Commonwealth Government's Renewable Energy Target (RET) scheme, is required. If the RET is retained, it should be redesigned to minimise its cost impacts on electricity customers.

Our analysis demonstrates that although energy remains affordable for the majority of NSW households, many of those with low incomes and high electricity usage are likely to be most affected by the price increases. A review of current customer assistance measures is needed to ensure they are effective, cost-efficient and well-targeted at the households who need them most.

7.2 Improving productivity in the energy sector

Over the last 5 years, the network cost component of retail electricity bills in NSW has increased by 72% in real terms, with the largest increases over the last 3 years. This is largely due to significant increases in the network businesses' operating and capital expenditures, which have not only led to higher electricity prices but also to a decline in network productivity (see IPART's review of productivity of State-owned corporations, including electricity distribution networks).¹⁰¹

Increasing this productivity is important for building the economy of NSW, as well as for lowering the costs of providing energy to customers.¹⁰² It can also play a role in improving the affordability of electricity for vulnerable customers. IPART has identified a range of opportunities to increase network productivity, including improving:

- ▼ the economic regulation provisions within the National Electricity Rules (NER) to ensure that expenditure is efficient
- ▼ the governance arrangements for the NSW electricity network businesses (and other State-owned corporations) to drive improvements in their productivity
- ▼ the utilisation of energy infrastructure by minimising peak demand through cost-effective opportunities to deploy time-of-use and/or smart meters
- ▼ the setting of network reliability standards, so they lead to the most cost-effective performance of the network and reflect the value the community places on the performance of the networks.

These opportunities and our specific recommendations are discussed below.

7.2.1 Improve the economic regulation of network businesses

In IPART's view, recent network cost increases are higher than necessary because certain aspects of the energy regulatory framework contribute to inefficient outcomes. In particular, the current regulatory framework:

- ▼ Constrains the ability of the Australian Energy Regulator (AER) to apply what it considers to be the *best* estimate of the network business' efficient operating and capital costs.
- ▼ Provides strong incentives for the network business to invest capital in the network, potentially beyond efficient levels, because the prescriptive requirements of the NER can lead to excessive returns.

¹⁰¹ IPART, *Review of Productivity Performance of State-Owned Corporations*, July 2010.

¹⁰² Relative to where they would otherwise be.

- ▼ Allows the network businesses to earn a return on *all* capital invested – regardless of its efficiency and prudence – by requiring the AER to roll all capital expenditure into their regulatory asset bases. This lack of discipline on expenditure is exacerbated by inadequate governance arrangements in NSW (discussed in the next section below).
- ▼ Provides opportunities for the network suppliers to appeal particular issues with limited risk of an adverse finding.

We have outlined our concerns in detail in submissions to the Australian Energy Market Commission (AEMC) and the panel reviewing the limited merits review provisions under the National Electricity and Gas Laws.¹⁰³ We will continue to participate in these reviews, arguing for improvements in energy regulatory settings.

7.2.2 Strengthen governance arrangements for NSW electricity network suppliers to promote productivity improvements

IPART's 2010 review of the performance of NSW State-owned corporations (SOCs)¹⁰⁴ found that SOC productivity has declined significantly over recent years, and the biggest declines have been in the electricity distribution network suppliers' productivity.

Although the NSW SOC governance framework – the key policy tool for promoting continued improvement in the SOC's cost-efficiency and productivity – is based on sound principles, NSW has increasingly departed from these principles. There is now a significant gap between how the corporatisation principles were envisaged to apply and how they are being applied in practice.

This has resulted in:

- ▼ increased imposition of policy-driven requirements on SOC's without regard to the impact on their business value and the efficiency of the broader economy
- ▼ poorly defined expectations of and accountability for SOC performance, due to lack of clarity about the relative priority of the various commercial and non-commercial requirements of SOC's
- ▼ diminished emphasis on improving efficiency and productivity, and on the role and capability of government (particularly of NSW Treasury when acting on behalf of shareholders) to promote such improvements.

¹⁰³ http://www.ipart.nsw.gov.au/Home/Quicklinks/IPART_Submissions_to_External_Reviews/IPART_Submissions

¹⁰⁴ IPART, *Review of the Productivity Performance of State Owned Corporations*, July 2010.

In our view, action is needed to strengthen the governance arrangements for the NSW electricity network suppliers (and NSW SOCs in general) to promote improvements in productivity. Such action is also timely, to help maximise the benefits from the announced merger of these businesses. Together with stronger incentives for efficient expenditure in the NER this will help to ensure that declining network productivity does not result in further increases in electricity prices.

7.2.3 Pursuing cost-effective opportunities to deploy time-of-use and/or smart meters

In recent years, Australia has experienced declining utilisation of its energy infrastructure, as strong growth in peak demand has outpaced growth in underlying energy consumption. To meet this higher peak demand, the electricity sector has invested in additional generation and network capacity that is only utilised for a short time in any period. This has led to higher generation and network costs per MWh of electricity produced, and ultimately in higher prices for electricity customers.

IPART considers there are opportunities to improve the utilisation of energy infrastructure by deploying time-of-use and/or smart meters to minimise peak demand. However, to improve the productivity of the electricity sector the benefits of this deployment must exceed the costs.

Currently, there is little financial incentive for network suppliers to ensure the deployment of these meters is cost-effective. Meters form part of the distribution network suppliers' regulatory asset bases. Thus, the costs associated with them are recovered from all electricity customers through higher network prices.¹⁰⁵ In addition, under the current NER, the costs of replacing existing meters with time-of-use or smart meters are recovered from the customer base regardless of whether they deliver benefits in terms of reduced network expenditure.¹⁰⁶

To promote cost-effective deployment of time-of-use and/or smart meters, we consider that the installation should be at the discretion of the customer or their retailer¹⁰⁷ – not mandated by their network business. This will target installation by those customers with the greatest willingness or ability to shift their demand from peak to non-peak. Individual customers are likely to be in a better position to gauge this ability than network businesses. Retailers may also be in a position to manage

¹⁰⁵ The experience in Victoria may represent an example whereby productivity has declined as a result of the Government mandated roll out of time-of-use meters given that the costs have been incurred (in terms of the costs of the meters and installation) yet the benefits in the form of reduced network expenditure are still to be realised.

¹⁰⁶ Under the current NER, the distributors would fund any expenditure greater than the regulated allowances during the regulatory period but earn a return on and of capital from the beginning of the next regulatory period until the meter is fully depreciated, regardless of the efficiency of that expenditure.

¹⁰⁷ Potentially with the customer paying the installation costs.

the demand of their overall customer base through programs targeted at individual customers or groups of customers.

Our position was supported by PIAC:¹⁰⁸

PIAC agrees with the note of caution struck by IPART in its Draft Report regarding the widespread installation of 'time of use' and/or 'smart meters' in NSW. ... PIAC also agrees with IPART that customers should not be forced to have smart meters installed as 'mandated by their network businesses'. ...

PIAC does not believe that third parties, whether government, network or retailers, should engage in broad-scale mandatory smart meter roll outs until we have had the opportunity to learn from the real-life case that is currently developing in Victoria.

While network suppliers may be well placed to propose the installation of time-of-use meters for specific customers or retailers, in our view the decision should be made by customers or their retailers.

7.2.4 Adjusting network reliability standards

Network reliability standards prescribe the minimum levels of service provision the network businesses must provide. These standards are a key driver of network expenditure, particularly capital expenditure. All else being equal, higher standards mean higher electricity prices for all customers.

Currently, network reliability standards are determined by each jurisdiction and are typically set out in the network business' licence conditions. They reflect judgements made by government (on behalf of the community) about the level of service the community expects and is willing to pay for.

Given the increasing importance of access to a safe and reliable supply of electricity, it is likely that the community's expectations in relation to service provision are high and will increase over time. However, higher standards impose greater costs. Therefore in making judgements government needs to consider the trade-offs between:

- ▼ the benefits from higher standards in terms of reduced 'blackouts' and the benefits to the wider community from a more reliable supply of electricity, and
- ▼ the costs associated with these standards and the resulting impact on individuals in terms of affordability and the productivity and wealth of the community.

¹⁰⁸ PIAC submission, May 2012, p 12.

Government should also consult with electricity consumers – both business and residential customers – to understand the different benefits they enjoy from a more reliable supply of electricity and the extent they would be willing to pay for these benefits through higher energy prices. We note that the AEMC has undertaken a survey of NSW customers to help it assess the costs and benefits of different reliability standards. In its draft advice to the NSW Government, the AEMC found although investment to meet the current reliability requirement in NSW, which were established in 2005, have already been committed and that the reduction in customers' bills is likely to be relatively modest:¹⁰⁹

A relatively small reduction in reliability can lead to a large reduction in the investment required by electricity distribution networks.

The AEMC quantified that between \$231 million and \$1.1 billion could be saved over 15 years, or between \$112 and \$467 million over 5 years.

The current NSW network reliability standards use a 'deterministic' approach. That is, in addition to setting out the required levels of service provision, they specify how the network businesses are required to plan their network. This is an 'input-based' approach – for example, the standards even include the level of redundancy that must be provided for in different parts of the network. In contrast, other jurisdictions use an 'output based' approach. That is, their standards specify the performance levels or outputs the network suppliers are required to meet, such as the maximum number and duration of outages.

The AEMC engaged the Brattle Group to examine the approach to setting electricity distribution network reliability standards and outcomes in Australia, New Zealand, Great Britain, Italy, the Netherlands and the US. The Brattle Group found that:

Whilst the Australian approach to regulating distribution reliability is generally very much in line with other jurisdictions ... NSW appears unique in applying input standards that are driving investment decisions.¹¹⁰

We are concerned that NSW's input-based approach does not necessarily allow the network businesses to deliver the specified network performance at least cost. It is imperative that any regulatory settings encourage the objectives to be achieved at least cost to the community. The Brattle Group recommended to the AEMC that:

The framework for distribution reliability should focus on reliability performance, with requirements relating to network planning only used as a last resort.¹¹¹

We agree with the Brattle Group and support specifying distribution network reliability standards on an output basis.

¹⁰⁹ AEMC, *Review of electricity distribution reliability outcomes and standards*, Information Sheet – NSW workstream draft report, p 2, June 2012.

¹¹⁰ The Brattle Group, *Approach to setting electricity distribution reliability standards and Outcomes*, January 2012, p 13.

¹¹¹ AEMC, *Review of electricity distribution reliability outcomes and standards*, Information Paper, 2 February 2012, p 2.

7.3 Improving the cost effectiveness of green energy schemes

Once the carbon pricing mechanism is operational, many of the existing carbon emission mitigation programs (green schemes) at the national, state and territory levels will need to be redesigned and some may become redundant.¹¹² For example, the NSW GGAS scheme will cease on 30 June 2012.

IPART supports the Commonwealth Government's commitment to reviewing the current set of green schemes, and to removing or redesigning schemes that are not complementary to the carbon price. We have previously established a framework for reviewing NSW schemes for this purpose.¹¹³ A number of stakeholders supported reviewing green schemes to ensure that they are efficient and cost-reflective.¹¹⁴

Given that reducing emissions in the electricity sector and the wider economy comes at a cost to electricity consumers, government budgets and ultimately economic growth, it is important that emission reduction is achieved in the most efficient and cost-effective way. We note that many existing green schemes have additional objectives, ranging from providing industry assistance through to addressing social hardship. We are concerned that many of these schemes may add unnecessary costs to energy bills without necessarily addressing a market failure that will not be addressed by the carbon pricing mechanism, and thus may create investment-distorting complexities in energy markets.

We are also particularly concerned about the Commonwealth Government's Renewable Energy Target (RET) scheme, the costs of which have been a major driver of recent increases in electricity prices. The RET is not cost-effective, particularly the Small-scale Renewable Energy Scheme (SRES). Rather, it promotes very expensive emissions abatement and relatively expensive renewable energy production, which has a considerable impact on retail electricity prices. In addition, we are concerned about:

- ▼ The distributional impacts of the RET, given it involves a significant transfer of costs from renewable generators to electricity customers. In our view, industry assistance is best provided transparently from government revenue, rather than through electricity prices, due to the regressive nature of higher electricity prices.
- ▼ The administration of the RET, specifically the legislated timing of the release of the binding target.

¹¹² As the Wilkins Report noted: "Currently, there are in excess of 200 relevant programs around Australia in the States and Territories. Many have the potential to interfere with an emissions trading scheme. The States and Territories, over a decade, filled the policy vacuum left by the Commonwealth Government." Mr Roger Wilkins AO, *Strategic review of Australian Government Climate Change Programs*, 31 July 2008, p 2.

¹¹³ IPART, *Review of NSW Climate Change Mitigation Measures - Final Report*, July 2009.

¹¹⁴ APG submission, May 2012, p 6, PIAC submission, May 2012, p 6.

- ▼ The Solar Credits Multiplier under the RET, which allows the creation of renewable energy certificates for 'phantom' renewable energy that is not produced. We consider that 1 certificate should represent 1 MWh of renewable energy generated. However, from 1 July 2012 with the Solar Credits Multiplier, 2 certificates can currently be created for every 1 MWh of small-scale solar electricity generated. The retailers then have an obligation to buy these 'phantom' certificates and pass on these costs to customers. This means that customers are paying for renewable energy that was not generated.
- ▼ The uncapped nature of the SRES, which means retailers will need to buy all certificates created¹¹⁵ and there is no limit on the number of certificates that can be created. In 2012, retailers will need to buy certificates for around 33% of the electricity sold in Australia, yet the scheme's target is 20% by 2020.
- ▼ The upfront deeming of certificates for up to 15 years. While this makes the scheme simple in its administration, it introduces a disconnect between the timing of creating certificates and the generation of renewable energy, with current electricity customers paying today for renewable energy deemed to be generated over the next 15 years.
- ▼ The overall design of the scheme, which means that amount of electricity actually generated from renewable sources will be significantly lower than the amount customers are paying for. Specifically, while customers are paying for over 33% of electricity to be sourced from renewable technologies in 2012, the proportion of electricity actually being generated by renewable technologies under the mandatory schemes is likely to be around 10%.¹¹⁶
- ▼ The inclusion of waste coal mine generators in the Large-scale Renewable Energy Scheme, which may not be consistent with its renewable energy objectives.

7.4 Retail price regulation

In 2012, the Australian Energy Market Commission is scheduled to examine the competitiveness of the NSW market and provide advice to the NSW Government about whether or not to deregulate electricity prices. Ultimately, the NSW Government will decide whether or not to continue with price regulation.

IPART continues to support the removal of price regulation in markets where competition exists. We consider that retail competition offers the best protection to customers that retail prices will not materially exceed the efficient cost of supply. While retail price regulation remains, it is important that regulators facilitate the development of the competitive market while protecting customers from abuses of market power. In particular, they should ensure that their frameworks support evolving competition.

¹¹⁵ CER aims to set the STP to clear the market of certificates.

¹¹⁶ This is calculated using the RPP of 9.15% plus the STP of 23.96% (adjusted for the upfront deeming of certificates and the solar credits multiplier which reduces it to less than 1%).

