Residential energy use in Sydney, the Blue Mountains and Illawarra

Results from the 2006 household survey
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1 Introduction

The Independent Pricing and Regulatory Tribunal of New South Wales (the Tribunal) has recently conducted a survey of residential household water and energy customers in the greater Sydney region. The information collected will assist with the Tribunal’s understanding of the likely impacts of its pricing decisions on customers and the community.

The survey provides a snapshot of the economic, demographic, energy use and income characteristics of energy customers within the Sydney, Blue Mountains and Illawarra regions. In particular, the survey covered Sydney Water’s area of operation, which includes parts of the areas in which EnergyAustralia and Integral Energy are standard suppliers of electricity and AGL is the standard supplier of gas. This survey builds upon the Tribunal’s earlier surveys undertaken in 1993/94, 1998/99 and most recently in 2003/04.\(^1\)

The main aims of the survey, as in previous years, were to collect information on the characteristics of households and their energy use that would:

- help the Tribunal assess the impact of its energy network and retail decisions on different households and community groups, particularly low-income households; and to
- provide information on the awareness of retail competition, the characteristics of customers being approached to change energy supplier, and the characteristics of customers who have decided to change energy supplier.

We analysed the results of the survey to develop a profile of energy users within the Sydney, Illawarra and Blue Mountain regions in 2006. The results were also used to inform the Tribunal’s decision-making on prices for electricity regulated retail tariffs for electricity in 2007.\(^2\)

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\(^1\) See IPART, Residential energy use in Sydney, the Blue Mountains and Illawarra – results from the 2003 household survey, RP27, December 2005 and IPART, Residential water use in Sydney the Blue Mountains and Illawarra – results from the 2003 household survey, RP26, May 2004, for a detailed profile of the 2003 results.

\(^2\) IPART, Promoting retail competition and investment in the NSW electricity industry – Regulated electricity retail tariffs and charges for small customers 2007 to 2010 – Final report and Determination, June 2007.
1.1 About the survey

The survey was conducted between August and October 2006 and involved 2,631 participants. The Tribunal engaged Taverner Research Company to undertake face-to-face interviews with residential households on the Tribunal’s behalf. Taverner also asked these households to allow EnergyAustralia, Integral Energy and AGL to give it access to their consumption data as relevant. This allowed Taverner to provide a combined data set that included the participants’ responses to the survey questions and their consumption data.

Given the particular focus on low-income households, we split the survey participants into two groups. The first group included a sample of approximately 2,000 households randomly selected from across the Sydney, Blue Mountains and Illawarra regions. The second group was drawn from Australian Bureau of Statistics census districts with a high proportion of low-income households, to increase the sample size of low-income households. For a more detailed description of the survey design and methodology, see Appendix B.

The Tribunal has released this report as an interim report in conjunction with the release of its final determination of regulated electricity retail tariffs for small retail customers for the period 2007 to 2010. Unfortunately it was not possible to finalise the weighting of the survey data to allow a final report of the survey results to be released at this time. A final report will therefore be released as soon as practicable following the finalisation of the weighting process.

The results reported in here are preliminary as they have not been weighted to be representative of the consumption profile for electricity and gas known in the Sydney region. This means that they are representative of the survey sample, and to the extent the consumption profile obtained is random, the entire region. As is outlined in Appendix A, there are likely to be some biases arising from the results, which the weighting of data may resolve. The results presented are nevertheless indicative of the wider population, and the conclusions drawn are unlikely to change as a result of the weighting process.

Where possible, we have compared the results of the 2006 and the 2003 surveys. To ensure a like for like comparison, we have used unweighted data for the 2003 results which means that some of the 2003 results reported here may differ from those reported in the earlier report of the 2003 results, and should only be used for comparative purposes.

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3 Income weights have been applied, where relevant, to eliminate the low-come bias in the sample.
1.2 Key findings and implications

The 2006 survey results confirm many of the general characteristics of high and low energy using respondents particularly:

- high electricity use respondents have more occupants, are more likely to be residing in a house, own more large energy using appliances, particularly an air conditioner and swimming pool (with associated pump)
- low electricity use respondents have on average fewer occupants, are more likely to be in a unit and use gas for other energy uses, and
- 57 per cent of high gas consuming respondents used gas for cooking, space heating and hot water heating, compared with only 4 per cent of low gas consuming respondents.

In addition we also investigated the proportion of respondents that indicated they had approached their supplier because they had difficulty paying their electricity or gas bill in the previous three years. The proportion of respondents having these difficulties that approached their supplier was constant compared with the 2003 results at 9 per cent for electricity customers and around 5 per cent of gas customers. As was the case in 2003, almost all of those respondents were provided with some assistance, whether an extension to the payment period, or direct financial support.

The proportion of respondents having an air conditioner rose between 2003 and 2006, from 38 per cent to 51 per cent for EnergyAustralia customers, and 59 per cent to 62 per cent for Integral Energy customers.

The final issue that we have considered is the awareness amongst the survey respondents of retail electricity and gas competition, and the proportion of households that changed supplier. In addition, we asked the reasons a respondent chose to change supplier, or chose not to change supplier.

We found that over 91 per cent of respondents were aware that it was possible to choose their electricity supplier and 94 per cent were aware they could choose their gas supplier. This was a considerable increase on the results in the 2003 survey where around 76 per cent of respondents indicated they were aware they could choose their energy supplier.

In addition, the number of respondents that decided to change supplier once approached increased since 2003. 34 per cent of households approached decided to change electricity supplier and 24 per cent of households decided to change gas supplier (22 and 16 per cent respectively in 2003).

Finally, the 2006 results indicate that the proportion of low and high income customers approached to change electricity or gas supplier was almost equal. This differs from the 2003 results, where in general, a larger proportion of higher income households had been approached to change supplier.
1.3 Structure of this report

This report explains our survey findings and their implications in detail:

- Chapter 2 provides a profile of residential energy users in the Sydney, Blue Mountains and Illawarra regions, describing the relationship between household energy consumption and various demographic, energy use and income characteristics

- Chapter 3 looks at the extent of retail competition, the characteristics of customers who are being approached to change energy supplier, and the characteristics of customers who, once approached, are changing their energy supplier, including their reasons for changing.
2 Profile of residential energy users in Sydney, the Blue Mountains and Illawarra

In this chapter we present a snapshot of the energy use, income and household demographic characteristics of residential energy users across Sydney, the Blue Mountains and the Illawarra in 2006. In so doing we examine in particular high energy users compared with low energy users to better understand the characteristics of these two groups. Similarly, we examine the differences in the characteristics of high and low income customers, to improve the Tribunal’s understanding of the use of energy between these two groups.

