



Information Paper

Typical Electricity Customers

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1 INTRODUCTION

There are occasions when both Aurora Energy and the Regulator need to ascertain the impact of electricity price changes on customers. To allow for general comments to be made about the impact of price changes it is usual to refer to the impact on a 'typical customer'.

In 2006, the then Office of the Tasmanian Energy Regulator (now the Office of the Tasmanian Economic Regulator (OTTER)) published an information paper that set out the Regulator's preferred methodology for defining a set of 'typical' electricity customers. The paper described a method for determining the consumption profile of customers within three broad categories: residential, commercial and institutional. Within these broad categories, customers were further grouped according to the combination of tariffs they used. Using the methodology, a set of typical customers was defined, based on customer consumption data from 2004.

In 2010 the Regulator updated the analysis based on data from Aurora Energy in 2009-10. Using the methodology described in the 2006 information paper, the Regulator redefined the set of typical customers using updated consumption data provided by Aurora Energy. Changes to commercial and institutional tariffs that had occurred since 2006 and the introduction of competition for these customers meant that the commercial and institutional customer categories used in 2006 were no longer appropriate. Typical customers were therefore re-categorised as residential or business.

This information paper sets out the process that has been used to update the typical customer information for 2014. The updated typical customer profiles will be used by OTTER when preparing future price comparison reports. By redefining the set of typical customers, any changes in underlying customer behaviour can be identified, which may be of interest to the Regulator, Aurora Energy and other stakeholders. It will also enable the Regulator to separate volume effects from price effects when carrying out comparative pricing analysis.

The Regulator's basic principles and methodology for determining the typical customer is detailed in the 2006 information paper which is available on the Regulator's website at www.economicregulator.tas.gov.au.

1.1 Methodology

The two primary categories of customers presented in this paper have been categorised based on the tariff they use for general consumption. That is, residential customers are identified as those using Tariff 31 and business customers as those using Tariff 22. As mentioned above, contestable non-residential customers that are no longer on regulated tariffs have been excluded from the analysis.

Within the broad residential and business categories, customers have been further grouped according to the combination of tariffs they use. A typical customer has

been chosen for each tariff combination. However, for the more popular tariff combinations (ie those with a proportionately higher number of customers) three typical customers have been identified. This is to ensure that no representative typical customer constitutes more than 20 per cent of the category, in accordance with the methodology described in the 2006 information paper.

The following method has been used to calculate typical customers' consumption levels:

- for groups defined by a solitary tariff, the median consumption;
- for groups defined by multiple tariffs, the median of the total consumption. For consumption on each tariff, the median of the percentages of the total consumption is calculated (and adjusted to 100 per cent when required);
- for groups requiring more than one typical customer to adequately describe them, the group is divided into an odd number of equally sized sub-groups (in terms of the number of customers in them) based on total consumption and the method described above used on each sub-group; and
- for groups with a high degree of skewness a second typical customer representing the top quartile is added. If the skewness is to the lower end the bottom quartile is used instead.

Throughout this report all consumption levels are presented on a 'per annum' basis.

1.2 Data used

The analysis uses customer consumption data from the 2012-13 financial year provided by Aurora Energy. Where stated, annual bills for 2014 have been calculated based on the approved standing offer prices available as at 1 January 2014.

2 TYPICAL RESIDENTIAL CUSTOMERS

There are five tariffs available to residential consumers. All residential customers use Tariff 31 (Light and Power). Most, but not all, customers then choose to use one of Tariff 41 (Hot Water) or Tariff 42 (Heating Discount) with the choice being mutually exclusive.¹ Some customers use an off-peak tariff (either Tariff 61 or Tariff 62) instead of Hot Water/Heating Discount tariffs whilst other customers use an off-peak tariff in addition to the Hot Water/Heating Discount tariffs.

There are six major tariff combinations used by customers as shown in Table 2.1.