If the Government decides not to remove regulation at this stage, and to give IPART terms of reference to regulate electricity prices beyond 2013, we consider we should be given a suitable degree of discretion in making the determination. This would allow us, as the independent regulator, to provide a balanced, flexible regulatory package that is in the long-term interest of customers and facilitates a stable and efficient electricity market. PIAC supported increased regulatory discretion, while retailers called for IPART to have limited discretion.¹¹⁷

For example, our existing terms of reference required us to base the retailers' energy purchase cost allowance on the higher of market prices and the long run marginal cost of energy (LRMC). In 2012/13, this has resulted in this cost allowance being between \$17 to \$19/MWh higher than it would have been if we had been able to set it in line with the market-based purchase cost. This flows through to prices, and results in customer bills being around 7.1% to 9.5% higher than they would be if the energy purchase cost allowance was set in line with the market-based purchase cost.

7.5 Electricity affordability and customer protection

In addition to addressing the drivers of the recent increases in retail electricity prices, action is needed to address the affordability of electricity for low-income households with high energy usage. In IPART's view, there is a need to review the current package of customer assistance measures to ensure it is effective, cost-efficient and targets those most in need of assistance. As governments have a limited budget for customer assistance, effective targeting is essential to ensure this limited budget achieves the greatest results.

It is important to note retail price regulation is not intended to improve the affordability of electricity, or provide assistance to support vulnerable customers. Its purpose is to protect customers from retailers exerting market power (in the form of higher prices, or lower service quality) where competition does not exist. We consider that effective competition offers customers the best form of protection, and that governments should continue to promote competition in the energy sector and remove regulation where competition exists. However, while retail price regulation continues to be necessary, we consider it important that regulators have sufficient discretion to make determinations that are in the long-term interest of customers and the competitive market.

¹¹⁷ TRUenergy submission, May 2012, p 2, AGL submission, May 2012, p 10, PIAC submission, May 2012, p 13.

7.5.1 Ensure customer assistance measures are effective, cost-efficient and well-targeted

Historically both State and Commonwealth Governments have provided financial assistance to households. This has primarily been in the form of income support, including the pension supplement, utilities allowance, energy rebates and emergency assistance. To a lesser extent, governments have also provided funding to assist households with energy efficiency.

Improving the effectiveness of customer assistance is not necessarily a case of ‘throwing more money at the problem’. Rather, this can be achieved by ensuring a complementary mix of emergency assistance, ongoing income support and energy efficiency measures reaches the customers most in need. Households require different forms of assistance depending on their circumstances. For example, emergency assistance (such as Energy Accounts Payment Assistance vouchers) may not be sufficient for those households with ongoing affordability issues arising from high energy usage associated with old and inefficient appliances.

In the coming year, we consider government’s key priorities for customer assistance should be to:

- ▼ More effectively target the current package of measures at the customers most in need of assistance.
- ▼ Reform the Energy Accounts Payment Assistance (EAPA) scheme.
- ▼ Promote the use of retailers’ payment plans as the first step for customers experiencing hardship.

More effectively target current measures at the customers most in need of assistance

IPART’s analysis of the impact of the 2012/13 electricity price increases on customers in NSW illustrates that the most affected households are those that not only have low incomes but also have high levels of energy usage. Some of these households may find it very difficult to reduce their usage due to factors such as a high number of household members, inefficient appliances and low-quality housing. They are the least able to accommodate rising electricity bills within their household budget, and most likely to face genuine financial hardship as a result of the price increases. Our analysis also identifies that customers in a number of rural areas, including north-western NSW, spend a large proportion of their income on electricity (see Chapter 6).

PIAC called for a range of customer assistance measures, including¹¹⁸:

- ▼ Increasing the funding for EAPA.
- ▼ Introducing a Rural Energy Rebate Supplement for eligible customers within the Country Energy supply area, effective 1 July 2012.
- ▼ Including customers who totally rely on motorised wheelchairs for mobility in the eligibility for the Life Support Rebate.
- ▼ Indexing the Life Support Rebate annually.

In addition, stakeholders generally support the NSW Government instructing IPART to undertake a comprehensive and consultative review of the effectiveness of customer assistance measures in NSW.¹¹⁹ If the NSW Government is so inclined, we consider that it would be most appropriate to consider the package of customer assistance measures in a comprehensive review.

It is important to ensure that the package of customer assistance measures effectively targets these households.

Reform the Energy Accounts Payment Assistance scheme

The primary objective of the Energy Accounts Payment Assistance (EAPA) scheme is to assist customers in emergency situations to remain connected to essential energy supply. The NSW Government has established an EAPA Advisory Group to provide advice on options to strengthen and improve delivery of the EAPA Scheme. IPART supports reform of EAPA. This should ensure that the scheme is well targeted and its administration is improved.

We also note that the current paper-based \$30 voucher system has not been updated to reflect advances in delivery systems and payment systems. Further, better systems will assist the NSW Government in ensuring that EAPA vouchers are available to customers with the greatest need.

Some community welfare organisations involved in the delivery of this scheme have told us that there are times when insufficient vouchers are available to meet demand in particular locations. In their submissions to our Draft Report, EWON and PIAC specifically called for increased funding for the EAPA scheme, while a range of other stakeholders called for a more general review of customer assistance measures.¹²⁰ Concerns about the level of EAPA vouchers were also raised at our public forum.¹²¹ PIAC suggests that funding needs to increase by 24%.¹²²

¹¹⁸ PIAC submission, May 2012, pp 6-12.

¹¹⁹ Australian Power & Gas Submission, May 2012, p 7, ERAA submission, May 2012, p 2, EWON submission, May 2012, p 3, PIAC submission, May 2012, pp 11-12.

¹²⁰ EWON submission, May 2012, p 3, APG submission, May 2012, p 7, ERAA submission, May 2012, p 2, PIAC submission, May 2012, p 11.

¹²¹ See transcript on IPART's website, www.ipart.nsw.gov.au

¹²² PIAC submission, May 2012, p 11.

IPART considers that EAPA is an important scheme to assist customers in short-term financial distress.

Promote retailers' payment plans as first step for customers experiencing payment difficulties

A key finding from our recent review of retailers' hardship programs is that customers who are experiencing difficulties paying their energy bills should contact their retailer for assistance. Retailers offer a range of customer assistance measures including payment plans, energy audits and bill payment extensions. These measures assist customers to stay connected.

However, results from our 2010 household survey indicated that of those customers who reported experiencing difficulty paying their bills, less than half had contacted their retailers. This suggests there is a need to promote retailers' payment plans as the first step for customers experiencing payment difficulties.



Appendices

A Terms of Reference

Terms of Reference for an investigation and report by the Independent Pricing and Regulatory Tribunal on regulated retail tariffs and regulated retail charges to apply between 1 July 2010 and 30 June 2013 under Division 5 of Part 4 of the *Electricity Supply Act 1995*.

A.1 Reference to IPART under section 43EA

The Minister refers to IPART for investigation and report under section 43EB of the Act:

The determination of regulated retail tariffs and regulated retail charges to apply to small retail customers in each standard retail supplier's supply district in New South Wales for the period from 1 July 2010 to 30 June 2013.

A.1.1 Background

In accordance with its commitment to retain the offer of regulated retail tariffs at least until 2013, the Government has extended the current scheme for regulated retail tariffs and charges to apply to small retail customers supplied under a standard form contract. A regulatory amendment will be made for these purposes under section 43EJ of the *Electricity Supply Act 1995* to allow IPART to make a further determination of regulated retail tariffs and charges that will apply from 1 July 2010 to 30 June 2013.

Since January 2002, every electricity customer in NSW has had the option to negotiate a retail supply contract with any licensed retailer. Small retail customers who do not seek supply from the competitive market are deemed to receive electricity under a 'standard form' customer supply contract from their 'standard retail supplier'. Customers can also switch backwards and forwards between these alternatives. These arrangements were designed to encourage customers to test the market by providing an assurance that they can return to regulated retail tariffs. Approximately 900,000 NSW customers have now moved on to negotiated tariffs.

While retail competition has delivered benefits for those participating in the market, the majority of residential and some small business customers have chosen to remain on standard form customer supply contracts which impose regulated retail tariffs and charges determined by IPART.

The NSW Government considers the reliable provision of electricity to be an essential service. It is therefore important that the financial viability of Standard Retail Suppliers is preserved, in order to ensure that they are able to continue to provide electricity to NSW customers. Network prices and energy purchase costs represent a significant proportion of the costs faced by retailers in the provision of electricity.

To promote retail competition and investment, regulated retail tariffs have been progressively moved toward fully cost-reflective levels over the course of the last 3 retail tariff determinations by IPART. The 2007 determination aimed to achieve regulated retail tariffs by 30 June 2010 that fully reflect the market-based costs of meeting each Standard Retail Supplier's obligations to their regulated customers.

This review should ensure the aims and approach of the 2007 determination are preserved. IPART's approach should result in prices that are based on the efficient cost of supplying small retail customers, including customers who revert from negotiated tariffs.

In carrying out the review, IPART should provide advice to the Government regarding the impact of the determination on small consumers.

A.1.2 Matters that must be taken into account

For the purposes of section 43EB(2) of the *Electricity Supply Act 1995*, in undertaking the review from 1 July 2010 to 30 June 2013, IPART should ensure its determination is consistent with the Government's policy aim of reducing customers' reliance on regulated prices. Regulated tariffs should reflect the efficient costs faced by a Standard Retail Supplier meeting the forecast demand of the regulated customers they are obliged to serve.

IPART's determination for the period from 1 July 2010 to 30 June 2013 should:

- ▼ result in prices that recover the efficient costs of supplying small retail customers, and
- ▼ apply any change to regulated tariffs on 1 July 2010 and annually thereafter on 1 July or on a date determined by IPART.

These Terms of Reference refer to 3 distinct cost components for Standard Retail Suppliers:

- ▼ Energy Costs
- ▼ Retail Costs, and
- ▼ Retail Margin.

Energy Costs

Energy costs include energy purchases from the National Electricity Market (NEM), greenhouse and renewable energy costs, NEM fees and energy losses.

For energy purchases, IPART should determine a target Energy Purchase Cost Allowance for 30 June 2013 and an Energy Purchase Cost Allowance for each year of the determination. The Energy Purchase Cost Allowance should be set, using transparent and predictable methodology, at a level that would allow a Standard Retail Supplier to recover the efficient costs of managing the risks associated with purchasing electricity from the NEM (including the Carbon Pollution Reduction Scheme). Additionally, IPART should have regard to the efficient costs of meeting any obligations that Standard Retail Suppliers must comply with, including the costs of complying with greenhouse and energy efficiency schemes (including present and future State and Commonwealth schemes).

The Energy Purchase Cost Allowance for each year must not be lower than the least cost mix of generating plant (based on those plants earning an economic return on their market value), including any plant that would be required to meet any regulatory obligation, (using generation technology that is available in the NEM for the relevant year/period), to efficiently meet each Standard Retail Supplier's forecast regulated load.

IPART should allow for a periodic review of the Energy Purchase Cost Allowance, including the costs of complying with greenhouse and energy efficiency schemes.

IPART should allow for energy losses as published by the Australian Energy Market Operator (AEMO).

IPART should allow for market fees and ancillary fees as imposed by AEMO under the National Electricity Rules.

Retail Costs

Standard Retailers incur retail operating costs in supplying electricity customers, which include the costs associated with customer service (eg, operating call centres, billing and collecting revenue), finance, IT systems, and regulation (eg, licence fees).

IPART will determine an allowance for retail operating costs based on efficient costs. IPART will take into account NSW Standard Retailers' efficient costs and other available information on efficient operating costs for retailers.

IPART should also ensure regulated retail tariffs are set at a level which encourages competition in the retail electricity market by including customer acquisition costs in the retail cost allowance.

Retail Margin

IPART will determine an appropriate retail margin giving consideration to any risks not compensated elsewhere arising from supplying regulated customers.

A.1.3 Consultation

IPART should consult with stakeholders, conduct public hearings or workshops and consider submissions, within the timetable for the investigation and report. IPART must make its report available to the public.

A.1.4 Timing

IPART is to investigate and provide a report of its Draft Report and Draft Determination of regulated retail tariffs and charges within 6 months of receiving the terms of reference and a Final Report and determination within 3 months of releasing the Draft Determination. IPART is also to publish an Issues Paper and methodology paper within 2 months of receiving the terms of reference.

A.1.5 Definitions

Regulated retail tariff means a tariff for or in relation to the supply of electricity required to be charged to a small retail customer under a standard form customer supply contract, being a tariff specified in a determination in force under Division 5 of Part 4 of the *Electricity Supply Act 1995*.

Small retail customer means a customer that consumes electricity at less than 160 MWh per year as prescribed in clause 7 of the *Electricity Supply (General) Regulation 2001*. A small retail customer is eligible for supply under a standard form customer supply contract.

Standard retail supplier means a retail supplier to whose retail supplier's licence is attached a standard retail supplier's endorsement. A standard retail supplier must impose tariffs and charges for or in relation to supplying electricity under a standard form customer supply contract in accordance with any relevant determination of IPART under Division 5 of the *Electricity Supply Act 1995*.

Standard form customer supply contract means a contract entered into under Division 3 of Part 4 of the *Electricity Supply Act 1995*.

B WACC

- 1 Our decision is to use a real pre-tax WACC of 7.1% and 8.0% to apply to electricity generation and retail respectively to update the energy cost allowance and cost pass through amounts in 2012/13.

The weighted average cost of capital (WACC) is used as a discount rate assumption for our modelling of the energy purchase costs and cost pass through assessments. As part of the 2012 annual review, we have updated the market-based parameters of the WACC.

The updated WACC for electricity generation is used to determine the discount rate in modelling the LRMC of generation (Chapter 3). The updated WACC for electricity retail is used to determine the efficient cost pass through amounts in Chapter 4.

We decided in our 2010 determination to update the WACC for the annual reviews using the same methodology for market-based parameters and valuations for non-market-based parameters that were used in the 2010 determination. The market-based parameters are the:

- ▼ risk free rate
- ▼ inflation adjustment
- ▼ debt margin.

We have updated these parameters using market data sampled over the 20-day trading period to 9 May 2012. We used the same methodology as was used in the 2010 determination to update these parameters.

We obtained a risk free rate of 3.7% from the 20-day average of the yield on 10-year nominal Commonwealth Government bonds. Our updated value of the 10-year inflation adjustment for the annual review is 2.8%. This was derived from the 20-day average of inflation swap market data. We obtained a debt margin range of 2.1% to 3.6%. We obtained the updated debt margin range from the yields on Australian corporate bonds with a BBB/BBB+ credit rating and at least 2 years to maturity. We also included the Bloomberg 7-year BBB fair value curve in our sample. An allowance of 12.5 basis points was added for debt raising costs.