A feature of the analysis in this report is that we have been able to compare the 2006 results against the results from the 2003 survey, due to the 2006 survey asking mostly identical questions to those in 2003, with the inclusion of some new additional questions. This has allowed us to identify some changes to the respondent characteristics since 2003.

This chapter considers:

- the characteristics of energy users, particularly relating electricity and gas use to household size, structure, access to gas and electricity, and dwelling type
- the uses of energy, and particularly changes in the uptake of high energy using appliances such as air conditioners, and
- the relationship between energy use and income.

2.1 What are the characteristics of energy users?

In the first instance we examined the characteristics of high and low consuming electricity and gas respondents – Box 2.1 and 2.2. High electricity using respondents tended to have more occupants (4.1 people compared to 2.9 on average), were more likely to live in a house (94 per cent compared to 82 per cent), and be a couple with children (71 per cent). Similarly, high gas using respondents also tended to have more occupants (3.9 compared to 3.0 people on average), live in a house and be a couple with children.
Box 2.1  
**Snapshot of high and low electricity users' household characteristics**

<table>
<thead>
<tr>
<th>Low Users ( &lt; 4,000 kWh per annum)</th>
<th>High Users ( &gt; 12,000 kWh per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On average, have 2.2 people in household (compared to an average household size of 2.9 people for all households)</td>
<td>On average, have 4.1 people in household (compared to an average household size of 2.9 people for all households)</td>
</tr>
<tr>
<td>46% are single person households (compared to 19% of all households)</td>
<td>71% are couples with children (compared to 43% of all households)</td>
</tr>
<tr>
<td>62% live in houses (compared to 82% of all households)</td>
<td>94% live in houses (compared to 82% of all households)</td>
</tr>
<tr>
<td>88% live in Sydney (compared to 86% of all households)</td>
<td>91% live in Sydney (compared to 86% of all households)</td>
</tr>
</tbody>
</table>

Box 2.2  
**Snapshot of high and low gas users' household characteristics**

<table>
<thead>
<tr>
<th>Low Users ( &lt; 5,000 MJ per annum)</th>
<th>High Users ( &gt; 35,000 MJ per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On average, have 2.2 people in household (compared to an average household size of 3 people for all households)</td>
<td>On average, have 3.9 people in household (compared to an average household size of 3 people for all households)</td>
</tr>
<tr>
<td>38% are single person households (compared to 18% of all households)</td>
<td>78% are couples with children (compared to 47% of all households)</td>
</tr>
<tr>
<td>65% live in houses (compared to 82% of all households)</td>
<td>89% live in houses (compared to 82% of all households)</td>
</tr>
<tr>
<td>90% live in Sydney (compared to 86% of all households)</td>
<td>88% live in Sydney (compared to 87% of all households)</td>
</tr>
</tbody>
</table>

To consider the possible reasons for the observed differences in electricity and gas use, we examined the relationship between electricity and gas use and the number of occupants of the household; whether they were a dual fuel or electricity only customers; and the household structure including dwelling type and ownership of the dwelling. The results indicated that:

- respondent households with more occupants use on average more electricity
- average electricity consumption per occupant for single person households was 5,193 kWh
- for gas customers, households with more occupants used more gas
- electricity consumption was higher for households without mains gas, irrespective of the number of occupants
- average electricity consumption for a house was 8,321 kWh, while average electricity consumption for a unit was 5,367 kWh
unlike in 2003, when average electricity consumption varies with the number of occupants, the average use for houses and units was broadly the same

renters are less likely to use gas (42 per cent), compared to home owners (52 per cent), and

average electricity consumption amongst respondents in the Blue Mountains (8,574 kWh) was higher than Sydney (7,981 kWh) and the Illawarra (6,993 kWh).

These results are presented in more detail below.

2.1.1 Electricity use amongst respondents in 2006 was 7,893 kWh

Average residential household electricity consumption amongst the survey participants in 2006 was 7,894 kWh. As observed from the previous survey, electricity use on average increased with the number of occupants in the household. For example, average consumption for households with 5 or more people in 2006 was 10,606 kWh, 61 per cent higher than for 1 to 2 person households Figure 2.1.

Figure 2.1 Average electricity consumption by number of household occupants

Larger households (with 5 or more persons) made up 15 per cent of total households Figure 2.2, but around 39 per cent of high consumption households (those using in excess of 12,000 kWh of electricity per annum).
To examine the impact of household structure, we calculated average annual electricity consumption per household occupant and structure – Figure 2.3. The results indicate that single and no children households use on average more electricity per person compared with households including children.

In larger households the household structure appears to influence the level of electricity consumption. The survey results indicate that households with children under 15 years of age use less electricity on average than households of the same size comprising adults or people of 15 years of age or over only. For example:

- households with two adults and two children consumed on average 7,970 kWh of electricity per annum compared to 10,011 kWh for households of four adults (where anyone over the age of 15 years is regarded as an adult).
households with two adults and three children consumed on average 10,479 kWh of electricity per annum compared to 11,263 kWh for households of five adults.

Figure 2.4 Proportion of respondents by household structure

2.1.2 Gas use on average was 24,547 MJ

Average residential gas use amongst the survey respondents in 2006 was 24,547 MJ. Households with a larger number of occupants still continue to use more gas compared with smaller households as observed from the 2003 results. The results for the 2006 survey are shown in Figure 2.4.

Figure 2.5 Average gas consumption by number of household occupants
Gas consumption by 5 plus occupant respondents was almost 110 per cent higher than for 1 to 2 occupant respondent households. In general, and as discussed in greater detail in section 2.2 below, 5 plus occupant households were more likely to use gas for all three main uses (cooking, space heating and hot water), compared with 1 to 2 occupant households (34 per cent compared with 29 per cent).

2.1.3 Respondents with gas use on average less electricity compared with electricity only households

Comparing respondents with and without mains gas demonstrates that respondents with gas use on average less electricity compared to electricity only customers – Figure 2.6. This result is consistent across each household size grouping.

