REPORT

ENERGY CONSUMERS AUSTRALIA

CONSUMER SENTIMENT AND BEHAVIOUR

VERSION 1.1

31/7/2019

back2back
Research to Design

OVERVIEW

Through the Power Shift Program, which commenced on 1 July 2016, Energy Consumers Australia (ECA) set out to undertake research to improve the evidence-based understanding of what really works in supporting vulnerable consumers to manage their energy bills, as well as identifying opportunities for market-led solutions and other initiatives to support energy management by vulnerable households.

As a result, over the past three years ECA has built a body of research that supports energy companies, government and regulators with evidence on which to build better-targeted, more effective and innovative energy management services and programs that deliver better outcomes for consumers.

In April 2019, commissioned Back2Back to undertake new analysis, drawing on ECA's Energy Consumer Sentiment Survey (ECSS) findings relevant to energy management policies and programs, including households in financial stress and low-income households, to assess their willingness and capacity to manage their energy use and control their bills.

Energy Consumers Australia undertakes the ECSS every six months, with the first report published in June 2016. The ECSS is a long-term project for Energy Consumers Australia, designed to provide information on what consumers are telling us about their levels of satisfaction, confidence and activity in the energy market.

From the fourth survey, reported in December 2017, the ECSS has tracked consumer sentiment and activities relating to energy management, behaviour change and housing.

Back2Back has synthesised the existing ECSS data and research undertaken for ECA by Essential Research, across six waves from June 2016 to December 2018. The review was to undertake a deep analysis and comparison of survey data and to examine key themes emerging from the research. This analysis is reported in Section 1-*Energy use and supply,* and Section 2-*Consumer behaviour and attitudes.*

ECA also requested additional comparison analysis of data to the customer segmentation model developed by ACIL Allen[1]. The segmentation model categorises consumers into nine possible consumer types, according to motivating factors, ability and opportunities. This analysis aims to provide segmentation and modelling data for Energy Consumers Australia to understand and support energy consumer behaviour. The analysis is reported as consumer clusters identified in the ECSS also in Section 2.

Section 3 reports comparative ownership and use of energy, devices and appliances across Australia.

[1] ACIL Allen Consulting, 2018, *Supporting Households to Manage Their Energy Bills*

The following document is comprised of three sections:

Section 1 – Energy use and supply in Australia

Section 2 – Consumer behaviour and attitudes

Section 3 – Who has what (in Australia)

Appendix

SECTION 1

The population use and attitude towards energy use is very different according to location, provision of energy supply and climate (see page 3). The northern states have low numbers of mains gas, central gas heating, high levels of solar hot water (and panels) and have more pools. ACT, Victoria and WA all have access to mains gas (all over 70% usage) which means their electricity bills are lower than other southern states (Tasmania and South Australia). South Australia is unusual in that it has increasing number of solar panels (like its northern counterparts), however monthly electricity bills are still high.

All states are increasingly using dual purpose air-conditioning units (heating and cooling), with the lowest state being NT (42%), although 80% of NT residents have air-conditioning (cooling only) units. The growing use of air-conditioning units are in line with the more extreme temperatures experienced across the country in the recent years.

Energy use and supply in

AUSTRALIA

KEY

Main gas | Solar panels | Pool | Air-con (both) | Air-con (cooling only) | Gas central heating | Solar hot water

NT

Average monthly wage	$8712
Average monthly electricity bill	$168.03
Average monthly gas bill	$50

7% | 40% | 38% | 42% | 80% | 0% | 59%

QLD

Average monthly wage	$6733
Average monthly electricity bill	$115.15
Average monthly gas bill	$64

12% | 42% | 23% | 70% | 29% | 2% | 24%

WA

Average monthly wage	$7156
Average monthly electricity bill	$117.22
Average monthly gas bill	$63

75% | 36% | 18% | 71% | 30% | 9% | 25%

NSW

Average monthly wage	$7432
Average monthly electricity bill	$135
Average monthly gas bill	$74

43% | 24% | 20% | 68% | 21% | 8% | 15%

SA

Average monthly wage	$6692
Average monthly electricity bill	$150.08
Average monthly gas bill	$79

12% | 41% | 11% | 77% | 27% | 12% | 15%

ACT

Average monthly wage	$10,143
Average monthly electricity bill	$135.85
Average monthly gas bill	$145

73% | 26% | 12% | 59% | 24% | 48% | 14%

TAS

Average monthly wage	$7024
Average monthly electricity bill	$163.53
Average monthly gas bill	$125

11% | 28% | 7% | 71% | 7% | 5% | 12%

VIC

Average monthly wage	$7385
Average monthly electricity bill	$122.61
Average monthly gas bill	$110

80% | 25% | 10% | 57% | 40% | 56% | 14%

All figures are based on self reported income from the Energy Consumer Sentiment Survey

Section 2

Consumer attitudes and behaviour

back2back
Research to Design

DID YOU KNOW?