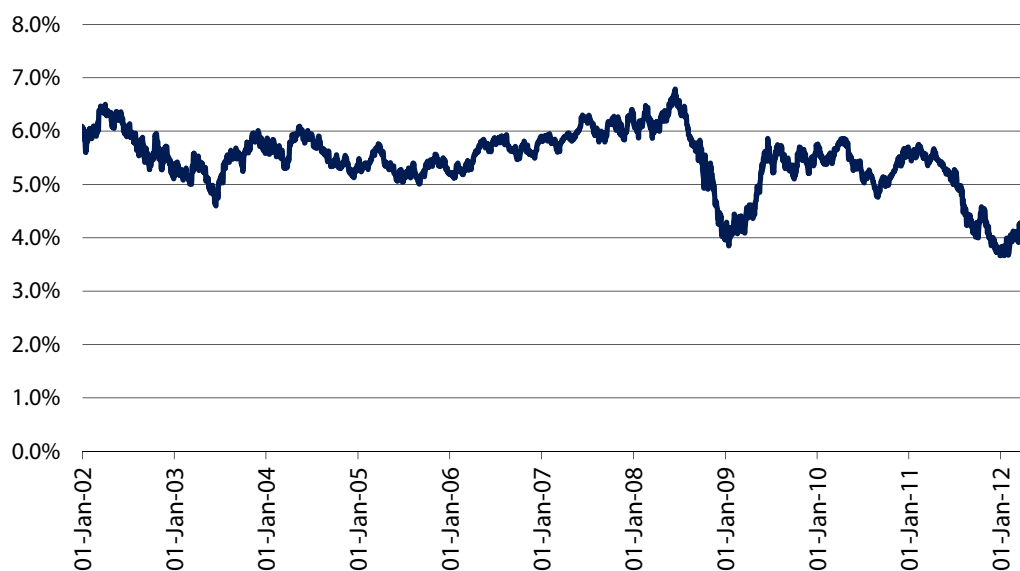
As required by the 2010 determination, we have maintained all other parameter valuations. Table B.1 sets out the parameters used in the draft and final decisions.

Table B.1 Rate of return range and parameters

WACC parameters	Final decision		Draft decision	
	Generation	Retail	Generation	Retail
Nominal risk free rate	3.7%	3.7%	3.8%	4.1%
Inflation adjustment	2.8%	2.8%	2.8%	3.0%
Market risk premium (MRP)	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%
Debt margin	2.1% to 3.6%	2.1% to 3.6%	2.4% to 3.9%	2.5% to 3.9%
Debt to total assets	50%	30%	50%	30%
Gamma	0.5 to 0.3	0.5 to 0.3	0.5 to 0.3	0.5 to 0.3
Tax rate	30%	30%	30%	30%
Equity beta	0.9 to 1.1	0.9 to 1.1	0.9 to 1.1	0.9 to 1.1
Cost of equity	8.6% to 10.8%	8.6% to 10.8%	8.8% to 11.0%	9.1% to 11.3%
Cost of debt	5.8% to 7.3%	5.8% to 7.3%	6.2% to 7.8%	6.6% to 8.0%
WACC range (pre-tax real)	5.0% to 7.4%	5.8% to 8.7%	5.3% to 7.8%	6.2% to 9.1%
WACC midpoint (pre-tax real)	6.2%	7.2%	6.5%	7.6%
WACC point estimate (pre-tax real)	7.1%	8.0%	6.5%	7.6%

As shown in Table B.1, we have not selected the midpoints of the ranges for our point estimate of the WACC values. The methodology set down in our 2010 determination required the use of short term averages for the market-based parameters, and long term averages for other parameters. As noted by some stakeholders, there could potentially be a disparity between using short term averages of market data for some parameters and long term averages for others.

The risk free rate has been affected by market volatility and prolonged weak market conditions (see Figure B.1). The change in market conditions has potentially created a disparity between the risk free rate (for which we use short term averages) and the MRP (for which we use long term averages). In the current market circumstances, there is some evidence to support the view that expectations for the MRP have risen as bond yields have fallen. However, it is difficult to measure these short term variations in expectations for the MRP.

Figure B.1 Trends in the nominal risk-free rate

Data source: Bloomberg.

Our Terms of Reference require us to determine an energy purchase cost allowance for each year that is not lower than the least cost mix of generation plant, including a return on those assets.¹²³ Having regard to this requirement and the unusual market conditions we have selected WACC values that are above the midpoints of the range.

We consider that our determination on the WACC addresses the higher level of market uncertainty at this time, and stakeholders' concerns in relation to the way that market parameters are estimated. Our decision to depart from the midpoint of the range is consistent with our recent decisions. We used a point above the midpoint of the range in our final decision for the Sydney Desalination Plant.¹²⁴ The upper bound of the range was used in our draft decisions for Sydney Water Corporation¹²⁵ and Sydney Catchment Authority.¹²⁶

To guide our decision-making on the point estimate for the WACC we estimated the long term averages of the risk free rate, debt margin, inflation adjustment and the MRP. The WACC values calculated using long term averages using the electricity retail and generation parameters are set out in Table B.2. We selected a point estimate towards the upper end of the range of values after considering the long term WACC estimates.

¹²³ Terms of Reference, p 3.

¹²⁴ IPART, *Review of water prices for Sydney Desalination Plant Pty Limited – Final Decision*, December 2011, p 80.

¹²⁵ IPART, *Review of prices for Sydney Water Corporation's water, sewerage, drainage and other services – From 1 July 2012 to 30 June 2016 – Draft Report*, March 2012, p 179.

¹²⁶ IPART, *Review of prices for Sydney Catchment Authority – From 1 July 2012 to 30 June 2016 – Draft Report*, March 2012, p 115.

Table B.2 Short term and long term WACC calculation

WACC parameters	Final decision		Long term average	
	Generation	Retail	Generation	Retail
Nominal risk free rate	3.7%	3.7%	5.4%	5.4%
Inflation adjustment	2.8%	2.8%	2.5%	2.5%
Market risk premium	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%	5.5% to 6.5%
Debt margin	2.1% to 3.6%	2.1% to 3.6%	2.0%	2.0%
Debt to total assets	50%	30%	50%	30%
Gamma	0.5 to 0.3	0.5 to 0.3	0.5 to 0.3	0.5 to 0.3
Tax rate	30%	30%	30%	30%
Equity beta	0.9 to 1.1	0.9 to 1.1	0.9 to 1.1	0.9 to 1.1
Cost of equity	8.6% to 10.8%	8.6% to 10.8%	10.4% to 12.6%	10.4% to 12.6%
Cost of debt	5.8% to 7.3%	5.8% to 7.3%	7.4%	7.4%
WACC range (pre-tax real)	5.0% to 7.4%	5.8% to 8.7%	7.1% to 8.9%	8.0% to 10.6%
WACC midpoint (pre-tax real)	6.2%	7.2%	8.0%	9.2%
WACC point estimate (pre-tax real)	7.1%	8.0%	na	na

The rest of this appendix summarises the submissions made by stakeholders in response to our draft decision and provides our consideration on these issues.

B.1 Stakeholders comments

We received comments on the WACC update from AGL, TRUenergy and Origin. AGL and Origin's submissions were supplemented with advice from SFG Consulting (SFG) and PricewaterhouseCoopers (PwC) respectively. Stakeholders commented on the decline in the risk free rate and its implications for the MRP, the gamma, the gearing assumption, equity beta and the debt margin.

Risk free rate and MRP

AGL and Origin submit that there is a negative relationship between the risk free rate and the MRP. In periods of high investor risk aversion, there is a flight from risky assets to safe assets, or a 'flight to quality'. This tends to push up the price and push down the yields on safe assets. For this reason, falling risk free rates tend to be associated with rising investor risk premiums (and vice versa).¹²⁷ The use of the short term measure of the risk free rate and the long term MRP have resulted in a situation where the reduced yield on the risk free rate has been reflected in the WACC, but the corresponding increase in the MRP has not. AGL and Origin both

¹²⁷ SFG Consulting, *The weighted average cost of capital for electricity generation*, May 2012 p 9.

propose to rectify this by either using a long term risk free rate or a short term MRP.^{128,129}

PWC's advice notes that some finance practitioners have recently made adjustments to the risk free rate when preparing independent reports for mergers and acquisitions.¹³⁰

SFG's advice identifies a precedent set by the Australian Competition Tribunal (ACT) on this issue. The ACT considered whether, given the point in time of the short term average, the long term value of the MRP and the short term risk free rate would result in a sensible WACC outcome. The ACT's decision changed the point in time over which the short term average of the risk free rate was taken.¹³¹

Gamma

AGL and Origin note that we have recently conducted a review of gamma that has resulted in a reduction in our parameter estimate. We have reduced our valuation from a range of 0.3 to 0.5, to a point estimate of 0.25.¹³² They submit that we should adopt the lower value of 0.25 for the annual review.^{133,134}

SFG's advice notes that the ACT has determined that 0.25 is the most appropriate value of gamma. SFG considers that using a gamma of 0.3 to 0.5 may result in allocative inefficiencies as the resulting regulated retail electricity price will be different from what it would be if IPART had adopted its recent valuation of gamma.¹³⁵

PWC's advice summarises the evidence we considered in our recent review of gamma.¹³⁶

Gearing

AGL proposes that the gearing assumption for generation should be lowered to 20%-30% if the BBB/BBB+ credit rating assumption is to be used. Otherwise, debt should be priced assuming project finance is used.¹³⁷ AGL considers that the current approach is inconsistent with the metrics required by ratings agencies to obtain a credit rating of BBB/BBB+.

¹²⁸ SFG Consulting, *The weighted average cost of capital for electricity generation*, May 2012 p 12.

¹²⁹ Origin submission, May 2012, p 7.

¹³⁰ PwC, *Origin Energy Limited: Review of IPART draft WACC calculation*, May 2012, p 13.

¹³¹ *Application by EnergyAustralia and Others* [2009] ACompT 8, Paragraph 114.

¹³² IPART, *Review of imputation credits (gamma) – Final Decision*, March 2012.

¹³³ AGL submission, May 2012, p 8.

¹³⁴ Origin submission, May 2012, p 10.

¹³⁵ SFG submission, May 2012, p 1.

¹³⁶ PWC submission, May 2012, p 22.

¹³⁷ AGL submission, May 2012, p 8.

Origin also submits that the gearing ratio is inconsistent with a BBB/BBB+ credit rating and notes that gearing levels for large Australian energy utilities with a BBB rating are within the range of around 15% to 25%.¹³⁸

Equity beta

AGL considers that the equity beta value does not acknowledge the risk faced by a standalone generator. AGL notes that ACIL Tasman used an equity beta of 1.75 based on a 60% debt funding level in their 2010 report on energy costs to the QCA.¹³⁹

Debt margin

TRUenergy submits that the cost of debt for electricity generators has increased due to political uncertainty associated with the introduction of carbon pricing. It notes the margins on several debt packages obtained by generators, which range from 160 to 450 basis points.¹⁴⁰

Origin considers that the sample of Australian corporate bonds is not a suitable proxy for the 10-year BBB/BBB+ debt margin because the bonds have too short a term to maturity. Origin submits that the debt margin should be set using the Bloomberg 7-year fair value curve, plus a premium of 15 to 25 basis points to adjust it to a 10 year tenor.¹⁴¹

Other issues

AGL notes that 2 different sampling periods were used in the draft decision. Data was sampled to 3 February 2012 for electricity generation and to 19 March 2012 for electricity retail. Our final decision samples market parameters over 1 period.

B.2 Our consideration of issues raised by stakeholders

Risk free rate and MRP

We have maintained the range of 5.5% to 6.5% for the MRP and the use of short term averages to update the risk free rate. The 20-day average of the 10-year nominal risk free rate is 3.7%.

¹³⁸ Origin submission, May 2012, p 9.

¹³⁹ AGL submission, May 2012, p 9.

¹⁴⁰ TRUenergy submission, May 2012, p 1.

¹⁴¹ Origin submission, May 2012, p 9.

We note that there may be an inconsistency between using short term data for the risk free rate and using long term data for the MRP. As stakeholders have noted, there may be an inversely proportional relationship between the MRP and the risk free rate. In our 2010 determination, we decided that we will update the risk free rate using the 20-day average of market data but not the MRP.¹⁴² Our 2010 determination uses short term averages of the yield on government bonds, and an MRP value that is based on the long term historical arithmetic average of market returns over the risk free rate.

The risk free rate yields have declined significantly since making the 2010 determination. The 20-day average of the risk free rate in our 2010 determination was 5.5%. This value is comparable to the long term average of the risk free rate of 5.4%, as shown in Table B.2. As shown in Figure B.1, the current yield of 3.7% is significantly below both the risk free rate used in our 2010 determination and the long term rates.

We have recently made decisions for the water industry that recognise this issue. Rather than adjusting the risk free rate or revaluing the MRP, we made a judgment when selecting the WACC point estimate from within the range. We have adopted the same approach in this determination. We have not adjusted our parameter valuations at this time. It is difficult to measure the short term variations in expectations for the MRP. Other regulators in Australia commonly use 6%. The AER recently reduced its valuation of the MRP from 6.5% to 6%. Our most recent determinations in the water industry applied an MRP of 5.5% to 6.5%.

We have retained the use of short term averages for the risk free rate. Efficient market theory proposes that current market rates provide the best indication of future rates as current market prices account for all available information relevant to future prices. This approach is also consistent with our 2010 determination. We have provided assurance to stakeholders that we would limit the review of the WACC in the annual reviews to provide greater certainty and reduce the cost and regulatory burden of annual reviews. We consider that using short term averages to obtain the risk free rate should in principle provide both the best indication of the risk free rate over the financial year 2012 to 2013 and enhance the certainty that stakeholders can have in our regulatory decisions.

But we recognised that there may be a discrepancy between the use of short term yields on the risk free rate and long term averages for the MRP, particularly in the current market. As shown in Table B.2, the midpoint of the WACC calculated using short term averages of market data is significantly below the WACC based on long term data averages. The midpoint WACC values calculated using long term averages are 8.0% and 9.2% for electricity generation and retail respectively. In the current market circumstances, there is some evidence to support the view that expectations for the MRP have risen as bond yields have fallen. However, it is

¹⁴² IPART, *Review of regulated retail tariffs and charges for electricity 2010 to 2013 – Final Determination*, pp 13-14.

difficult to measure these short term variations in expectations for the MRP. We have considered the WACC using long term averages when making a judgement on the point estimate within the range.

We note that the ACT varied the AER's final determination because "the Tribunal considers that an averaging period during which interest rates were at historically low levels is unlikely to produce a rate of return appropriate for the regulatory period." Further, the ACT considered that there was "no basis at this stage for assuming that historically low interest rates will be representative of each of the five years commencing on 1 July 2009."¹⁴³ Our decision for the annual review updates the WACC to apply for the 2012/13 financial year only. As noted previously, current market rates provide the best indicator of future rates. Bond rates may revert to long term averages over time, although it is unknown if this will occur over the next 12 months. While a short term average of the risk free rate should produce the best estimate of the risk free rate, it does not address the negative relationship between movements in the MRP and the risk free rate. For this reason we have selected a WACC point above the midpoint of the range with reference to the long term averages of the WACC.

We note that within the constraints of the National Electricity Rules governing the regulation of networks, the ACT's decision did not lengthen the averaging period. Its decision was to use the same short term average, starting at a different point in time.