**Figure 2.6 Average annual electricity consumption of respondents with and without mains gas by electricity consumption**

Considering electricity consumption by access to energy source and income shows that average electricity consumption is lower for low income electricity only, and dual fuel customers compared with higher income respondents – Figure 2.7.
2.1.4 Respondents that live in houses use more energy than those in units

On average, respondents that live in houses (including separate houses, but excluding combined dwellings/non-dwellings, semi-detached houses, and townhouses) use 55 per cent more electricity than a respondent occupying a unit – Figure 2.8. This is likely to reflect in part a greater number of occupants in houses compared with units and the generally large energy use associated with maintaining larger premises.

Figure 2.8 Average annual electricity consumption by dwelling type
To consider the impact of the number of occupants within each household, we calculated the average electricity consumption for houses and units per occupant – Figure 2.10. These results suggest that household size is likely to be a significant reason for the observed differences, as average electricity consumption per occupant is almost the same for both houses and units.

2.1.5 Renters are less likely to use mains gas than owners

50 per cent of our survey sample was connected to mains gas over the survey regions. To consider the scope for access to gas to manage overall bills, we also considered the proportion of mains gas by ownership status. The results indicated that 52 per cent of owners and 42 per cent of tenants had mains gas connected. These results were almost identical to the results from the 2003 survey, where 54 per cent of owners and 42 per cent of tenants used mains gas.
2.1.6 Respondents in the Illawarra use less electricity than those in the Blue Mountains and Sydney

Finally, we examined average electricity consumption for each of the three regions surveyed. On average, electricity consumption was highest in the Blue Mountains (7.4 per cent higher than Sydney), and lowest in the Illawarra (12.4 per cent lower than Sydney). For Sydney, average electricity consumption was 7981 kWh – Figure 2.12.

These regional differences are likely to reflect the different characteristics of respondents between the regions, particularly the proportion of units in the area
compared with larger houses, differences in household size and whether the region has access to mains gas.

### 2.2 What are the main uses for energy amongst residential households?

Having considered the household structure and characteristics influencing electricity and gas consumption, we then examined the uses of energy amongst residential households. The survey collected information on the number of large energy using appliances including refrigerators, air-conditioners and swimming pool pumps. Given particular concerns about the uptake of air conditioners, we also asked questions about the intention of survey participants to install an air conditioner in the coming years.

To compare between high and low energy users energy use characteristics, we examined the survey results in relation to these two category of user – Box 2.3. These results show that high electricity users have on average more large domestic appliances (5.2 compared with 3.2 for low using electricity consumers), have an air conditioner (72 per cent), and a swimming pool (35 per cent). Similarly, high gas using households are more likely to use gas for space heating, cooking and hot water heating.

#### Box 2.3 Snapshot of high and low energy users’ energy use characteristics

<table>
<thead>
<tr>
<th>Low Electricity Users ( &lt; 4,000 kWh per annum)</th>
<th>High Electricity Users ( &gt; 12,000 kWh per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own an average of 3.2 large domestic appliances</td>
<td>Own an average of 5.2 large domestic appliances</td>
</tr>
<tr>
<td>40% have electric hot water systems, 45% of which are off peak</td>
<td>68% have electric hot water systems, 82% of which are off peak</td>
</tr>
<tr>
<td>36% have air conditioners</td>
<td>72% have air conditioners</td>
</tr>
<tr>
<td>29% have reverse cycle air conditioners</td>
<td>56% have reverse cycle air conditioners</td>
</tr>
<tr>
<td>4% have swimming pools</td>
<td>35% have swimming pools</td>
</tr>
<tr>
<td>70% have mains gas</td>
<td>43% have mains gas</td>
</tr>
<tr>
<td>63% use gas for cooking</td>
<td>38% use gas for cooking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low Gas Users ( &lt; 5,000 MJ per annum)</th>
<th>High Gas Users ( &gt; 35,000 MJ per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27% have gas hot water systems</td>
<td>84% have gas hot water systems</td>
</tr>
<tr>
<td>92% use gas for cooking</td>
<td>84% use gas for cooking</td>
</tr>
<tr>
<td>27% have gas heating</td>
<td>79% have gas heating</td>
</tr>
</tbody>
</table>

The concern about air conditioner uptake arises due to the impact on peak load requirements within the network. The survey data however does not allow us to consider the time of use of air conditioners to allow this issue to be specifically examined.
In addition, we examined the relationship between the number of large energy-using appliances and air conditioners in general and found that:

- electricity use increases with the number of large energy-using appliances owned by a respondent

- respondents on average have more large energy-using appliances compared with the 2003 results, and the number of appliances increase with income

- the proportion of respondents with an air conditioner has increased substantially since 2003, particularly for those customers supplied by EnergyAustralia

- of respondents without an air conditioner, 15 per cent indicated an intention to install an air conditioner in the future

- respondents with an air conditioner used on average 13.1 per cent more electricity per occupant compared to those without an air conditioner, and

- 33 per cent of respondents with gas use it for space heating, cooking and hot water.

2.2.1 Electricity use increases with the number of large energy-using appliances owned by a respondent

The survey asked participants to provide information on the types of large energy using appliances that they use. Ideally we would like to understand the pattern of consumption of large energy using appliances but the survey information is not sufficient to allow this, in part because of the way most electricity consumption is metered. In principle, the number of appliances operated by an individual household is likely to be positively related to the overall level of energy use for that household.

For this reason, we investigated energy use by number of appliances, in addition to examining differences in energy use between particular appliances. The large appliances included in the survey were a microwave, dishwasher, washing machine, clothes dryer, air conditioner, swimming pool and hot water system. For the 2006 survey, we also asked whether the household operated more than one refrigerator.

The results demonstrate that there is a clear relationship between the number of large energy using appliances and average annual electricity consumption. Respondents with 7 appliances used on average 136 per cent more electricity compared with respondents operating only one of those appliances – Figure 2.13.

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5 Large energy-using appliances included a refrigerator (including a second refrigerator), washing machine, dryer, microwave, electric hot water system, air conditioner, and swimming pool pump.
To determine whether the number of appliances was related to household income and the number of occupants, we also examined the relationship between income and occupants by number of appliances – Figures 2.14 and 2.15. The results indicate that, on average, high income households have more large energy using appliances, whilst households with more occupants do not necessarily have more appliances.
Figure 2.15 Average number of large energy using appliances by household size

2.2.2 55 per cent of respondents have an air conditioner, while 16 per cent intend to install one

We also considered the proportion of respondents with an air conditioner. As with other types of large energy using appliances, ideally it would be useful to understand the relationship between air conditioner ownership and the daily and seasonal variations in electricity consumption for households. Unfortunately the survey data is unable to assist in our understanding of this relationship.