Table 2.1: Tariff combinations for residential customers

Tariff combination	Approx. number of customers	% of residential customers	% point change from 2010	Number of typical customers
Tariff 31 alone	11 194	6.2	+0.3	1
Tariffs 31 and 41	55 579	30.7	-2.8	3
Tariffs 31 and 42	99 614	55.1	+5.7	3
Tariffs 31 and 61 ¹	3 502	1.9	-0.8	1
Tariffs 31, 41 and 61	6 013	3.3	-1.6	1
Tariffs 31, 42 and 61	4 887	2.7	-0.9	1

Note 1: Relatively few customers use Tariff 62

In accordance with the methodology outlined in section 1.1, the more popular tariff combinations (each representing more than 20 per cent of customers) have each been defined by three typical customers, while the other combinations have each been defined by one typical customer.

To describe a typical customer total consumption levels are required as well as an allocation between the tariffs. In other words, a typical customer will be described as using X kWh in total, with Y per cent on tariff A and Z per cent on tariff B.

It is interesting to note the change in the number of customers on the tariff combinations from the 2010 typical customer study. In 2014, the percentage of customers on the Tariffs 31 and 41 combination has decreased by just under three percentage points, whilst the percentage of customers on the Tariffs 31 and 42 combination has increased by just under six percentage points. This indicates a shift from Tariff 41 (Hot Water) to Tariff 42 (Hot Water and Space Heating) for residential customers. The data also suggests that Tariff 61 (OffPeak) is slowly being phased out as customers move to the Heating Discount tariffs. These trends are consistent with observations made in the 2010 report.

¹ Tariff 41 (hot water) applies to electric storage water systems whilst Tariff 42 (hot water and space heating) applies to hot water supply systems in conjunction with direct wired electric heaters. See Aurora's tariff schedule for further details.

2.1 Customers using Tariff 31 only

One typical customer has been defined for this group. The median consumption for Tariff 31 customers is 2 897 kWh. This customer would have an annual bill of \$1 124 in 2014. Compared to the 2010 data, typical consumption has increased by around three per cent, whilst the annual bill has increased by just over 31 per cent since 2010.

2.2 Customers using Tariffs 31 and 41

In accordance with the defined methodology which requires using more than one typical customer when the group represents more than 20 per cent of customers this group is divided into three sub-groups. This is obtained by splitting the data into thirds for total consumption and distribution between tariffs. The outcome of this approach is given in Table 2.2. The annual bill for 2014 for each typical customer is also given.

Table 2.2: Typical customers using Tariffs 31 and 41

Group	Total annual consumption kWh	% used on Tariff 31	Annual bill \$
'Low' consumption	3 475	54.2	1 176
'Medium' consumption	6 405	55.9	1 831
'High' consumption	10 578	55.3	2 747

The low consumption is 53 per cent of the medium consumption whilst the high consumption is 166 per cent of the medium consumption.

Compared to the results reflected in the 2010 paper, the level of consumption has fallen between six and nine per cent however the annual bill has increased by between 17 and 19 per cent.

2.3 Customers using Tariffs 31 and 42

Due to the number of customers using this tariff combination, three typical customers have been defined for this group. This is obtained by splitting the data into thirds for total consumption and distribution between tariffs. The resultant typical customers are given in Table 2.3 along with their annual bill for 2014.

Table 2.3: Typical customers using Tariffs 31 and 42

Group	Total annual consumption kWh	% used on Tariff 31	Annual bill \$
'Low' consumption	4 811	43.1	1 413
'Medium' consumption	8 310	41.3	2 123
'High' consumption	13 285	40.8	3 139

Similar to customers on Tariffs 31 and 41, customers on Tariffs 31 and 42 have significantly reduced their annual consumption by approximately 13 per cent (on top of a 17 per cent decline observed in 2010 with respect to the consumption reported in the 2006 paper). This indicates that customers continue to find ways to reduce their total annual electricity consumption likely through installing micro generation systems, adopting alternative fuel sources such as natural gas and greater awareness of energy efficiency.

2.4 Customers using Tariffs 31 and 61

Only one typical customer is required to represent this group. The median of the total consumption is 6 726 kWh. The median percentage of electricity used on Tariff 31 is 53.7 per cent; the typical customer therefore uses 3 612 on Tariff 31 and 3 114 kWh on Tariff 61. The annual bill for this customer in 2014 would be \$1 806.