PWC has submitted evidence that some finance practitioners have adjusted their measure of the risk free rate to account for current market uncertainty. PWC's analysis suggests that practitioners have adjusted for the currently low yields on the risk free rate in a variety of ways including:

- ▼ sampling the risk free rate over a longer period of time
- ▼ using short term averages and adding an arbitrary premium to the risk free rate
- ▼ increasing their estimate of the MRP.¹⁴⁴

There are a number of actions that can be taken to recognise that there may be a disparity in the current market between the risk free rate (for which we use short term averages) and the MRP (for which we use long term data). For this annual review and in our recent decisions for the water industry we have selected point estimates of the WACC above the midpoint of the range, after considering the WACC estimated using long term averages of market data. This approach recognises the current uncertainty in the market and the possible discrepancy that arises from using a short term measure of the risk free rate and the long term MRP. To make adjustments at the parameter level and select a point above the midpoint of the range would be duplicative.

¹⁴³ *Application by EnergyAustralia and Others* [2009] ACompT 8 Paragraph 114.

¹⁴⁴ PwC, *Origin Energy Limited: Review of IPART draft WACC calculation*, May 2012, pp 13-14.

Gamma

Our decision maintains the gamma value of the 2010 determination of 0.3 to 0.5. While we determined in March 2012 that based on the current best evidence, gamma should be valued at 0.25,¹⁴⁵ the 2010 determination confines the manner in which the WACC is updated. It requires the gamma to be left unchanged.

We have developed our thinking on a number of aspects of the WACC calculation since the 2010 determination. As noted by stakeholders we have reduced the value of gamma to 0.25 in subsequent decisions. The effect of this decision is to increase the WACC. We have also adjusted our approach to estimating the debt margin and shortened the term to maturity assumption, from 10 years to 5 years in subsequent decisions. We have adopted a post-tax financial model which uses a post-tax WACC, instead of a pre-tax WACC in subsequent decisions. These other changes (in normal markets) result in either a decrease in the WACC, or result in no significant movement.

Just as we have not reopened past decisions to reflect our latest thinking on individual WACC parameters, we have not departed from agreed-upon methodologies and valuations from the 2010 determination for the annual update of the WACC. Therefore, we have not changed the gamma, our approach to estimating the debt margin, the term assumption when estimating market-based parameters or changed to a post-tax model in this annual review.

Equity beta and gearing

We have maintained the gearing assumptions of 50% for generation and 30% for retail. We have also maintained the equity beta range of 0.9 to 1.1. In the 2010 determination, we reviewed extensive evidence to determine the appropriate level for the equity beta and gearing assumption, including the equity beta and gearing from comparator businesses in the industry, the advice of our consultant, SFG, and the views expressed in independent valuation reports.

Review of the equity beta and gearing were not within the scope of the annual review as set out in the 2010 determination.

¹⁴⁵ IPART, *Review of imputation credits (gamma)* – Final Report, March 2012, p 1.

Debt margin

Due to changes in the Australian bond market since our 2010 determination, we have not been able to set the debt margin using the same sample of bonds as was used in the 2010 determination. However, we have applied the same principles as were used in the 2010 determination to obtain the debt margin valuation. We have selected a sample of securities from the Australian bond market with a credit rating of BBB to BBB+ and have at least 2 years to maturity. We have also included the Bloomberg 7-year BBB fair value curve in our sample. As was the case in the 2010 determination, the upper, lower and midpoint values derived from this sample of securities are inputs to our WACC calculator. These yields are expressed as a margin over the risk free rate and include 12.5 basis points for debt raising costs. The composition of the sample used to set the debt margin is detailed in Table B.3. The upper and lower bounds of the debt margin were set by the GAIF and Santos bonds respectively.

Table B.3 Yields on corporate bonds over the sampling period

Security	Ticker	Average yield over the sampling period (basis points)
Bloomberg Fair Value BBB 7 years	C3567Y Index	328.71
Mirvac Group	E1195249 Corp	257.97
Holcim	EJ096330 Corp	196.65
Sydney Airport	E1308853 Corp	232.37
Santos	EF102609 Corp	237.20
GAIF	E1675822 Corp	346.96
Mirvac Group	E1414696 Corp	342.63
New Terminal Finance	EF641357 Corp	272.70
United Energy	EJ118108 Corp	264.70
Dexus	E1223256 Corp	262.66
Sydney Airport	E1684902 Corp	296.59
Caltex	E1883417 Corp	256.02
Brisbane Airport	E1620440 Corp	264.64
APT Pipelines	E1325336 Corp	296.56

Note: Excludes debt raising costs.

Source: Bloomberg.

Both Origin and TRUenergy propose significant changes to the methodology to calculating the debt margin for the current annual review. As noted previously, we provided assurance to stakeholders that we would limit the annual review of the WACC to provide greater certainty and reduce the cost and regulatory burden of annual reviews. We considered in 2010 the benchmark cost of debt for retailers and generators and concluded that a BBB/BBB+ credit rating was suitable. We also considered whether we should use alternative debt pricing indicators such as bank debt facilities but concluded that as participants were rated BBB/BBB+, they should be able to raise corporate bonds in Australia or overseas.¹⁴⁶ We do not consider that the evidence presented justifies a change from the methodology used in the 2010 determination.

TRUenergy provided a sample of margins on debt facilities in their submission. These transactions are not priced by Bloomberg. We use data from Bloomberg as it is an independent and replicable source of market data that provides data over our sampling period. The TRUenergy sample of margins is not consistent with our trading period.

Origin has proposed to add a margin to yields on the fair value curve to adjust for tenor. We have considered whether it is appropriate to extrapolate for tenor as part of our previous review of the WACC. We decided against adjusting for tenor as it could “skew a debt margin estimate that is based on market data for a specific credit rating.”¹⁴⁷ Our review of the debt margin in 2011 confirmed this view.¹⁴⁸

¹⁴⁶ IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 - Final Report*, p 237.

¹⁴⁷ IPART, *IPART’s weighted average cost of capital*, April 2010, p 10.

¹⁴⁸ IPART, *Developing the approach to estimating the debt margin - Final Decision*, April 2011, p 34.

C The impact of carbon on electricity prices

In November 2011, the Commonwealth Government passed legislation to introduce a carbon pricing mechanism starting on 1 July 2012. The mechanism will place a price on greenhouse gas emissions from around 500 Australian largest emitters.

The objective of the scheme is to drive a structural change away from high-emissions intensity products and processes. Broadly speaking, businesses emitting more than 25,000 tonnes of greenhouse gases per year will need to surrender a carbon permit for each tonne of CO₂-e they release into the atmosphere. Some carbon permits will be provided to eligible businesses at no cost as part of a Government assistance package, and the remaining amount will need to be purchased.

The proposed carbon price will start at \$23 per tonne of CO₂-e and rise at 2.5% (plus inflation) for the next 2 years.¹⁴⁹ On 1 July 2015, the fixed price will transition into a flexible pricing mechanism, where the carbon price will be determined by the market.¹⁵⁰

The carbon pricing mechanism will increase the cost of generating electricity, which will increase wholesale prices, and thus the retail price of electricity. This is intended to send price signals to high emission-intensive generators, and facilitate the transition to a low emission-intensive energy sector. In addition, a price on carbon will send price signals to electricity consumers about the environmental impact of their consumption, and thereby reduce overall consumption and the associated carbon pollution.

The impact of carbon price on wholesale electricity markets

To supply their customers, electricity retailers in NSW must purchase wholesale electricity through the National Electricity Market (NEM). Wholesale trading in electricity is conducted as a spot market where supply and demand are instantaneously matched.

Different types of generators participate in the NEM, ranging from high-emission intensity generators such as coal-fired plants to generators that do not emit greenhouse gases to produce electricity such as wind farms.

¹⁴⁹ <http://www.cleanenergyfuture.gov.au/clean-energy-future/carbon-price/#content01>

¹⁵⁰ Subject to a price floor and ceiling that applies for the first 3 years of the flexible price period.

Generators offer to supply the market with specific amounts of electricity at particular prices. The Australian Energy Market Operator (AEMO) issues instructions to each generator to produce the required quantity of electricity that will meet demand at all times in the most efficient way, while maintaining the technical security of the power system.

The introduction of a carbon price will change the costs faced by generators to supply electricity in 2 ways:

- ▼ **Direct effects** - Generators that burn fossil fuels (ie, coal and gas-fired plants) will need to surrender one carbon permit for each tonne of greenhouse gas emissions they release into the atmosphere.¹⁵¹ The cost faced by generators that do not emit greenhouse emissions, such as wind farms, will remain unchanged.
- ▼ **Indirect effects** - Fossil fuel generators may also face higher fuel costs due to the introduction of a price on carbon. Producers of coal and gas may have to purchase carbon permits for methane and carbon dioxide which escapes into the atmosphere when coal is mined and gas is produced. These costs might be passed down the supply chain into wholesale gas and coal prices.

As a result of the carbon price, fossil-fuel generators are expected to increase the prices at which they are willing to sell electricity into the wholesale market. The extent to which wholesale market prices will increase as a result of the carbon price will depend on a range of factors, including the emissions intensity of the marginal plant, the existing mix of generation technologies in each NEM region, the competitiveness and market dynamics of the NEM, and the type of contracts that generators have in place.

The cost that retailers incur in purchasing electricity from the wholesale market represents around 40% of their total cost base. To remain financially viable, retailers will need to recover the higher electricity purchase costs they face as a result of carbon, and as such these higher costs will be reflected in the prices at which retailers are willing to sell electricity to their customers. Therefore, some of the cost of purchasing carbon permits by generators will flow down the supply chain to customers in the form of higher electricity prices.

¹⁵¹ The carbon cost of each generation plant is determined by taking the legislated carbon price and multiplying by the emissions intensity of the generation plant.

D The Renewable Energy Target scheme

In 2009, the Renewable Energy Target (RET) scheme commenced, expanding on the former Mandatory Renewable Energy Target (MRET) scheme, which had been operational since 2001.¹⁵² The RET scheme is designed to deliver on the Commonwealth Government's commitment to ensure that 20% of Australia's electricity supply will come from renewable sources by 2020.

From 1 January 2011, the RET scheme was split into 2 parts:

- ▼ the Small-scale Renewable Energy Scheme (SRES), and
- ▼ the Large-scale Renewable Energy Target (LRET).

The schemes aim to:

- ▼ encourage the additional generation of electricity from renewable sources
- ▼ reduce emissions of greenhouse gases in the electricity sector, and
- ▼ ensure that renewable energy sources are ecologically sustainable.

The schemes are established by the *Renewable Energy (Electricity) Act 2000* (Cth) and the accompanying *Renewable Energy (Electricity) Regulations 2001* (Cth).

The Act, Regulations, and all associated requirements are administered by the Clean Energy Regulator (CER).¹⁵³

D.1 Small-scale Renewable Energy Scheme

The SRES creates a financial incentive for households and small businesses to install eligible small-scale renewable energy systems. These systems include solar water heaters, heat pumps, solar panel systems, small-scale wind systems, and small-scale hydro systems.¹⁵⁴

¹⁵² <http://www.climatechange.gov.au/government/initiatives/renewable-target.aspx>

¹⁵³ <http://ret.cleanenergyregulator.gov.au/home/home>

¹⁵⁴ For more information on the SRES as discussed in this section see: <http://ret.cleanenergyregulator.gov.au/About-the-Schemes/sres>

It does this by requiring liable entities (such as electricity retailers) to surrender Small-scale Technology Certificates (STCs) on a quarterly basis. One STC 'represents' one megawatt hour (MWh) of electricity generated or displaced (with the exception of the Solar Credits multiplier).

How STCs are created

The owners of eligible small-scale systems are entitled to create STCs based on how much renewable electricity their systems produce or displace (on a deemed basis). The number of STCs a system can create is based on:

- ▼ the amount of electricity deemed to be generated or displaced by the system over the course of its lifetime (this is assumed to be 15 years)
- ▼ the geographic location of the installation
- ▼ its size and capacity, and
- ▼ the Solar Credits multiplier (see below).

Solar Credits multiplier

Solar credits¹⁵⁵ provide an additional benefit for those who install small renewable energy generation units. Solar credits apply to the first 1.5 kilowatts (kW) of capacity installed for systems connected to a main electricity grid and up to the first 20 kW of capacity for off-grid systems.

Solar credits work by multiplying the number of STCs that systems would generally be eligible to create. For systems installed from 1 July 2011 to 30 June 2012, the multiplier is 3 and is scheduled to reduce to 2 on 1 July 2012 before reverting to the standard rate of STC creation (a multiplier of one) applies for systems installed from 1 July 2013.¹⁵⁶

Demand for STCs

The SRES places a legal liability on liable entities to surrender STCs. The number of STCs to be surrendered is calculated using the Small-scale Technology Percentage (STP), set annually in the Regulations.¹⁵⁷ The STP is calculated on the estimated:

- ▼ value (MWh) of small-scale technology certificates that will be created for the year
- ▼ amount of electricity that will be acquired by liable entities for the year, and
- ▼ amount of all partial exemptions expected to be claimed for the year.

¹⁵⁵ *Renewable Energy (Electricity) Act 2000* (Cth), s23B; *Renewable Energy (Electricity) Regulations 2001* (Cth), clause 20.

¹⁵⁶ For more information on Solar Credits including transitional arrangements see: <http://ret.cleanenergyregulator.gov.au/Solar-Panels/Solar-Credits/solar-credits>

¹⁵⁷ *Renewable Energy (Electricity) Regulations 2001* (Cth), clause 23A.

There is no target or cap on the number of STCs that get created in any given year.

The liable entity may purchase their STCs through an agent who deals with STCs, or transactions may occur through the clearing house at a fixed price of \$40. However, certificates may take some time to clear, thus delaying payment to the seller.

Certificate surrender

Liable entities surrender to CER the STCs that they have purchased. This takes place quarterly in April, July, October and February of each calendar year. If a liable entity does not surrender its required number of STCs in a quarter, it will have to pay a shortfall charge, currently set at \$65¹⁵⁸ per STC not surrendered.

The quarterly obligations to surrender STCs in calendar year 'n' are determined as follows:¹⁵⁹

$$\begin{aligned}\text{Quarter 1} &= 35\% * \text{STP}_n * (\text{REAn-1} - \text{PECn-1}) \\ \text{Quarter 2} &= 25\% * \text{STP}_n * (\text{REAn-1} - \text{PECn-1}) \\ \text{Quarter 3} &= 25\% * \text{STP}_n * (\text{REAn-1} - \text{PECn-1}) \\ \text{Quarter 4} &= \text{STP}_n * (\text{REAn} - \text{PECn}) - (\text{Q1} + \text{Q2} + \text{Q3})\end{aligned}$$

Where:

STP_n is the STP for year n

REAn is the retailer's relevant acquisitions¹⁶⁰ of electricity in year n

PECn is the retailer's partial exemption certificates in MWh in year n.

D.2 Large-scale Renewable Energy Target

The LRET creates a financial incentive for the establishment and growth of renewable energy power stations, such as wind and solar farms, or hydro-electric power stations.¹⁶¹

This is achieved by legislating demand for Large-scale Generation Certificates (LGCs). LGCs are created based on the amount of eligible renewable electricity produced by the power stations.