Of the sample group, 55 per cent of respondents had an air conditioner. The highest proportion of respondents with air conditioners were serviced by Integral Energy (62 per cent), followed by AGL and EnergyAustralia (57 and 51 per cent of their customers in the sample respectively) – Figure 2.16.

For the purposes of this survey, an air conditioner refers to a water-cooled, air-cooled, ducted, evaporative, window or similar air conditioner. It does not include electric fans.
The proportion of respondents with an air conditioner increased compared with the 2003 results. In 2003, 48 per cent of respondents had an air conditioner. Since 2003, the largest increase in air conditioners has occurred by respondents serviced by EnergyAustralia. In 2003, only 38 per cent of EnergyAustralia’s customers had an air conditioner, whilst in 2006, 51 per cent of its customers had an air conditioner.
We also examined the relationship between household income and air conditioners – Figure 2.17. Whilst the uptake of air conditioners has increased across all income groups between 2003 and 2006, the largest increase occurred in the $104,000+ group where the proportion of respondents with an air conditioner increased from 47 per cent in 2003 to 60 per cent in 2006.

Figure 2.17 Proportion of respondents with air conditioning by income, 2003 and 2006

Finally, of the respondents without an air conditioner, we asked whether they were considering installing one in the future. For EnergyAustralia and Integral Energy’s customers, a higher proportion of those without an air conditioner indicated that they were considering installing one in the future compared to the 2003 results – Figure 2.18.
2.2.3 Respondents with an air conditioner used 13 per cent more electricity per occupant than those without

In light of particular concerns about the ongoing rise in the number of households with air conditioners, we have examined the relationship between air conditioner and electricity consumption. Importantly, there are many reasons why electricity consumption varies between households. These results only provide an indication of the relationship between electricity consumption and having an air conditioner.
On average, electricity consumption was 13.1 per cent higher for respondents (3,431 kWh) with an air conditioner, compared with respondents without an air conditioner – Figure 2.19. These results are almost identical to those based on the 2003 survey.

Figure 2.19 Average electricity consumption per occupant for households with or without an air conditioner

In addition, we asked respondents with an air conditioner how often they use their air conditioner, both in summer and winter periods (if it can operate in reverse cycle). 65 per cent of respondents with an air conditioner indicated that they only use it on very hot days – Figure 2.20. This compares with 26 per cent for most hot days.

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7 We also considered the difference in electricity consumption for those with a swimming pool. The average electricity consumption for households with a swimming pool was 11,064 kWh. This result is likely to represent the underlying relationship between owning a swimming pool and other household characteristics such as the number of occupants, resulting in the high consumption observed.
Finally, a proportion of respondents had reverse cycle air conditioners. We asked these respondents about their use of the air conditioner for heating. 45 per cent of respondents with a reverse cycle air conditioner indicated that they only used it during very cold days compared with 21 per cent for most cold days.
2.2.4 46 per cent of respondents said they would not switch off their air conditioner if prices increased on very hot days by 25 per cent

Finally, we asked participants with an air conditioner whether they would switch off their air conditioner on very hot days if the price was 25 per cent higher. Almost half of respondents with an air conditioner indicated that they would not use it less in these circumstances – Figure 2.22.

Only a very small proportion (7 per cent) indicated that they would turn their air conditioner off for the entire day.

Figure 2.22 Proportion of respondents responding to a 25 per cent price rise on very hot days

2.2.5 38 per cent of households connected to gas use it for cooking, heating and hot water

Finally, we examined the usage of gas within a household as between cooking, space heating and hot water. On average, 33 per cent of respondents with gas used it for all three purposes (an increase from 29 per cent in 2003). The majority of respondents used gas for at least two purposes (79 per cent), with cooking and hot water use being the next highest combination (27 per cent), followed by cooking and space heating (13 per cent) and hot water and space heating (6 per cent) – Figure 2.23.
We also considered average gas consumption by appliance use. As expected, average consumption for respondents using gas for only one purpose (17,137MJ) is lower than average consumption when gas is used for two (20,922MJ) purposes. Average consumption when gas is used for cooking, space heating and hot water is highest (31,740MJ) – Figure 2.24.
2.3 What is the relationship between income and energy use?

The relationship between income and energy use is important to any consideration of the impact that electricity and gas prices are likely to have on particular households. The survey was therefore designed to allow the Tribunal to examine in detail the characteristics of low income households, particularly their energy use.

In this section we outline the results of this analysis. Our key findings are:

- average annual electricity consumption increases with income
- average annual gas consumption also increases with income
- in general, concession card holders use less energy compared with non-concession card holders, and
- more respondents are aware that concessions are available compared to the participants in 2003.

The remainder of this section reports these results in detail.

2.3.1 High income households generally use more energy

On average, electricity and gas consumption for high income households is higher than for low income households. In 2006, average annual electricity consumption for high income households was 9,848 kWh compared with 6,655 kWh for low income households. Similarly for gas consumption, high income gas consumers used on average 30,909 MJ in 2006, compared with 17,931 MJ for low income households.

To consider why electricity and gas consumption between low and high income households differs, we examined the underlying differences in the characteristics related to electricity and gas consumption for each of these groups – Box 2.4.

High income households on average used 23 per cent more electricity than average households, and 26 per cent more gas than average households. They generally have more occupants than low income households (3.6 compared with 2.3), have a number of high energy using appliances, including an air conditioner and swimming pool pump.
Box 2.4  Typical characteristics of low and high income households

<table>
<thead>
<tr>
<th>Low Income ( &lt; $31,200)</th>
<th>High Income ( &gt; $104,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than average electricity consumption of 6,655 kWh (average of 8,009 kWh)</td>
<td>Higher than average electricity consumption of 9,848 kWh (average of 8,009 kWh)</td>
</tr>
<tr>
<td>Lower than average gas consumption of 17,931 MJ (average of 24,553 MJ)</td>
<td>Higher than average gas consumption of 30,909 MJ (average of 24,553 MJ)</td>
</tr>
<tr>
<td>38% Rent their home (private or public) (compared to 15% of high-income households)</td>
<td>85% own or are paying off their home (compared to 62% low-income households)</td>
</tr>
<tr>
<td>On average, have 2.3 people in household</td>
<td>On average, have 3.6 people in household</td>
</tr>
<tr>
<td>37% are single person households (compared to 7% for high-income households)</td>
<td>67% are couples with children (compared to 18% for low-income households)</td>
</tr>
<tr>
<td>75% have a concession card (compared to 4% for high-income households)</td>
<td>96% do not have a concession card (compared to 25% for low-income households)</td>
</tr>
<tr>
<td>42% have mains gas</td>
<td>68% have mains gas</td>
</tr>
<tr>
<td>49% have a clothes dryer; 22% have a dishwasher; 98% have a washing machine; 90% have a microwave; 39% have a second refrigerator</td>
<td>80% have a clothes dryer; 75% have a dishwasher; 99% have a washing machine; 95% have a microwave; 54% have a second refrigerator</td>
</tr>
<tr>
<td>52% of households have an air conditioner</td>
<td>60% of households have an air conditioner</td>
</tr>
<tr>
<td>5% have a pool</td>
<td>25% have a pool</td>
</tr>
</tbody>
</table>