2.5 Customers using Tariffs 31, 41 and 61

Only one typical customer is required to represent this group. Given that there are multiple tariff types under this category the percentage of the total consumption used on each tariff has been calculated in accordance with the methodology outlined in section 1.1 of this paper. Since the sum of the medians does not add up to 100 per cent the median values have been scaled by their sum, giving the final breakdown as outlined in Table 2.4. This adjustment to the medians is necessary to ensure that calculations based on the individual tariffs are equal to calculations based on the sum of the tariffs.

Table 2.4: Median percentages for customers using Tariffs 31, 41 and 61

Tariff	Median %	Adjusted %
31	41.6	44.1
41	30.1	31.9
61	22.7	24.0

Using the median of the total consumption of 9 133 kWh, the typical customer uses 4 025 kWh on Tariff 31, 2 915 kWh on Tariff 41 and 2 193 kWh on Tariff 61. There has been a 16 per cent decrease in consumption for the typical customer on this tariff combination and a shift away from Tariff 61 to the other Tariff types. This customer would have an annual bill of \$2 335 in 2014.

2.6 Customers using Tariffs 31, 42 and 61

Following the same methodology as used in section 2.4, Table 2.5 presents the median percentage breakdown and the adjusted values for a typical customer on Tariffs 31, 42 and 61.

Table 2.5: Median percentages for customers using Tariffs 31, 42 and 61

Tariff	Median %	Adjusted %
31	37.7	38.9
42	41.0	42.3
61	18.3	18.9

Using the median of the total consumption (10 624 kWh per annum), the typical customer uses 4 129 kWh on Tariff 31, 4 490 kWh on Tariff 42 and 2 004 kWh on Tariff 61. This equates to an annual bill of \$2 593 in 2014.

3 TYPICAL BUSINESS CUSTOMERS

Business customers are defined as customers using Tariff 22 and possibly one other tariff. A small number of business customers use Tariff 22 in combination with a Hot Water supply tariff (Tariff 43) and an Off-peak tariff (Tariff 61). Tariff 22 is available to all low voltage business customers and is the standard tariff for most small to medium sized businesses. There are 27 722 business customers. Of these, 26 333 or 95.0 per cent use just Tariff 22. The remaining customers use Tariff 22 in combination with either Tariff 43 and/or Tariff 61. In keeping with the general principles outlined in the 2006 information paper, five typical customers have been identified to cover those customers using just Tariff 22, one typical customer has been identified for those using Tariff 22 in conjunction with Tariff 61 and one typical customer has been identified to cover customers using Tariff 22 and Tariff 43.

Table 3.1: Tariff combinations for business customers

Tariff combination	Approx. number of customers	% of business customers	% point change from 2010	Number of typical customers
Tariff 22 alone	26 333	95.0	+1.7	5
Tariffs 22 and 61	231	0.8	-1.4	1
Tariffs 22 and 43	1 082	3.9	-0.2	1
Tariffs 22, 43 and 61	76	0.3	-0.1	1

3.1 Customers using Tariff 22 only

The five typical customers using only Tariff 22 are shown in Table 3.2. These typical customers have been determined by breaking the population into five equally sized groups (based on consumption) and calculating the mean of each group.

Table 3.2: Typical business customers and their annual bills in 2014

Typical customer	Annual consumption kWh	Annual bill \$
'Very low' consumption	241	463
'Low' consumption	1 344	866
'Medium' consumption	4 398	1 750
'High' consumption	11 349	3 616
'Very high' consumption	33 959	9 684

Since 2010 the 'Very low' and 'Low' consumption levels have increased substantially by 65 and 29 per cent respectively, however the 'High' and 'Very High' have experienced falls of three and 16 per cent respectively. The 'Medium' consumption category has increased by seven per cent.

All annual bills have increased by between 10 and 48 per cent.