¹⁵⁸ <http://ret.cleanenergyregulator.gov.au/For-Industry/Surrender/Quarterly-STC-Liability-Surrender/STC-Surrender>

¹⁵⁹ More information about quarterly liability under the SRES can be found on CER's website: <http://ret.cleanenergyregulator.gov.au/For-Industry/Liable-Entities/Determining-Liability/determine-liability>

¹⁶⁰ Relevant acquisitions are large purchases of electricity by retailers – see Sections 31 and 32 of the *Renewable Energy (Electricity) Act 2000*.

¹⁶¹ For more information on the LRET as discussed in this section see: <http://ret.cleanenergyregulator.gov.au/About-the-Schemes/lret>

How LGCs are created

Eligible power stations are entitled to create LGCs based around how much **additional** renewable electricity they produce above their baseline. The baseline is based on historical electricity generation, or for power stations which first generated electricity after 1 January 1997, the baseline is zero.

One LGC equals one MWh of generated renewable energy electricity. LGCs are sold through the open market, where the LGC price is determined by supply and demand.

Demand for LGCs

The LRET places a legal requirement on liable entities (typically electricity retailers) to surrender a set number of LGCs each year. The number of LGCs to be surrendered is calculated using the Renewable Power Percentage (RPP), set annually in the Regulations.¹⁶² The RPP takes into account:

- ▼ the required amount in the renewable electricity target for the year (the LRET specifies the amount of renewable energy to be generated for every year up to 2030)
- ▼ the estimated amount of electricity that will be acquired by liable entities for the year
- ▼ any under or over surrender of LGCs against the annual targets of previous years, and
- ▼ the estimated amount of all partial exemptions (provided as Partial Exemption Certificates (PECs) to eligible emissions-intensive trade-exposed (EITE) industries) expected to be claimed for the year.

Liable entities multiply the RPP by their total MWhs of relevant electricity that they acquire to determine how many LGCs they will need to surrender for that year.

Liable entities can purchase LGCs directly from renewable energy power stations or through Agents. Ownership of LGCs is transferred in the REC Registry, with payment negotiated directly between the businesses outside of the Registry.

Certificate surrender

Liable entities must surrender to CER the required number of LGCs to meet their annual liability (as determined by the RPP). If a liable entity does not surrender its required number of LGCs in a year, it is liable to pay a shortfall charge, currently set at \$65 per LGC not surrendered.

¹⁶² *Renewable Energy (Electricity) Regulations 2001* (Cth), clause 23.

E Further information on low-income households

In chapter 6 we analysed the impact of energy price increases on energy customers. We indicated that low-income households with high energy use may be most affected by rising energy prices. This appendix provides more information about low-income households. For the purposes of this analysis, low-income households are defined as households with annual income between \$14,000 and \$38,000 (before tax) in 2012/13.^{163,164}

Drawing on our household survey data, we examine how and why energy bills (and therefore the share of income spent on energy) vary between low-income households. We consider:

- ▼ variation in usage across all households
- ▼ variation in low-income households' energy bills, and
- ▼ what drives the variation in bills.

We then provide a profile of low-income households, both Australia-wide and for Sydney. The purpose of our analysis is to provide information to inform discussions about assistance measures.

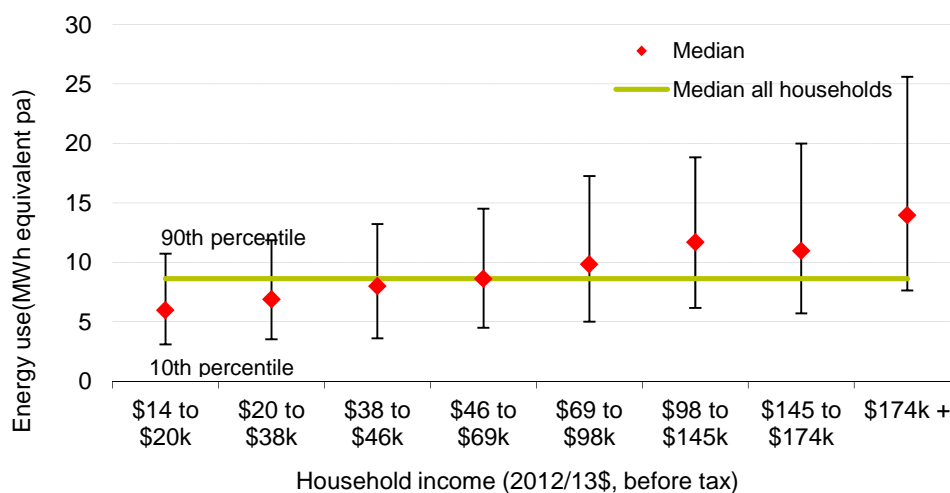
E.1 Do low-income households use more energy?

Our analysis in Chapter 6 found that low-income households generally spend a higher proportion of their disposable income on energy than do higher income households (Figure 6.3). But this does not mean that low-income households use more energy than higher income households (and therefore pay higher bills). On the contrary, low-income households generally use less energy than higher income households, and pay lower bills (Figure E.1. and Figure E.2).

¹⁶³ Large households with incomes exceeding \$38,000 may also be classified as low-income.

¹⁶⁴ We excluded households with income below \$14,000 per year because many of these household are likely to have only temporarily low incomes. For example, the category includes households with income from businesses that, for whatever reason, were not profitable in the preceding year.

Figure E.1 Indicative energy use for residential customers — Sydney and surrounds, equivalent MWh per year^a

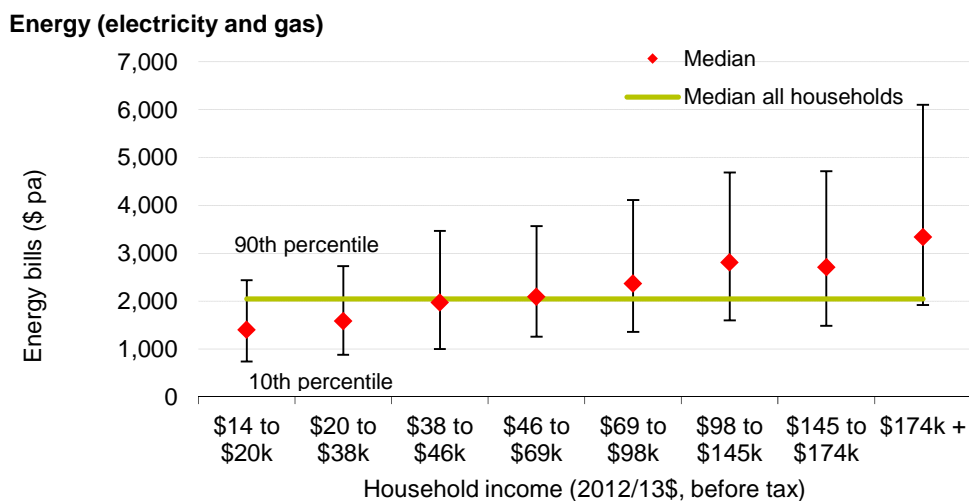


^a Gas consumption is converted to equivalent MWh using the conversion factor of 3.6 MJ per kWh.

Note: Distributions are presented without weighting survey responses.

Data source: IPART Household Survey, 2008 and 2010.

Figure E.2 Indicative energy bills for residential customers — Sydney and surrounds, \$ per year



Note: Bills after rebates. Distributions are presented without weighting survey responses.

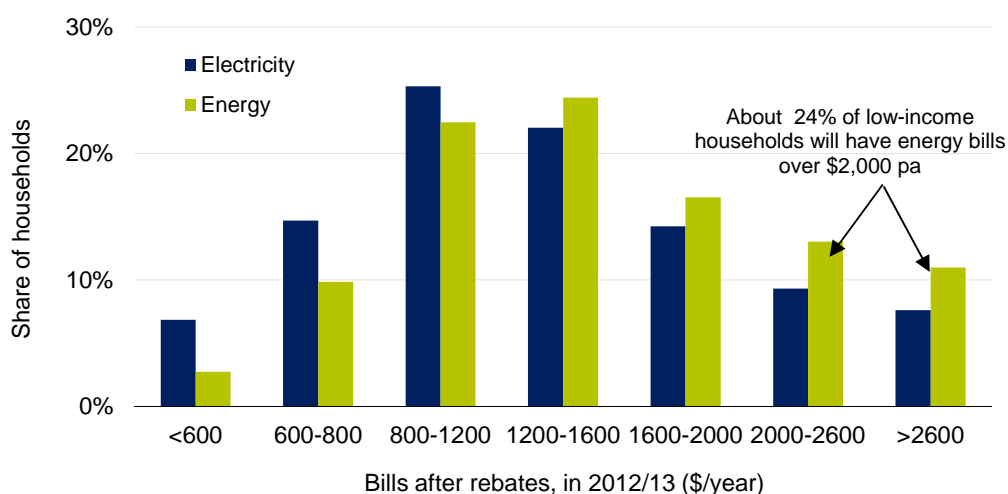
Data source: IPART Household Survey, 2008 and 2010.

E.2 How energy bills for low-income households vary in metropolitan NSW?

There is wide variability in the bills of low-income households, as well as in the share of their income that is spent on energy. Looking at variability in bills, annual energy bills in 2012/13 for low-income households will range from less than \$600, to more than \$2,600. For almost a quarter of these households, their annual energy bill is likely to be more than \$2,000 (Figure E.3).

Low-income households with high bills will be most affected by price increases. The next section discusses the main reasons for the variability in the bills of low-income households.

Figure E.3 Indicative energy bills for low income households — Sydney and surrounding areas 2012/13



Note: Low income households are those whose annual household income will be between \$14,000 and \$38,000 in 2012/13 (before tax and before carbon compensation payments). Survey responses are weighted. Customer bills are net of the Low Income Household Rebate.

Data source: IPART Household Survey.

E.3 The drivers of variation in energy bills

We analysed our household survey data to better understand why low-income households' bills vary so much.¹⁶⁵ More specifically, we looked at why these households spend such different proportions of their disposable income on energy.

¹⁶⁵ We used semi-log regression analysis, where the dependent variable is the log of the proportion of income spent on energy.

E.3.1 Factors that affect the proportion of income spent on energy

The proportion of its disposable income that a household spends on energy depends on:

- ▼ how much disposable income it has
- ▼ how much energy it uses, and
- ▼ what prices it pays for that energy.

How much energy a household uses in turn depends on the characteristics and the choices made by that household. These characteristics and choices include how many people there are in the household, what it uses energy for and how efficiently it uses that energy.

E.3.2 What we found to be the main drivers of variability

We found that differences in income have the biggest impact on the proportion of income spent on energy. This is true both within the low-income group and across all households (Figure E.4).

Looking at the factors that drive energy use, for low-income households the number of people in the household (particularly adults¹⁶⁶) is the most important factor.¹⁶⁷ The next most important factors are, respectively:

- ▼ having a swimming pool
- ▼ how often an air conditioner is used
- ▼ how often a clothes dryer is used, and
- ▼ having a 2nd fridge.

The pattern is somewhat different across the whole population. In particular, the number of people in a household explains less of the variation between all households (Figure E.4).¹⁶⁸

¹⁶⁶ An adult means a person over the age of 15 years.

¹⁶⁷ In the regression model, the number of people in the household shows variations in energy use per person after taking into account things like how often a clothes dryer is used and how large the dwelling is. For more information about what each variable captures, see IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*. December 2011.

¹⁶⁸ Using a dishwasher was included as variable in the regression model and is statistically significant. However, this variable captures more than just how much energy a dishwasher uses and is therefore not included in this discussion. For more information, see IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*. December 2011, pp 24-30.

The type and size of dwelling also has an impact on how much energy a household uses. One of the main reasons is that detached houses and larger dwellings tend to require more energy to heat or cool. Also, larger dwellings tend to have larger hot water systems and require more lighting. Our analysis shows that, for low-income households, the type of dwelling (ie, detached house, semi-detached dwelling or apartment) has an important impact on energy bills.¹⁶⁹ In contrast, the size (measured by the number of bedrooms) does not have much impact once other factors (such as the number of people and having a 2nd fridge) have been taken into account.¹⁷⁰ For other income groups, both the type and the size of the dwelling are important (Figure E.4).

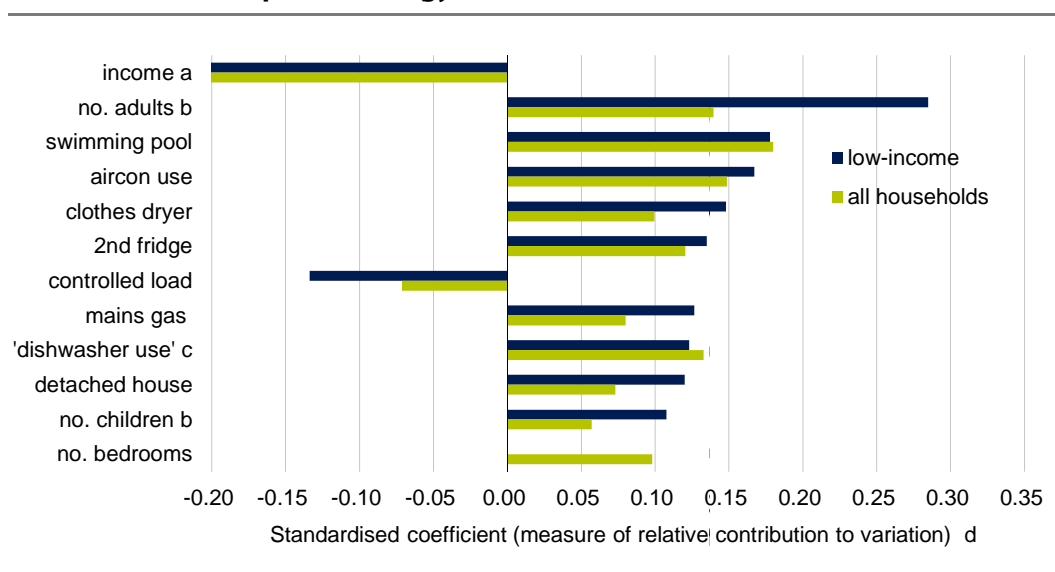
Different types of energy attract different prices. For example, usage prices for controlled load (ie, off-peak) hot water systems are significantly lower than for other electric hot water systems.¹⁷¹ Our analysis suggests that, on average, having a controlled load hot water system means lower bills. On the other hand, using mains gas – and therefore paying 2 access prices – tends to mean higher energy bills. Both of these factors account for more of the variation between low-income households than between all households (Figure E.4).

¹⁶⁹ Our survey data indicate that more than 35% of low-income 1 person households and more than 70% of 2 person low-income households live in detached houses. Many of these households are age pensioners and many of their houses have 3 or more bedrooms (IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011, p 67.

¹⁷⁰ One of the possible reasons for this is that low-income pensioners living in the family home tend to use only some of their rooms.

¹⁷¹ A controlled load electricity supply is remotely controlled by the network provider, and is usually switched on only at night. It has a separate meter and is mostly used for hot water.