Figure 2.25 Average annual electricity consumption by income, 2006

![Figure 2.25](image)

Figure 2.25 shows the average electricity consumption by income from the 2006 survey, and Figure 2.26 shows annual gas consumption by income grouping.
2.3.2 Concession card holders use less energy than other consumers

To assist with financial hardship in certain circumstances, the electricity retailers provide government-funded rebates to assist pensioners and low-income households. The energy concession is applied to the cost of electricity and gas, and is paid in instalments through an eligible customer’s electricity bill.

We asked survey participants whether they held a concession card, and compared electricity and gas consumption between those with and those without a concession card. The results indicate that respondents with a concession card use on average less electricity and gas compared with those respondents without a concession card – Figure 2.27.
Figure 2.27 Average annual electricity and gas consumption for concession card holders compared with non-concession card holders

On average, the proportion of respondents within the low income category with a concession card increased from 67 per cent to 75 per cent in 2006 – Figure 2.28.
Figure 2.28 Proportion of respondents with a concession card by income

The proportion of respondents that are aware that concession cards can be used to claim a rebate on energy bill has also increased since 2003. In 2003, 87 per cent of respondents were aware that a concession could be claimed, and this increased to 92 per cent of respondents in 2006 – Figure 2.29.
The survey continued to identify some households who had financial difficulty paying their electricity and gas bills in the last three years.

In 2006, 9 per cent of electricity and almost 5 per cent of gas consuming respondents indicated they had difficulties paying their bills and approached an energy supplier to seek assistance – Figures 2.28 and 2.29. These results are almost identical to those observed from the 2003 survey results.\footnote{The 2003 results reported here differ from those presented in the 2003 survey report because survey participants in 2006 were not asked whether they had difficulties paying their electricity or gas bill, but only whether they had approached their supplier as a result of having payment difficulties.}
Figure 2.30 Proportion of electricity customers with difficulties paying energy bills in previous three years

2006

2003
Of those respondents that indicated they had difficulties paying their energy bills and sought assistance from their supplier, we asked what assistance was offered. The forms of assistance included for electricity customers:

- 71 per cent were offered an extension on the due date, and
- 29 per cent were allowed to pay the bill off in instalments.

Where assistance was sought from a gas retailer, the forms of assistance included:

- 76 per cent were offered an extension on the due date of the bill, and
- 28 per cent were allowed to pay the bill off in instalments.
We also considered the proportion of respondents who had financial difficulties against household income – Figures 2.32 and 2.33. In general, a higher proportion of low income respondents had payment difficulties for both electricity and gas bills.

**Figure 2.32 Proportion of all respondents that approached their supplier due to having difficulties paying their electricity bill**

![Figure 2.32]

**Figure 2.33 Proportion of respondents that approached their supplier due to having difficulties paying their gas bill**

![Figure 2.33]
3 What is the extent of retail competition, who is being approached and why are they changing?

Since the introduction of full retail competition for gas and electricity in 2002, residential customers have had the option of choosing who supplies them with these services. In recent years, the electricity and gas retail suppliers have started to actively market competitive supply contracts to customers.

In 2003 the Tribunal asked survey respondents about their awareness of retail competition, and, if they had been approached, whether they had change electricity or gas supplier. In addition, respondents were asked the reason for changing, or choosing not to change once approached. At that time, awareness of retail competition was high, approximately 75 per cent of respondents indicated that they were aware they could choose their electricity or gas supplier. There were also less customers who subsequently chose to change supplier once approached.

The results from the 2006 survey build upon these earlier observations. Our analysis of the data indicates that:

- awareness that a customer can choose their retail electricity and gas supplier has further increased, with over 91 per cent of respondents being aware they can choose their electricity supplier
- the proportion of households that are aware they can choose their electricity and gas supplier did not vary significantly between low and high income respondents, or between low and high consumption respondents
- more than 56 per cent of respondents had been approached to switch electricity supplier; 40 per cent had been approached to switch gas supplier
- the proportion of households approached to change electricity or gas supplier did not vary significantly between low and high income respondents or between low and high consumption respondents compared against the 2003 results where higher income households and higher consumption households in general were more likely to have been approached
- of those approached, approximately 34 per cent of respondents switched their electricity supplier, and 24 per cent switched their gas supplier
- of those approached, low income and low consumption electricity respondents were more likely to switch their supplier
the main reason for switching both electricity and gas suppliers was that the competitive offer was cheaper (65 per cent for electricity and 54 per cent for gas customers)

the main reason for choosing not to switch electricity or gas supplier was that the respondent was satisfied with their existing provider (39 per cent of electricity customers and 32 per cent for gas customers) and

a higher proportion of lower income households switch once approached by an electricity supplier (39 per cent) compared with high income households (33 per cent).

The remainder of this chapter presents these results in greater detail.

3.1 Over 91 per cent of survey participants are aware that they can change their electricity supplier

There has been a marked increase in awareness of retail competition since the 2003 survey. Over 91 per cent of respondents to the 2006 survey indicated that they were aware that they could change their electricity supplier. Almost 94 per cent of respondents indicated that they were aware they could choose their gas supplier. This compares with 75 per cent and 77 per cent for electricity and gas respectively in the 2003 results.
3 What is the extent of retail competition, who is being approached and why are they changing?