A common reason for using typical customers is to calculate the impact of changes to Aurora Energy's approved pricing structure. For example, the typical customer methodology allows for the evaluation of the impact on a typical customer of a change in fixed (supply) costs as compared to energy (usage) costs. For the five typical customers shown above the amount of their annual bill that is made up of fixed costs ranges from 81 per cent for the typical 'Very Low' consumption customer to four per cent for the typical 'Very High' consumption customer.

3.2 Customers using Tariff 22 and Tariff 61

There are only 231 customers using Tariff 22 and the off-peak tariff, Tariff 61. Based on the methodology set out in section 1.1 of this paper, only one typical customer has been defined for this group. The median total consumption for these business customers is 21 022 kWh. The median percentage used on Tariff 22 is 80.8 per cent of total consumption.

3.3 Customers using Tariffs 22 and 43

For customers using a combination of Tariffs 22 and 43 the median value of the total consumption is 14 484 kWh, with 66.6 per cent consumption used on Tariff 22. There is a trend towards a greater percentage of consumption on Tariff 22 as total consumption increases, with the median for the top third of customers being 75 per cent.

3.4 Customers using Tariffs 22, 43 and 61

For customers using all three tariffs, the median total consumption is 45 174 kWh with the median percentage usages being 63.5 per cent on Tariff 22, 20.6 per cent on Tariff 43 and 15.9 per cent on Tariff 61. At present there are only 76 customers on this tariff combination, which limits the value of using this typical customer in price comparisons.

4 SUMMARY

4.1 Summary of typical residential customers for 2014

Applying the methodology and using the data provided by Aurora Energy, a summary of the consumption by typical residential customers is listed in Table 4.1 for each tariff. The table includes the total consumption and the total charge based on the January 2014 standing offer prices.

Table 4.1: Typical residential customers' annual consumption and their annual bills in 2014

Typical customer category based on tariff mix	Tariff 31 kWh	Tariff 41 kWh	Tariff 42 kWh	Tariff 61 kWh	Total kWh	Annual bill \$
Tariff 31	2 897				2 897	\$ 1 124
Tariffs 31/41 Low consumption	1 882	1 593			3 475	\$ 1 176
Tariffs 31/41 Medium consumption	3 579	2 826			6 405	\$ 1 831
Tariffs 31/41 High consumption	5 852	4 726			10 578	\$2 747
Tariffs 31/61	3 612			3 114	6 726	\$1 806
Tariff 31/42 Low consumption	2 072		2 739		4 811	\$1 413
Tariffs 31/42 Medium consumption	3 435		4 875		8 310	\$2 123
Tariffs 31/42 High consumption	5 421		7 864		13 285	\$3 139
Tariffs 31/41/61	4 025	2 915		2 193	9 133	\$2 335
Tariffs 31/42/61	4 129		4 490	2 004	10 624	\$2 593

Note: Charges are rounded to nearest whole dollar.

4.1.1 Aurora Energy residential tariffs used

31 – Residential light and power

41 – Hot water supply

42 – Heating discount (residential hot water and space heating)

61 – OffPeak with afternoon boost period

62 – OffPeak, night period only

4.2 Summary of typical business customers for 2014

The typical business customers and their total charges in 2014 are presented in Table 4.2.

Table 4.2: Typical business customers' annual consumption and their annual bills in 2014

Typical Customer category based on tariff mix	Tariff 22 kWh	Tariff 43 kWh	OffPeak kWh	Total kWh	Annual bill \$
Tariff 22 very low consumption	241			241	\$463
Tariff 22 low consumption	1 344			1 344	\$866
Tariff 22 medium consumption	4 398			4 398	\$1 750
Tariff 22 high consumption	11 349			11 349	\$3 616
Tariff 22 very high consumption	33 959			33 959	\$9 684
Tariffs 22/43	9 641	4 843		14 484	\$4 007
Tariff 22/61	16 990		4 032	21 022	\$5 740
Tariffs 22/43/61	28 667	9 323	7 184	45 174	\$10 859

Note: Consumption given in kWh and charges rounded to nearest dollar.

4.2.1 Aurora Energy business tariffs used

22 – General

43 – Business hot water supply

61 – OffPeak with afternoon boost period