Figure E.4 The relative impact of selected factors on the proportion of disposable income spent on energy



a The standardised coefficients for income are too high to show on the chart (-0.85 for all households and -0.45 for low-income households).

b An adult means a person older than 15 years and a child means a person 15 years or younger. These variables capture information about uses for energy other than those already accounted for in the regression model, eg, hot water, washing machines, computers, cooking.

c More than any of the other variables, the variable 'using a dishwasher' captures factors other than simply using a dishwasher. It therefore shows more than just the impact of using a dishwasher. For more information, see IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011, pp 24-31.

d A standardised coefficient measures the expected change in the dependent variable when the explanatory variable is increased by 1 standard deviation. The purpose of these coefficients is to identify which explanatory variables have a bigger impact on the dependent variable when the former are measured in different units.

Note: Semi-log regression analysis. Household bills calculated using regulated prices for 2012/13 (estimated). The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2009/10. Income for each band is inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Customer bills are net of rebates.

Data source: IPART Household Survey, 2010. IPART analysis.

We also estimated what proportion of the household's disposable income each of these energy-using items and household characteristics will 'cost' (on average) in 2012/13. As Figure E.5 shows, we found that:

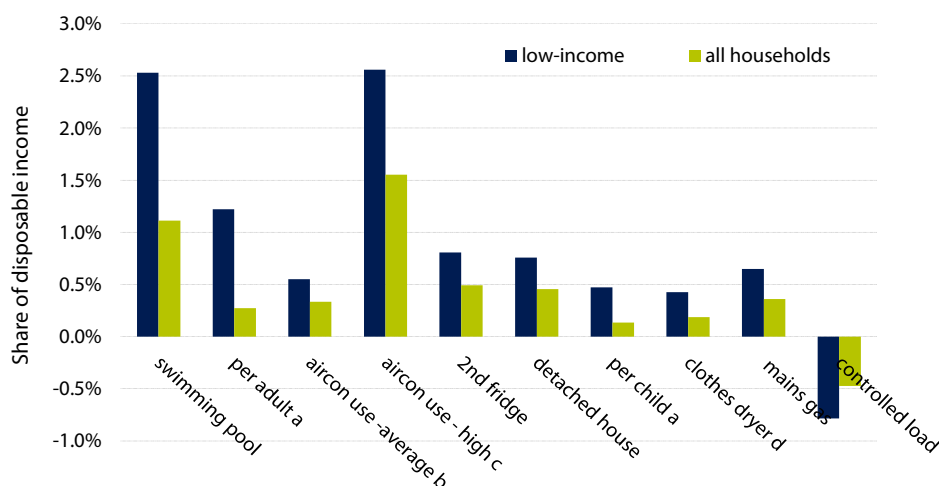
- ▼ having a swimming pool will cost a low-income household about 2.5% of its disposable income (compared to about 1% for all households)
- ▼ using an air conditioner very frequently may cost as much as – or potentially more than – having a swimming pool¹⁷²
- ▼ living in a detached house rather than a semi-detached dwelling or an apartment, and running an old 2nd fridge will each cost a low-income household about 0.8% of its disposable income (compared to 0.5% for all households)
- ▼ using a clothes dryer once a week will cost about 0.4% of a low-income household's income (compared to 0.2% for all households).

We also found that the additional amount of energy¹⁷³ used by each adult in the household will cost about 1.2% of a low-income household's disposable income, and the amount used by each child will cost about 0.5% of this income (compared to 0.3% and 0.1% respectively for all households).

These findings suggest that, for some low-income households with high energy bills, energy efficiency measures may be an effective way to reduce the impact of higher prices. Some of these measures could be as simple as turning off – or disposing of – a 2nd fridge, or turning down the thermostat on a hot water system.

¹⁷² We estimated that a low-income household will spend 2.5% of its disposable income for using an air conditioner 7 days per week, 7 hours per day for 6 months of the year.

¹⁷³ For purposes other than those already accounted for, such as hot water and computers.

Figure E.5 Proportion of disposable income that different energy uses 'cost'

a An adult means a person older than 15 years and a child means a person 15 years or younger. These variables capture uses for energy other than those already accounted for in the regression model, eg, TVs, computers, cooking.

b Average use means the equivalent of 3 days per week, 3.5 hours per day for 6 months of the year.

c High use means the equivalent of 7 days per week, 7 hours per day for 6 months of the year.

d For using a clothes dryer once per week.

Note: Linear regression analysis. Household bills calculated using regulated prices for 2012/13 (estimated). The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2009/10. Income for each band is inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Customer bills are net of the Low Income Household Rebate.

Data source: IPART Household Survey, 2010.

E.3.3 The prevalence of these drivers amongst low-income households

Some of these energy-using items are fairly common amongst low-income households, while others are not. Table E.1 provides more information about the prevalence of the drivers amongst low-income households compared to all households.

Table E.1 Selected characteristics of Sydney households in 2010

		Low-income households	All households
Live in a detached house	%.	55	62
Bedrooms	no.	2.8	3.2
Adults (>15 years old)	no.	1.6	2.2
Children (up to 15 years old)	no	0.2	0.4
Have a swimming pool	%	7	15
Have an air conditioner	%	55	59
Have a second fridge	%	37	47
Have a clothes dryer	%	53	66
Have a dishwasher	%	27	52
Air conditioner use ^a	hrs/year	155	167
Dishwasher use ^a	times per week	0.7	1.9
Clothes dryer use ^a	times per week	0.7	0.9
Have controlled load	%	41	40
Use mains gas	%	39	49

^a Average for all households, including those that do not have, or do not use, the appliance.

Note: Survey data are weighted to correct for sample biases in dwelling type.

Source: IPART, *Determinants of residential energy and water consumption in Sydney and surrounds. Regression analysis of the 2008 and 2010 household survey data*, December 2011, p 93.

E.4 A profile of low-income households

We used both ABS data for the lowest income quintile¹⁷⁴ and our household survey data to provide a profile of low-income households.

A high proportion of low-income households are one person households or couples without children – almost 70% of households in the lowest income quintile compared to around 50% of all households. Most of these one person and couple households are older than 54 years, and a high proportion are older than 64 years. One parent households make up a further 10% of the lowest income quintile (Table E.2).

The vast majority of low-income households receive government pensions or allowances – about 88% of households in the lowest income quintile compare to 45% of all households. For more than half of these households, government pensions and allowances provide at least 90% of total household income. But at the same time, many of these households have low accommodation costs because they are owners with no mortgage – 46% compared to 33% of all households (Table E.2)

¹⁷⁴ Australian Bureau of Statistics, *6523.0 Household Income and Income Distribution, Australia - Detailed tables, 2009-10*, Table 6A.

Table E.2 Key characteristics of households in the lowest income quintile – 2009/10

	Lowest income quintile	All households
	%	%
Family composition of household		
One person	43	24
Couple only	26	26
One parent family	10	6
Couple with dependent children	14	26
Other	8	17
Age profile		
One person households >64 yrs	54	36
One person households <55yrs	24	43
Couple households >64 yrs	33	66
Couple households <55yrs	12	42
Contribution of government pensions and allowances to gross household income		
Nil or less than 1%	12	45
50% to less than 90%	16	9
90% and over	58	16
Tenure and landlord type		
Owner without a mortgage	46	33
Owner with a mortgage	16	36
Renter - public housing	12	4
Renter - private or other	23	25

Note: The lowest income quintile had a pre-tax income threshold of around \$38,000 in 2009/10. A quintile means 20% of households.

Source: Australian Bureau of Statistics, 6523.0 Household Income and Income Distribution, Australia - Detailed tables, 2009-10, Table 6A, IPART analysis.

Our household survey data provides a similar profile of low-income households in Sydney. The data also show that a high proportion of low-income households, and in particular low-income couples, live in detached houses. Many of these houses have 3 or 4 bedrooms. Households in detached houses are more likely to have the items that we have identified as contributing to high energy bills, such as 2nd fridges and air conditioning (Box E.1).

Box E.1 Profile of low-income households in Sydney (2010)

In Sydney (2010), about 80% of low-income households had only 1 or 2 occupants. Their ages and incomes suggest that the majority of these households were pensioners:

- ▼ More than 70% of 1 person households were aged 65 years or older and only 11% were younger than 55 years (survey respondent's age).
- ▼ More than 60% of 2 person households were headed by people aged 65 years or older and only 16% were younger than 55 years (survey respondent's age).

Many low-income households lived in detached houses – more than 35% of 1 person households and more than 70% of 2 person households. Many of these houses had 3 or more bedrooms.

The households that lived in detached houses were more likely to

- ▼ have a 2nd fridge, for example 45% of 1 person households compared to 13% in a flat, and 59% of 2 person households compared to 8% in a flat
- ▼ have a dishwasher, for example 26% of 1 person households compared to 10% in a flat, and 39% of 2 person households compared to 23% in a flat
- ▼ have air conditioning, for example 59% of 1 person households compared to 27% in a flat, and 75% of 2 person households compared to 39% in a flat
- ▼ have a swimming pool – almost 10% of both 1 and 2 person households.

a The survey data are weighted to correct for sample biases in dwelling type, household structure and income.

Source: IPART analysis of data from the Sydney (2010) household survey.

F Change in energy bills, income and consumption since 2006/07

Chapter 6 analysed the impact of energy price increases on energy customers for a single year - 2012/13. This appendix considers the cumulative impact of energy price increases since 2006/07. It shows how energy bills as a proportion of disposable income will have changed for households in metropolitan NSW between 2006/07 and 2012/13, after the 1 July 2012 price increases. It shows this for all households as well as for low-income households.

For most of our analysis, we assumed that each household will use as much energy in 2012/13 as it did in 2006/07. However, electricity usage has fallen somewhat in recent years. As a consequence, energy bills may be somewhat lower in 2012/13 than our analysis indicates. This appendix also provides some information about how electricity usage has fallen, and what this may mean for energy bills.

Our analysis shows that energy bills are likely to represent a larger share of household disposable income in 2012/13 than they did in 2006/07, despite a decline in electricity usage. This contrasts with the findings of the ABS's most recent Household Expenditure Survey¹⁷⁵ (HES, conducted in 2009/10). This survey found that, on average, energy bills represented the same share of total household expenditure in 2009/10 that they had in 2003/04. This appendix explains why our findings differ from those of the HES.

F.1 Energy bills as a share of disposable income in 2006/07 and 2012/13 (for unchanged energy usage)

Once the 1 July 2012 price changes take effect, electricity prices will have increased by more than 70% in real terms since 2006/07. Gas prices have increased too – by more than 15% in real terms between 2006/07 and 2011/12, and with a further increase of around 14% on 1 July 2012. Household incomes have also increased, but by less than energy prices in percentage terms (although by far more in dollar terms). Consequently, for the same amount of energy, the majority of households will spend a larger share of their disposable income on energy in 2012/13 than they did in 2006/07. But the impact on low-income households is much greater.

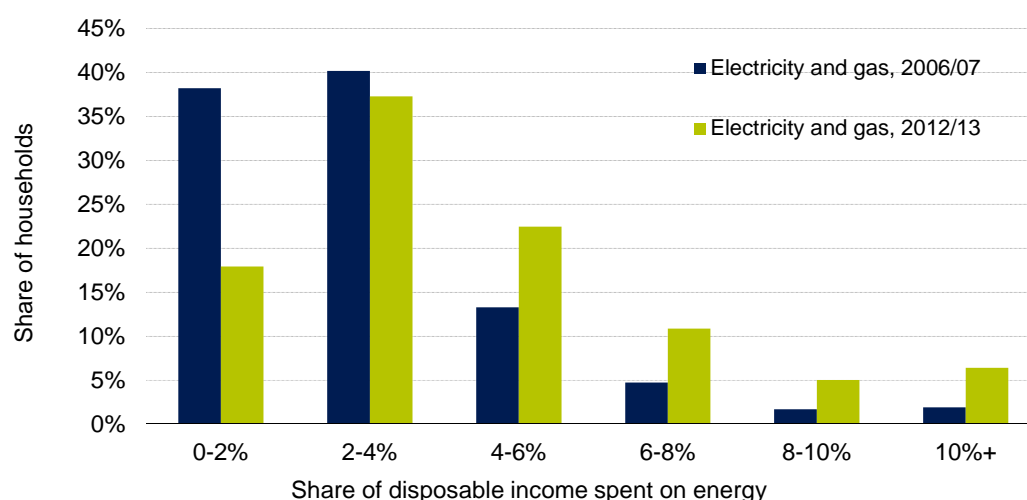
¹⁷⁵ ABS, Cat. No. 6530.0 Household Expenditure Survey, Australia: Detailed Expenditure Items, 2009-10.

This can be seen in Figure F.1 and F.2, which show the distribution of energy bills as a proportion of disposable income for all households in metropolitan NSW, and for low-income households in this area in 2006/07 and 2012/13. Figure F.1 shows that despite the large increases in energy prices, energy bills will still represent less than 6% of their disposable income for almost 80% of all households in 2012/13, and less than 4% for about half these households. They will represent more than 8% for only 11% of these households.

Figure F.2 shows that for low-income households, the impact of the increases in energy prices is much greater. Energy bills in 2012/13 will represent less than 6% of disposable income for only about 30% of these households, and more than 8% for just over 45%. In comparison, in 2006/07 energy bills represented more than 8% of disposable income for less than 20% of these households.

Section F.3 explains why our findings differ from those of the Australian Bureau of Statistics' Household Expenditure Surveys.

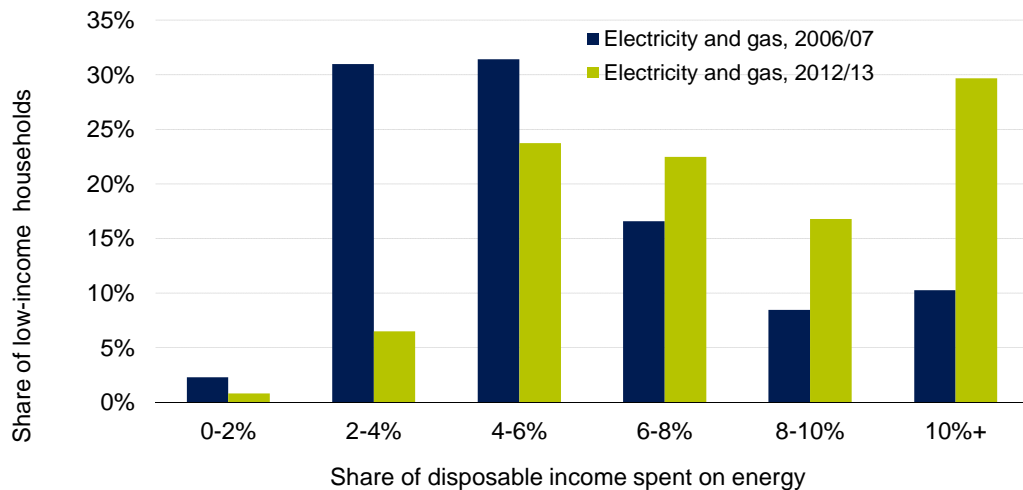
Figure F.1 Energy bills as a share of disposable income — Sydney and surrounding areas 2006/07 and 2012/13



Note: The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2009/10. Incomes for all bands are inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Incomes for 2006/07 are deflated using the change in average weekly earnings. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Survey responses are weighted. Customer bills are net of the Low Income Household Rebate. We have assumed that gas prices will increase by 14% on 1 July 2012. For more information, see IPART, *Changes in regulated retail gas prices in NSW from 1 July 2012*, June 2012.