Figure 3.1 Proportion of electricity customers who were aware that they could choose their electricity supplier

2006

<table>
<thead>
<tr>
<th>Average annual consumption (kWh)</th>
<th>Proportion of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4,000</td>
<td>90%</td>
</tr>
<tr>
<td>4,001 - 8,000</td>
<td>99%</td>
</tr>
<tr>
<td>8,001 - 12,000</td>
<td>94%</td>
</tr>
<tr>
<td>12,001 +</td>
<td>93%</td>
</tr>
</tbody>
</table>

2003

<table>
<thead>
<tr>
<th>Average annual consumption (kWh)</th>
<th>Proportion of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4,000</td>
<td>68%</td>
</tr>
<tr>
<td>4,001 - 8,000</td>
<td>76%</td>
</tr>
<tr>
<td>8,001 - 12,000</td>
<td>76%</td>
</tr>
<tr>
<td>12,001 +</td>
<td>76%</td>
</tr>
</tbody>
</table>
In addition, awareness of the ability to choose energy supplier did not vary considerably between the levels of consumption or income in 2006, whilst in 2003 higher consuming gas customers tended to be more aware that they could switch their supplier.
3.2 More than 56 per cent of respondents had been approached to switch electricity supplier

We next considered the proportion of respondents that had been approached to switch electricity or gas supplier. The results indicated that on average around 59 per cent of all respondents had been approached by an electricity or gas supplier. In particular 56 per cent of electricity customers had been approached by an electricity supplier and 40 per cent of gas customers had been approached by a gas supplier. This is higher than the 27 per cent approached at the time of the 2003 survey, and there is no longer a bias towards owners as compared with tenants, as observed in the 2003 results.

Figure 3.3 Proportion of gas and electricity customers approached to change supplier by ownership status

In addition, while electricity customers approached tended to have higher average electricity consumption, for gas customers there was no substantial difference. This also contrasts with the results in 2003, where those customers approached to switch
What is the extent of retail competition, who is being approached and why are they changing?

tended to have considerably higher average consumption, compared to those who had not been approached. This may suggest that retail gas and electricity businesses are seeking customers more widely, compared with earlier efforts at targeting high consuming customers.

Figure 3.4 Average annual electricity and gas consumption between customers who were approached to change supplier

Electricity

![Electricity Consumption Chart]

Gas

![Gas Consumption Chart]

Finally, in 2003 we observed that higher income households for both electricity and gas customers were almost twice as likely to have been approached to change supplier. In the 2006 results (Figure 3.5 below), this observation is no longer the case. On average however, the proportion of electricity customers approached is higher than gas customers.
3. What is the extent of retail competition, who is being approached and why are they changing?

Figure 3.5 Proportion of electricity and gas customers approached to change supplier by income category

3.3 Almost 48 per cent of electricity customers were approached by their existing supplier to enter into a contract

To minimise the potential for confusion amongst respondents about the differences between a competitive market offer and switching between energy suppliers, they were asked whether they had also been approached by their existing supplier to change to a competitive market contract.

The results show that 48 per cent of electricity customers and 49 per cent of gas customers were approached by their existing supplier to enter into a contract – Figure 3.6.
What is the extent of retail competition, who is being approached and why are they changing?

Figure 3.6 Proportion of electricity and gas customers approached to enter a contract with an existing supplier by consumption

Of those approached however, 54 per cent of electricity customers and 46 per cent of gas customers chose to enter into a contract with their existing supplier – Figure 3.7. This was significantly higher than the switching rates that were observed for respondents that chose to switch between suppliers.
3 What is the extent of retail competition, who is being approached and why are they changing?

Figure 3.7 Proportion of electricity and gas customers approached who entered into a contract with an existing supplier by consumption

3.4 34 per cent of electricity customers approached by a new supplier, switched supplier

Of those respondents that had been approached, on average almost 34 per cent of electricity customers, and 24 per cent of gas customers, decided to change energy supplier. This is higher than at the 2003 survey (22 per cent of electricity and 16 per cent of gas customers switched once approached in 2003). The proportion of households that switched by income category once approached is presented in Table 3.1 below.
Table 3.1 Proportion of electricity and gas customers approached who actually changed supplier, by income category

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Electricity</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than $31,200</td>
<td>39%</td>
<td>25%</td>
</tr>
<tr>
<td>$31,201-$52,000</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>$52,001-$104,000</td>
<td>34%</td>
<td>30%</td>
</tr>
<tr>
<td>more than $104,000</td>
<td>33%</td>
<td>32%</td>
</tr>
</tbody>
</table>

Of those customers that decided to change electricity and gas supplier, the highest proportion was amongst lower electricity consumers. Almost 38 per cent of electricity customers using less than 4,000 kWh switched supplier once approached. This compares with 30 per cent of households consuming 8,001 to 12,000 kWh. This result differs from the 2003 survey results where higher consuming households were more likely to switch supplier (23 per cent for over 12,001 kWh, compared with 9 per cent for less than 4,000 kWh).

Figure 3.8 Proportion of electricity customers approached who decided to change electricity supplier, by electricity consumption
3 What is the extent of retail competition, who is being approached and why are they changing?

**Figure 3.9** Proportion of gas customers approached who decided to change gas supplier, by gas consumption

![Bar chart showing proportion of gas customers approached who decided to change gas supplier, by gas consumption.](chart)
Finally we compared the average annual electricity and gas consumption between those households that changed electricity and gas supplier. Average consumption for those that switched electricity supplier was 5.6 per cent lower than for those that did not. On the other hand, average annual gas consumption for those that chose to switch supplier was 7.0 per cent higher than for those that did not – Figure 3.10.

Figure 3.10 Average annual gas and electricity consumption for households who changed electricity and gas supplier compared with those who did not

Electricity

Gas
3.5 The most common reason for changing energy supplier or moving onto a competitive offer was that the competitive offer was cheaper

As in the 2003 survey, we also asked those respondents who chose to change energy supplier or move onto a contract with an existing supplier, what was their reason for changing. The most common reason for switching electricity supplier was that the competitive electricity offer was cheaper (65 per cent), with the next highest response being a combined electricity and gas bill offer (9 per cent). This was in line with the reasons given at the 2003 survey.

For those that chose to change gas supplier or move to a competitive gas market offer, 54 per cent indicated that they changed because the offer was cheaper. The next most significant reason was the offer of a combined electricity and gas bill (21 per cent). Similar to the electricity reasons, these results were also in line with those from the 2003 survey.

3.6 The most common reason for not changing energy supplier or moving onto a competitive offer was that the customer was happy with their existing supplier

We also asked respondents that chose not to change energy supplier the reason for deciding not to change supplier. 39 per cent of electricity customers indicated that they were happy with their current supplier, with a further 17 per cent indicating that they did not want to be locked into a contract.