Data source: IPART Household Surveys, 2008 and 2010.

Figure F.2 Energy bills as a share of disposable income for low-income households— Sydney and surrounding areas 2006/07 and 2012/13



Note: Low-income households are households with incomes between \$14,000 and \$38,000 in 2012/13, before tax. The income for the middle of each band is used to calculate disposable income. Disposable income as a share of household income is derived from ABS household income distribution data for 2009/10. Incomes for all bands are inflated to 2010/11 using the change in average weekly earnings. Income forecasts for 2011/12 and 2012/13 use NSW Treasury's forecast increase in the average wage index of 3.5%. Incomes for 2006/07 are deflated using the change in average weekly earnings. Disposable income in 2012/13 is further adjusted for the impact of the carbon compensation package. Survey responses are weighted. We have assumed that gas prices will increase by 14% on 1 July 2012. For more information, see IPART, *Changes in regulated retail gas prices in NSW from 1 July 2012*, June 2012.

Data source: IPART Household Surveys, 2008 and 2010.

F.2 Changes in energy consumption and its impact on energy bills

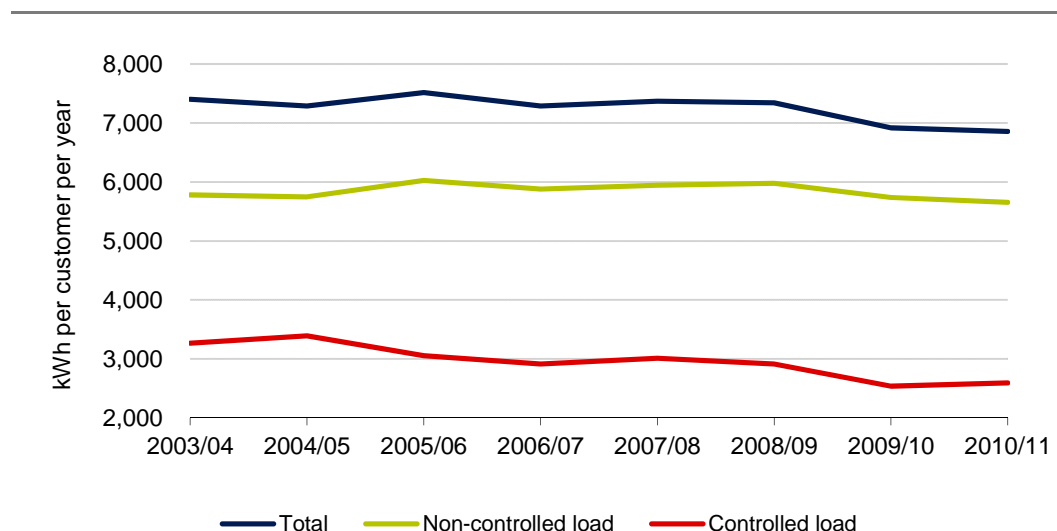
If a household uses less energy in 2012/13 than it did in 2006/07, its energy bills will represent a smaller share of its disposable income in 2012/13 than the amount indicated above. The size of the impact will depend on how much less energy the household uses.

In NSW, electricity consumption per household has fallen by a modest amount in recent years. Average annual electricity consumption per residential customer fell by about 6% between 2006/07 and 2010/11. Average annual consumption of controlled load electricity fell the most, or by about 11% per household with a controlled load supply. In comparison, average consumption of non-controlled load electricity fell by a fairly small amount – about 4% per household (Figure F.3).

The above information suggests that households are likely to use – or at least purchase¹⁷⁶ – less energy in 2012/13 than they did in 2006/07.¹⁷⁷ Therefore, their energy bills will represent a smaller share of their disposable income than Figure F2 indicates. However, the impact of lower consumption on energy bills is likely to be small because:

- ▼ Reductions in electricity usage have been modest.
- ▼ Controlled load electricity (which has declined the most) is far cheaper than continuous supply electricity, and therefore has comparatively little impact on bills.
- ▼ Some households may have switched to gas instead of electricity, for example for hot water.¹⁷⁸

Figure F.3 Average NSW residential electricity consumption per customer, 2003/04 to 2010/11 (kWh per year)



Note: Data are not weather corrected. Weather correction of Ausgrid data (undertaken by Ausgrid) has little impact on average consumption per customer. We did not have weather corrected data for Endeavour Energy or Essential Energy.

Data source: Ausgrid, Endeavour Energy and Essential Energy. IPART calculations.

¹⁷⁶ For example, households with solar hot water *purchase* less energy (electricity and gas) and therefore have lower energy bills. But these households do not necessarily use *less* energy, because the solar hot water systems provide some of their energy.

¹⁷⁷ For our analysis we used consumption data for each household from the 2008 and 2010 IPART household surveys. The consumption data are for the period 2006 to 2007 for the Hunter, Gosford and Wyong (2008) area survey, and mainly for 2009 for the Sydney (2010) area.

¹⁷⁸ More households may be using gas for hot water to take advantage of rebates and/or to comply with BASIX requirements (see NSW Environment and Heritage website at <http://www.environment.nsw.gov.au/rebates/indexfaq.htm> and <http://www.environment.nsw.gov.au/energy/hwsphase.htm>).

F.3 Why our findings differ from those of the Household Expenditure Surveys

The Australian Bureau of Statistics (ABS) conducts nation-wide surveys of household expenditure every 6 years. The most recent Household Expenditure Survey (HES) was conducted in 2009/10. Comparing results for the 2009/10 survey with those for the HES 2003/04 survey shows that, on average, the share of energy expenditure in total household expenditure remained virtually unchanged over the period. For all households, the average share remained 2.5% (for electricity and mains gas).¹⁷⁹

This finding contrasts with our analysis that suggests that households are likely to spend a larger share of their disposable income on energy in 2012/13 than they did in 2006/07. Our analysis found that, for all households, the median share will increase from 2.5% to 4%.

There are 2 main reasons why our findings differ from those of the HES. The most important of these is that our analysis covers a more recent 6-year period. (IPART analysed the period 2006/07 to 2012/13, whereas the HES data are for the period 2003/04 to 2009/10). The second reason is that the HES is Australia-wide, whereas our analysis is only for NSW. These differences are discussed below.

There are important differences between the earlier (HES) period and the later (IPART) period with respect to both energy prices and expenditure/income. In particular, energy prices rose less rapidly over the HES period than they will over the IPART period. At the same time, incomes (and therefore expenditure) rose more rapidly over the HES period than they are expected to do over the IPART period. For example, in nominal terms:

- ▼ Regulated electricity prices in NSW rose by about 68% over the HES period compared to more than 110% over the IPART period.
- ▼ Regulated gas prices in NSW rose by about 25% over the HES period compared to more than 50% over the IPART period.
- ▼ Total expenditure per household in Australia increased by 38% over the HES period, while we estimated that disposable income (a rough estimate of expenditure) will increase by around 30% over the IPART period.¹⁸⁰

¹⁷⁹ IPART calculations using ABS, *HES Cat. No. 6535.0.55.001 Household Expenditure Survey, Australia: Detailed Expenditure Items, 2003-04 Table T2* and ABS, *Cat. No. 6530.0 Household Expenditure Survey, Australia: Detailed Expenditure Items, 2009-10, Table 3A*.

¹⁸⁰ To calculate the change in income between 2006/07 and 2010/11, we used the index of average weekly earnings (full time adult) for NSW (ABS Census 2006, ABS, *Catalogue No. 6302.0: Average weekly earnings, Australia*, November 2011, Table 11A). To forecast incomes in 2011/12 and 2012/13, we used NSW Treasury's forecast increase in the average wage index of 3.5% (NSW Government, *2011-12 Half-Yearly Review*, 15 December 2011, p 19). Disposable income in 2012/13 is increased by 1% for the carbon compensation package (see Chapter 6).

The second difference - Australia-wide compared to NSW only - is important because energy prices have risen more rapidly in NSW than in Australia as a whole, while incomes have risen more slowly. For example, between 2003/04 and 2009/10 (the HES period):

- ▼ The energy price component of the CPI rose by about 65% for Sydney compared to about 50% for all capital cities.¹⁸¹
- ▼ Average weekly earnings rose by 26% in NSW compared to 31% in Australia.¹⁸²

F.4 The relationship between increases in income and increases in energy bills

An increase in energy bills as a share of disposable income does not necessarily mean that households are worse off overall. This is because energy bills are only one cost relevant to a household's overall cost of living. We also need to consider how incomes have changed relative to the overall cost of living.

A range of measures show that in general, household incomes have increased by more than the cost of living (including energy costs) over the past 5 years. Among many of the households generally considered least able to afford electricity price increases (such as age pensioners), incomes are either directly or indirectly linked to the cost of living, and so have increased in line with the cost of living.

Cost-of-living measures use an 'average' household with an 'average' mix of goods and services in its 'basket'. Therefore, households that receive (at least) cost-of-living increases and use average or less than average¹⁸³ amounts of energy are likely to receive sufficient additional income to cover increases in their energy bills. However, high energy users may be worse off unless they can reduce their energy consumption.

Box F.1 provides more detail on increases in incomes and the cost of living.

¹⁸¹ The energy price index is a weighted average of the indices for electricity and other fuels. As weights we used 0.8 for electricity and 0.2 for other fuels (mainly gas), based on 2009/10 HES data. (ABS, *Catalogue No. 6401.0 Consumer Price Index, Australia*, Table 11 and ABS, *Cat. No. 6530.0 Household Expenditure Survey, Australia: Detailed Expenditure Items, 2009-10*, Table 3A.)

¹⁸² Adult full time total earnings.

¹⁸³ Average consumption is higher than median consumption because a small proportion of households use a large amount of energy. For example, median consumption of electricity for residential customers with controlled load in Ausgrids' network area is about 8,000 kWh per year, but average consumption is about 8,900kWh per year (2009/10 consumption). Median consumption is the amount used by 50% of households.

Box F.1 Increases in income and the cost of living (including energy)

For most NSW households, the increase in their income is likely to have been higher than the increase in the aggregate cost of living (which includes the cost of electricity and gas) over the past 5 years. For example, average weekly earnings in NSW grew by 22% in the 5 years to December 2011. The Consumer Price Index (CPI) – which captures prices of a representative bundle of goods and services in Australia – grew by only 16%.^a Other cost of living measures that account for the goods and services purchased by particular groups of people, and that include mortgage payments and consumer credit charges^b indicate the average cost of living for employees, age pensioners, other government transfer recipients and self-funded retirees increased by 16% to 20% in this period.^c

Over shorter periods, the average cost of living can increase more quickly than average wages and incomes. For example, in the year to December 2011 the cost of living measure for employees, age pensioners and other government transfer recipients rose by more than the growth in average weekly earnings. Such lags between increases in the cost of living and incomes can cause short-term budget problems for some households, particularly for those with low funds available for discretionary spending.

For some households, their income is directly linked to a measure of the cost of living. These households are directly compensated (although with a lag) for increases in the cost of living (including electricity prices). For example, the age pension increases every year according to the maximum of the increase in the CPI and the change in the Pensioner and Beneficiaries Living Cost Index. In addition, the pension must be at least 27.7% of average male weekly earnings.

For other households, income is indirectly linked to the cost of living through legislation governing the setting of minimum and award wages and through wage negotiations. For example, in setting the minimum wage, Fair Work Australia is required to consider the relative living standards and needs of the low paid. Many wage decisions are linked to changes in the CPI.

For these reasons, it is reasonable to expect that, on average over a number of years, household incomes are likely to outpace cost of living increases for many households, including cost of living increases arising from increases in energy prices. However, it should be noted that this is not necessarily true for self-funded retirees and the self-employed.

^a ABS Catalogue No. 6302.0: Average Weekly Earnings Australia, Table 11A, Total Earnings; ABS Catalogue No. 6401.0: Consumer Price Index, Australia, Table 5.

^b The CPI does not capture mortgage payments or consumer credit charges. The CPI captures housing costs for owner-occupiers with reference to the value of dwellings.

^c ABS Catalogue No. 6463.0: Analytical Living Cost Indexes for Selected Australian Household Types, December 2011, Table 7.

G | The Households Assistance Package

In Chapter 6 we discussed the Commonwealth Government's Household Assistance Package. We analysed the additional income provided to low-income households as part of this package and compared this with the increase in their energy bills (due to the carbon price). We did this for 3 sets of households:

- ▼ Those that will not benefit from the tax reforms in the package (because their private incomes are too low).
- ▼ Those that will benefit from these tax reforms.
- ▼ Those whose incomes are at the top of the Commonwealth Government's low-income range (between about \$30,000 for a one person households and \$60,000 for a couple with 3 dependent children).

Chapter 6 shows the detailed results of our analysis only for the first set of households (ie, those that will not benefit from the tax reforms in the package, because their private incomes are too low). This appendix shows the detailed results for the other 2 sets of households.

Table G.1 Impact of the assistance package for low-income households that will benefit from tax reforms (2012/13 \$pa)

Household type ^a	Income after tax \$'000	Compen- -sation	Increase in bill due to the carbon pricing mechanism			Surplus/-shortfall		
			house 2	house 3	unit 1 or 2 ^b	house 2	house 3	unit 1 or 2 ^b
Dwelling type No. bedrooms								
Pensioner/self-funded retiree living alone								
Coastal	35	485	141	162	84	344	323	401
North West	35	485	161	188	99	324	297	386
South West	35	485	175	206	109	310	279	376
Non-pensioner 1 person household								
Coastal area	25	254	137	158	80	117	95	174
North Western	25	254	157	184	95	96	70	159
South Western	25	254	171	202	105	83	52	149
Pensioner/self-funded retiree couple (70/30 income split)								
Coastal area	50	553	168	190	133	385	363	420
North Western	50	553	189	215	153	364	337	399
South Western	50	553	202	233	167	350	320	386
Non-pensioner couple (70/30 income split)								
Coastal area	35	443	162	184	127	280	259	316
North Western	35	443	183	209	147	260	233	295
South Western	35	443	196	227	161	246	216	282
Single parent family, 1 child 5 - 7 years old								
Coastal area	50	688	165	186	na	523	502	na
North Western	50	688	185	212	na	503	476	na
South Western	50	688	199	230	na	489	458	na
Single parent family, 2 children 8 -10 years old and 16-17 years old								
Coastal area	50	277	186	208	na	91	69	na
North Western	50	277	207	233	na	70	43	na
South Western	50	277	220	251	na	56	26	na
Couple family, 1 child 5 - 7 years old (70/30 income split)								
Coastal area	50	395	186	208	na	209	187	na
North Western	50	395	207	233	na	188	162	na
South Western	50	395	220	251	na	175	144	na
Couple family, 2 children 8 -10 years old and 16-17 years old (70/30 income split)								
Coastal area	50	442	208	229	na	234	213	na
North Western	50	442	228	255	na	214	187	na
South Western	50	442	242	273	na	200	169	na

^a The climate zones are represented by Sydney metropolitan area, Moree SLA and Deniliquin SLA respectively.