For gas customers, the main reason for not switching was that they were happy with their existing supplier (32 per cent) with a further 21 per cent indicating that they did not want to be locked into a contract.
A Overview of the survey design and methodology

A face-to-face (door to door) interview methodology was utilised for this survey. This approach was adopted to:

- Ensure maximum comparability with past surveys.
- Obtain consent signatures from respondents to permit water, gas and electricity agencies to release their billing data for inclusion in the analysis.

Interviews were conducted from August to October 2006.

A.1 Sample size

A total of 2631 door to door interviews were completed across the Sydney Water Corporation areas with 600 of the total interviews being specifically samples from low income areas to ensure a minimum low income sample of at least 600 respondents.

A.2 Sample selection

The 2006 survey utilised a random selection of Census Collector Districts (CDs) from Statistical Local Areas (SLAs).

The full list of all of the postcodes included in the survey is shown below. The number of interviews was divided proportionally by the number of residents in each of the four key regions covered by Sydney Water. These proportions are shown in the table below.

Postcodes were matched to SLAs and CDs were randomly select within each SLA. The number of CDs selected within each SLA was proportional to the number of dwellings within each SLA⁹.

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⁹ This information was obtained from the Australian Bureau of Statistics publication: Census of Population and Housing Selected Social and Housing Characteristics for Statistical Local Areas, New South Wales and Jervis Bay Territory, 2001.
A Overview of the survey design and methodology

Table A.1 Postcodes for Sydney Water Sampling

<table>
<thead>
<tr>
<th>Central Sydney</th>
<th>Northern Sydney</th>
<th>Illawarra</th>
<th>Greater Western Sydney (incl. Blue Mountains)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2050</td>
<td>2060-2080</td>
<td>2500-2508</td>
<td>2115-2118</td>
</tr>
<tr>
<td>2130-2139</td>
<td>2081-2114</td>
<td>2515-2519</td>
<td>2125</td>
</tr>
<tr>
<td>2190-2195</td>
<td>2119-2122</td>
<td>2525-2534</td>
<td>2140-2156</td>
</tr>
<tr>
<td>2203-2234</td>
<td>2126</td>
<td>2160-2164</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2157-2159</td>
<td>2165-2177</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2196-2200</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2558-2574</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2745-2786</td>
<td></td>
</tr>
</tbody>
</table>

Percentage of Sydney Water Region

31% 20% 7% 42%

A.3 Selecting households

A.3.1 2,000 randomly selected households

A total of 260 Census Collectors’ Districts (CDs) were randomly selected. The number of CDs selected in each SLA was proportional to the size of the SLA. Five interviews were conducted in each CD with a skip pattern of at least 3 dwellings between successful interviews to minimise serial correlations.

Start points were selected through random identification of a street intersection. A random number from 1-10 was allocated representing the number of dwellings away from the intersection where the first call was to be made.

Interviewers called on every 3rd dwelling until a minimum of five interviews have been conducted in that CD.

A.3.2 Incremental 600 low-income households:

An additional 120 low income CDs were selected to provide an additional 600 interviews with low income households. Additional low income households were included to enable more in-depth analysis of energy and water usage for those households. A threshold of $31,200 was selected as this represents the threshold utilised by the ABS for the lower income groupings. Information on the Census Collector Districts (CDs) with severe disadvantage was obtained from the ABS and 120 additional CDs were selected from amongst these.
A.4 Pre-survey letter

As an initial strategy to increase the response rate and to verify the official nature of the survey, a formal letter on the Tribunal’s letterhead was left at each household providing an invitation to participate and an explanation of the survey prior to the interviewer calling on the household.

The letter provided a Tribunal telephone number to call in case of need or for verification in addition to Taverner’s number.

A.5 Piloting

An initial 24 face-to-face pilot interviews were conducted in Sydney, the Illawarra and Blue Mountains during August 2006. Changes were made to the questionnaire based on problems identified during piloting.

A.6 Survey Sample

Interviews were conducted with 2631 households. This section provides a summary of the survey sample according to:

- Income groups.
- Household size (number of people in each household).
- Household structure.
- Home ownership status.
- Pensioner status.
- Dwelling type.
- Employment status.

A.7 Response Rate

An overall response rate of 27 per cent was achieved. This is based on households which were eligible but refused to participate when interviewers called. The response rate varied significantly between Sydney, the Illawarra and the Blue Mountains reflecting the characteristically greater willingness of households outside of large metropolitan areas such as Sydney to participate in surveys of this nature. The response rates for the three areas were as follows:

- Blue Mountains - 42 per cent.
- Illawarra - 42 per cent.
- Sydney - 26 per cent.

In total 13,291 households were visited where no one was home.
The total number of interviews in each of the three areas is summarized in the table below. This includes the additional households which were in low income CDs.

**Table A.2 Interviews conducted in each of the three survey areas**

<table>
<thead>
<tr>
<th>Survey area</th>
<th>Number of interviews</th>
<th>Per cent of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney</td>
<td>2257</td>
<td>86</td>
</tr>
<tr>
<td>Illawarra</td>
<td>289</td>
<td>11</td>
</tr>
<tr>
<td>Blue Mountains</td>
<td>85</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>2631</td>
<td>100</td>
</tr>
</tbody>
</table>

**A.8 Weighting**

In order to overcome any biases in the survey data due to over sampling of low income households, data have been weighted according to the household income distribution of households in the three areas represented in the survey. Average household incomes for the three areas were obtained from the Australian Bureau of Statistics (ABS) and weights calculated for each survey household based on the average household income for their SLA.

Most of the figures and results presented in this report have been generated from the data obtained from the unweighted random sample of 2031 respondents, adjusted for any non-responses to the particular questions reported. In some instances, we were unable to obtain consumption data for a respondent, and these respondents were therefore excluded where results were reported by consumption category.

Where figures or results are presented in the report by income category, we have used the full sample of 2631, applying the income weights to remove any biases associated with the additional low-income sampling.

**A.9 Potential sample biases**

Weighting of the survey data helps to overcome some of the sampling bias which may occur in a survey of this nature. Even though weights have been applied it is important to consider the potential biases within the survey sample when interpreting the data. Potential biases might include:

1. Response rates in metropolitan locations are traditionally lower than in non-metropolitan locations.
2. Response rates may have been affected by a heightened state of concern over privacy issues and giving of personal information.
3. As discussed previously, a greater proportion of low income households were included in the sample to enable more in-depth analysis for this group. However, the household income weighting which have been applied to the data should correct for any biases due to over sampling of low income households.
4. Unit and apartments are likely to be underrepresented in the survey sample for the following reasons:
   a) many are difficult to access because they are security buildings
   b) there is a greater proportion of units in metropolitan locations where the response rate is lower than in non-metropolitan locations.

A.10 Consumption and billing information from utilities

In order to obtain billing and consumption data for electricity, gas and water, survey participants were asked to sign a consent form allowing the relevant utilities to release that information to Taverner Research for inclusion in the data analysis. Participants who refused permission were not included in the survey.

For those who gave permission, a signed consent form was forwarded to the relevant utilities in exchange for billing and consumption data. Account numbers were sought from respondents to facilitate the utilities accessing their information, however, a number of respondents were unable to provide account numbers because they had disposed of their bills. This made data retrieval more difficult for the utilities and hence not all billing and consumption data for respondents were obtained.

The following table provides a breakdown of the number of respondents who gave permission for their information to be accessed and the percentage of customers for which utilities were able to provide consumption and billing data.

<table>
<thead>
<tr>
<th>Survey area</th>
<th>Number of Respondents giving permission for data to be accessed</th>
<th>Respondents for which data was provided by utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Water Corporation</td>
<td>2598</td>
<td>2472 (95%)</td>
</tr>
<tr>
<td>EnergyAustralia Electricity</td>
<td>1190</td>
<td>924 (78%)</td>
</tr>
<tr>
<td>EnergyAustralia Gas</td>
<td>267</td>
<td>144 (54%)</td>
</tr>
<tr>
<td>AGL Gas</td>
<td>1038</td>
<td>631 (61%)</td>
</tr>
<tr>
<td>Other Electricity</td>
<td>529</td>
<td>410 (78%)</td>
</tr>
<tr>
<td>Integral Energy</td>
<td>912</td>
<td>787 (86%)</td>
</tr>
</tbody>
</table>
Overview of the survey design and methodology

A.11 Annualised billing and consumption data

Billing and consumption data were provided for each quarter by the utilities. Quarters added to 365 days for some, but not for others. For those for whom quarters did not add to 365 days, the data was annualised. This involved dividing the total consumption and billing for all four quarters by the number of days represented by all four quarters and then multiplying that amount by 365 days. Billing and consumption data are, therefore, reported on an ‘annualised’ or ‘per annum’ basis (ie, over 365 days) for water, gas and electricity.

A.12 Income groups

For the purposes of this report, all households earning less than $31,200 have been defined as low income households. Just under half of the survey sample (35%) said they earned less than $31,200 per annum. As described in the Sample Selection section above, the increased percentage of low income households in the survey is explained by the 600 additional interviews conducted in low income areas which were included in order to provide sufficient low income households to enable more detailed analysis of this income group.

The highest income group which made up six percent (6 per cent) of the total sample earned more than $156,000 per year. Twelve percent of households refused to provide their annual income.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>Person 15 years and over</td>
</tr>
<tr>
<td>Children</td>
<td>Persons aged less than 15 years</td>
</tr>
<tr>
<td>Full time employment</td>
<td>Paid employment of more than 35 hours per week, including paid holidays and including all second jobs</td>
</tr>
<tr>
<td>High consumption</td>
<td>For electricity, consumption above 12,000kWh per annum. For gas, consumption above 35,000MJ per annum</td>
</tr>
<tr>
<td>High income</td>
<td>Household income above $104,000 per annum</td>
</tr>
<tr>
<td>House</td>
<td>Separate house, combined dwelling/non-dwelling, and semi-detached/terrace/house/villa unit/town house/ duplex</td>
</tr>
<tr>
<td>Household</td>
<td>A small group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food (<a href="http://www.abs.gov.au">www.abs.gov.au</a>)</td>
</tr>
<tr>
<td>Household income</td>
<td>Total income of the household (not respondent), before taxes, from all sources including income from salaries, interest, dividends, bonuses, capital gains, profits and so on</td>
</tr>
<tr>
<td>Indoor amenity</td>
<td>Facilities located inside the dwelling including toilets, showers, baths, spas, dishwashers and washing machines</td>
</tr>
<tr>
<td>Large energy using appliance</td>
<td>Dishwasher, washing machine, clothes dryer and air conditioner. The survey did not ask about entertainment appliances (such as VCRs, DVD players, TVs and stereos)</td>
</tr>
<tr>
<td>Large land size</td>
<td>Land more than 900 square metres</td>
</tr>
<tr>
<td>Low consumption</td>
<td>For electricity, consumption below 4,000kWh per annum. For gas, consumption below 5,000MJ per annum</td>
</tr>
<tr>
<td>Low income</td>
<td>Household income below $31,200 per annum</td>
</tr>
<tr>
<td>Medium land size</td>
<td>Land between 500 to 900 square metres</td>
</tr>
<tr>
<td>Middle family</td>
<td>Family with most children aged from 6 to 15 years and still at home</td>
</tr>
<tr>
<td>Mature family</td>
<td>Family with most children over 15 years and still living at home</td>
</tr>
<tr>
<td>Part time employment</td>
<td>Employment of 8 to 34 hours per week</td>
</tr>
<tr>
<td>Population</td>
<td>All households in the Sydney, Blue Mountains and Illawarra regions</td>
</tr>
<tr>
<td>Price structure</td>
<td>The mix of fixed charges, usage charges and price steps</td>
</tr>
<tr>
<td>Glossary</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td></td>
</tr>
</tbody>
</table>

**Relative standard error**
A measure of an estimate's reliability obtained by dividing the standard error of the estimate by the estimate itself. This quantity is expressed as a per cent of the estimate. Estimates with large RSEs are considered unreliable.

**Renters**
Customers paying rental for their primary place of residence.

**Residential customers**
Customers in private dwellings, not including commercial and industrial customers.

**Sample**
Surveyed households in the Sydney, Blue Mountains and Illawarra regions.

**Significant**
95 per cent probability that something is true.

**Single person**
Person living alone or sharing accommodation in a house or flat.

**Small land size**
Land less than 500 square metres.

**Standard error of the mean**
An estimate of the standard deviation of the sampling distribution of means, based on the data from one or more random samples.

**Unit**
Granny flat, ‘low rise’ flats (less than 3 storeys), flats (3 storeys) and ‘high rise’ flats (more than 3 storeys).

**Young family**
Family with mostly pre-school children.