^b Lone person households live in a 1 bedroom unit and couples live in a 2 bedroom unit.

Sources: Australian Government Households Assistance calculator (<https://www.cleanenergyfuture.gov.au/helping-households/household-assistance-estimator/>), 2010 IPART household survey and Essential Energy consumption data.

Table G.2 Impact of the assistance package households at the top of the Australian Government's income range (2012/13 \$pa)

Household type ^a	Income after tax \$'000	Compen- -sation	Increase in bill due to the carbon pricing mechanism			Surplus/-shortfall		
Dwelling type			house	house	unit	house	House	unit
No. bedrooms			2	3	1 or 2 ^b	2	3	1 or 2 ^b
Pensioner/self-funded retiree living alone								
Coastal	30	485	139	160	82	346	325	403
North West	30	485	159	186	97	326	299	388
South West	30	485	173	204	107	312	281	378
Non-pensioner 1 person household								
Coastal area	30	157	139	160	82	18	-4	75
North Western	30	157	159	186	97	-3	-29	60
South Western	30	157	173	204	107	-16	-47	50
Pensioner/self-funded retiree couple (70/30 income split)								
Coastal area	45	247	166	188	131	81	60	116
North Western	45	247	187	213	151	61	34	96
South Western	45	247	200	231	165	47	16	82
Non-pensioner couple (70/30 income split)								
Coastal area	45	147	166	188	131	-19	-41	16
North Western	45	147	187	213	151	-40	-67	-4
South Western	45	147	200	231	165	-53	-84	-18
Single parent family, 1 child 5 - 7 years old								
Coastal area	55	214	167	188	na	48	26	na
North Western	55	214	187	214	na	27	0	na
South Western	55	214	201	232	na	14	-17	na
Single parent family, 2 children 8 -10 years old and 16-17 years ol								
Coastal area	60	267	190	212	na	77	55	na
North Western	60	267	211	237	na	57	30	na
South Western	60	267	224	255	na	43	12	na
Couple family, 1 child 5 - 7 years old (70/30 income split)								
Coastal area	60	214	190	212	na	24	3	na
North Western	60	214	211	237	na	4	-23	na
South Western	60	214	224	255	na	-10	-41	na
Couple family, 2 children 8 -10 years old and 16-17 years old (70/30 income split)								
Coastal area	65	267	214	235	na	53	32	na
North Western	65	267	234	261	na	33	6	na
South Western	65	267	248	279	na	19	-12	na

^a The climate zones are represented by Sydney metropolitan area, Moree SLA and Deniliquin SLA respectively.

^b Lone person households live in a 1 bedroom unit and couples live in a 2 bedroom unit.

Sources: Australian Government Households Assistance calculator (<https://www.cleanenergyfuture.gov.au/helping-households/household-assistance-estimator/>), 2010 IPART household survey and Essential Energy consumption data.

H Retailers' customer hardship programs and EAPA

In our report on Electricity businesses' performance against customer service indicators in NSW for 2010/11, we expressed concern about the performance of some retailers, the overall affordability of electricity and the effectiveness of customer hardship programs in NSW. We indicated that we would undertake a review of the effectiveness of energy retailers' hardship charters to identify opportunities to improve the delivery of hardship programs and reduce customer disconnections where possible.

Since March 2010, electricity retailers who supply small retail customers have been required to develop and implement customer hardship charters as a condition of licence.¹⁸⁴ The purpose of a customer hardship charter is to assist customers in financial difficulty to better manage their energy bills on an ongoing basis.

In early 2012, we met with representatives from community groups, consumer advocates and retailers to gain an understanding of the experiences of customers who enter retailers' customer hardship programs and the various organisations that deliver assistance to these customers.

All parties expressed frustration at the operation of the Energy Accounts Payment Assistance (EAPA) Scheme. The NSW Government has established an EAPA Advisory Group to provide advice on options to strengthen and improve delivery of the EAPA Scheme. IPART supports reform of EAPA. This should ensure that the scheme is well targeted and its administration is improved.

In its submission to our draft report, PIAC called for an increase in the funding for EAPA.¹⁸⁵

¹⁸⁴ *Electricity Supply (General) Regulation 2001*, clause 13AA.

¹⁸⁵ PIAC submission, May 2012, pp 10-11.

H.1 Energy Accounts Payment (EAPA) scheme

EAPA is a voucher-based scheme administered by community welfare organisations on behalf of the Government.¹⁸⁶ It is designed to assist customers who are financially disadvantaged and experience difficulty in paying a particular home gas and/or electricity bill because of an emergency or crisis. It targets households that are experiencing unusual or unexpected financial stress, and is not intended to offer continuing income support. Currently, the value of an individual EAPA voucher is \$30, and customers can receive vouchers to a maximum value of \$480 per year.¹⁸⁷

In 2010 the Department of Trade & Investment, Regional Infrastructure & Services NSW (formerly I&I NSW)¹⁸⁸ commenced a review of the EAPA scheme. It released a consultation paper that focused on specific options for improving the allocation and distribution of EAPA vouchers, including:¹⁸⁹

- ▼ introducing a voluntary scheme for retailer delivery of EAPA to complement the existing delivery of EAPA by community welfare organisations (CWOs)
- ▼ examining voucher payment parameters, including the \$30 value of EAPA vouchers, the maximum customer limits and the current restriction for not placing bills in credit
- ▼ extending EAPA access to households that are connected to liquid petroleum gas for heating or cooking purposes (excluding BBQs and outdoor heating)
- ▼ extending EAPA access to customers of exempt suppliers (caravan parks, retirement villages) who are individually metered and receive a separate energy bill
- ▼ improving administrative requirements surrounding surrendering the EAPA vouchers, revising the guidelines for CWOs and introducing a CWO accreditation and review framework.

The current NSW Government has established an EAPA Advisory Group to provide advice on options to strengthen and improve delivery of the EAPA Scheme. IPART supports reform of EAPA. This should ensure that the scheme is well targeted and its administration is improved.

Budget figures indicate that the 2011/12 EAPA funding was \$14 million.¹⁹⁰ We note that \$14 million would have been sufficient to provide vouchers to about 2% of all households in NSW, or 5% of households in the lowest 2 income quintiles.¹⁹¹

¹⁸⁶ Country Energy has trialed a program of retailer's distributing the vouchers.

¹⁸⁷ <http://www.trade.nsw.gov.au/energy/customers/help>

¹⁸⁸ Department of Trade and Investment NSW is the NSW Government agency responsible for energy.

¹⁸⁹ I&I, *Review of the Energy Accounts Payment Assistance (EAPA) Scheme: Consultation Paper*, December 2010, p 4.

¹⁹⁰ NSW Government, *2011/12 Budget Estimates, Budget Paper 2*, Appendix E, p E-25.

¹⁹¹ Assuming that each household on average received vouchers to the value of \$240 per year (which is half of the maximum assistance available).

Information from our 2008 survey in the Hunter, Gosford and Wyong areas¹⁹² shows that EAPA vouchers are mostly used by lower income households. Also, households with children are more likely to receive EAPA vouchers than households without children living at home. Households that access EAPA vouchers used a similar amount of electricity than households that did not access EAPA vouchers. Box H.1 describes our findings in more detail.

We note that stakeholders expressed concern that there are insufficient EAPA vouchers to meet current demand. We consider it likely that the coming price increase will add to the demand for vouchers and therefore increase the shortfall. This strengthens the need for a review of the schemes to ensure it is targeted and well administered.

Stakeholders also raised other issues relating to the EAPA scheme, including:

- ▼ What arrangements are appropriate for the distribution of EAPA vouchers and will ensure that this scheme is accessible to those who most need assistance?
- ▼ Should the eligibility criteria be more prescriptive (as in Victoria) or should those delivering the vouchers have the discretion to consider the customer's individual circumstances?

¹⁹² Further information about our 2008 household survey is available on our website at http://www.ipart.nsw.gov.au/investigation_content.asp?industry=6§or=17&inquiry=146

Box H.1 Who uses EAPA vouchers and why? Findings from the 2008 household survey

The 2008 survey in the Hunter, Gosford and Wyong areas asked respondents whether they had used EAPA vouchers in the past 3 years and if not, why not.

Who uses EAPA vouchers?

We found that households with (gross) incomes below \$52,000 per year were more likely to have used EAPA than households with higher incomes. Additionally, low-income households were more likely to need vouchers but were uncomfortable about approaching a charity (Table H.1). We also found that households with children were more likely to have used EAPA vouchers than other households (Table H.2).

Table H.1 Proportion of households that had received, or needed EAPA vouchers in the 3 years prior to the survey (%)

Income	Received EAPA vouchers	Needed vouchers but felt uncomfortable approaching a charity	Total
\$/year	%	%	%
Less than \$10,400 ^a	6	5	11
\$10,400 to \$31,200	11	3	14
\$31,201 to \$52,000	10	4	14
\$52,001 to \$78,000	6	3	9
\$78,001 to \$104,000	4	2	7
more than \$104,000	3	1	4

^a Most households (87%) who reported incomes below \$10,400 per year were mature-aged single households.

Note: Numbers may not add due to rounding.

Table H.2 Proportion of households that had received EAPA vouchers in the 3 years prior to the survey, by household type (%)

Household type	Proportion that had received EAPA vouchers
Single person (people living alone)	8
Single parent	20
Couple with children living at home	15
Couple with no children living at home	5

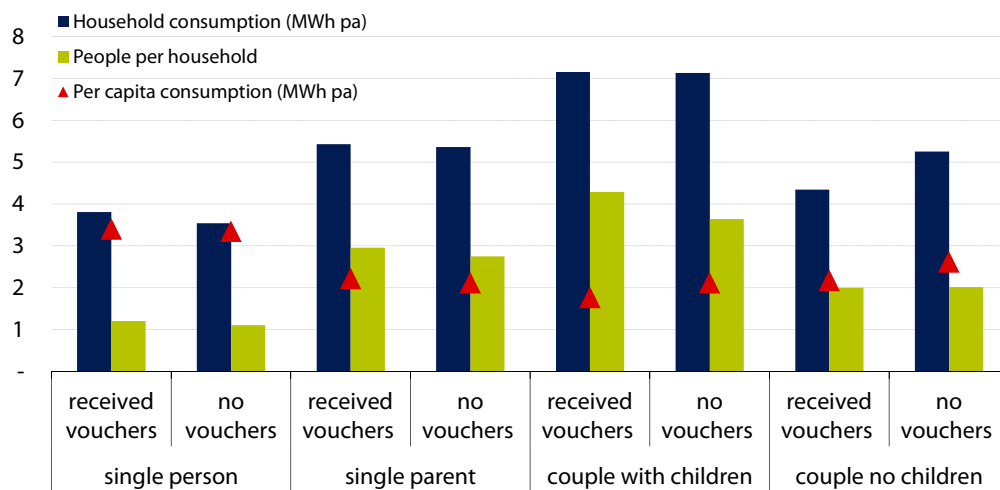
Note: Survey responses are weighted to correct regional sample biases.

Data source: IPART analysis of data from the 2008 household survey in the Hunter, Gosford and Wyong areas.

The characteristics of households receiving EAPA vouchers

For households with incomes below \$52,000 per year, we found that those that had received vouchers used a similar amount of electricity on average than similar households that had not received them (Figure H.1). We also found that renters were more likely to have received EAPA vouchers than households who owned their own homes (Figure H.2).

Figure H.1 Average electricity consumption and number of occupants of households that received EAPA vouchers and those that had not

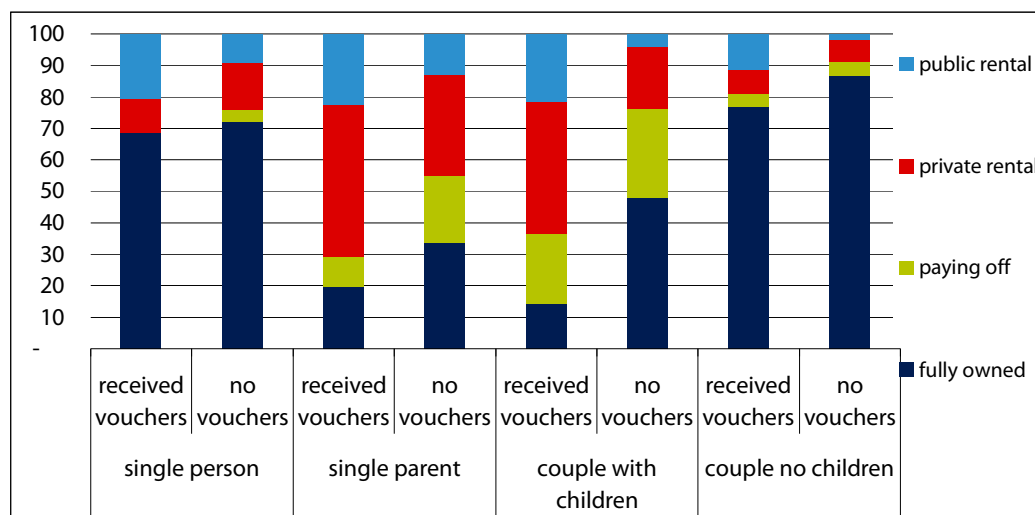


Note: Survey responses are weighted to correct regional sample biases. Only households with annual incomes below \$52,000 at the time of the survey are included.

Data source: IPART analysis of data from the 2008 household survey in the Hunter, Gosford and Wyong areas. Further information is available on our website at:

http://www.ipart.nsw.gov.au/investigation_content.asp?industry=6§or=17&inquiry=146

Figure H.2 Home ownership status of households that had received EAPA vouchers and those that had not (%)



Note: Survey responses are weighted to correct regional sample biases. Only households with annual incomes below \$52,000 at the time of the survey are included.

Data source: IPART analysis of data from the 2008 household survey in the Hunter, Gosford and Wyong areas. Further information is available on our website at:

http://www.ipart.nsw.gov.au/investigation_content.asp?industry=6§or=17&inquiry=146

Findings

- ▼ The current paper-based \$30 voucher EAPA system has not been updated to reflect advances in delivery systems and payment systems. Further, better systems will assist the NSW Government in ensuring that EAPA vouchers are available in to customers with the greatest need. Improved systems will also allow more effective monitoring of the scheme and tracking of EAPA vouchers. It should also improve the efficiency of the scheme so that community welfare organisations and retailers have more time to deal with their customers.

H.2 Other findings related to the operation of hardship programs

Our other findings arising out of our consultation are:

- ▼ Customers who are experiencing hardship should contact their retailer to discuss payment plans and the availability of other assistance before their levels of debt become too high. Retailers offer a range of payment plan options when they are aware of a customer's needs and rely on the engagement of customers to deliver effective assistance. However, results from our 2010 household survey indicated that of those customers who reported experiencing difficulty paying their bills, less than half had contacted their retailers. This suggests there is a need to promote retailers' payment plans as the first step for customers experiencing payment difficulties.
- ▼ Incentive payments made by retailers to reduce the debt of customers in a hardship program are effective in encouraging customers to make regular payments and to reduce the customer's level of debt, particularly in the case of customers with large debts.
- ▼ Energy efficiency advice, audits and programs to assist hardship customers to reduce their energy consumption are effective for some customers.