DEMOGRAPHICS OF OLDER AUSTRALIANS

The Australian population is ageing, with older Australians a growing proportion of the total population. In 2017, 15% of Australians (3.8 million) were aged 65 and over. The Institute of Health and Welfare projects this proportion to grow steadily over the coming decades.

Growth in the proportion of older Australians is partly due to increasing life expectancy: in 2014–16, a 65-year-old man could expect to live another 20 years and a 65-year-old woman another 22 years—7 years longer for both sexes than in the mid-1960s. Overall, Australians now enjoy one of the highest life expectancies in the world. These increases in life expectancy have generally not come at the expense of reduced functioning or worsened general health.

(Institute of Health and Welfare)

In 2017

15%

(1 in 7)

Australians (3.8 million) were aged 65 and over

PROFILE OF
AUSTRALIAN CONSUMER ENERGY USE, BEHAVIOURS AND ATTITUDES

The following section outlines the general grouping of Australians according to general profile information and similarities in population and lifestyle features. The segmentation has been created using clustering analysis. Cluster analysis is typically used in marketing to understand the characteristics of a population. Cluster analysis can be used to identify homogenous groups within a population to understand trends and target segments and to focus market strategies.

Cluster analysis groups objects (e.g., respondents, products or other entities) so that each object is very similar to others in the cluster with respect to some predetermined selection criterion. In the current sample the following clusters have been created based on the criteria:

- age;
- level of education;
- children at home under 18; and
- level of financial stress.

Due to inconsistent and missing data across waves 1-3**, only waves 4-6 have been modelled in the segmentation analysis.**

Selection of the variables for the cluster analysis was conducted after extensive exploration of the data and based also on availability of particular data items. Clustering may be improved in future iterations with focused data based on optimal segmentation characteristics from the ACIL Allan segmentation framework.

CLUSTERING METHOD

Hierarchical agglomeration clustering was used to develop the segments shown in the following section. Between groups linkage and chi-squared measures were used to determine the clusters. Cluster selection was determined by presentiveness of groups and the population as well as closest alignment with the ACIL Allan segmentation framework.

Clusters were then profiled using cross tabulation and ANOVAs to determine areas of significant difference in attitudes and behaviours. The profiles in this section show general characteristics in a segment. Where segments are over or under-represented, these are shown in the specific profile.

Limitations

The entire sample is over-represented by older retired Australians. 43% of the sample for waves 4-6 are depicted as retired. Compared the actual population (15% of Australians are retired), this group does influence the overall estimates. This result appears to be a form of non-response bias created by the survey method (online self-selection). Where possible the researcher has accounted for the impact of bias in the analysis. Note also that group 1 is overrepresented in wave 5 results.

AUSTRALIAN ENERGY CONSUMERS

GROUP 1
Complacent
Competent

GROUP 2
Middle Australia
Dependent

GROUP 3
Dependent

GROUP 4
Middle Australia
Cautious

GROUP 5
Competent
Cautious

GROUP 6
Cautious

GROUP 7
Competent
Completers

GROUP 8
Hard to help
Stuck

GROUP 9
Stuck

GROUP 1
Complacent
Competent

AGE

- 55+ — 70%
- 34-54 — 29%
- under 34 — 0%

This group OVER represented in WA and ACT

This group also over represented in wave 5

27% full-time employment

11% part-time employment

51% retired

FINANCE

- Receive a concession — 36%
- Payment plan — 1%
- Monthly electricity bill — Under $125

80% comfortable
20% coping
0% struggling

81% says bills do not put financial pressure on them
Only 18% said they had a bill larger than they expected

EDUCATION

- Degree — 55%
- Tertiary training — 44%
- High school only — 0%

- Children under 18 at home — 13%
- Speak other language — 10%

SWITCHING

- Switched electricity providers in 12mths — 11%

Group 1 is predominantly over 55, with 70% of the participants over 55 years old. This group is very well established and comfortable. Their monthly bills are all under $125 per person and 36% also receive a concession, which removes any real financial pressure. This group is also highly educated with all having a minimum of a tertiary education (44%) and 55% have at least an under graduate degree. They are highly represented in the ACT or NT.

This group is mainly above the average on most areas including intention to buy energy control devices and having more energy saving devices. Almost 10% speak a language other than English at home.

This group is influenced by bill pressure, although only 11% had said that they had switched energy companies in the last 12mths.

Motivation	Ability	Opportunity
Medium (to low)	High	High

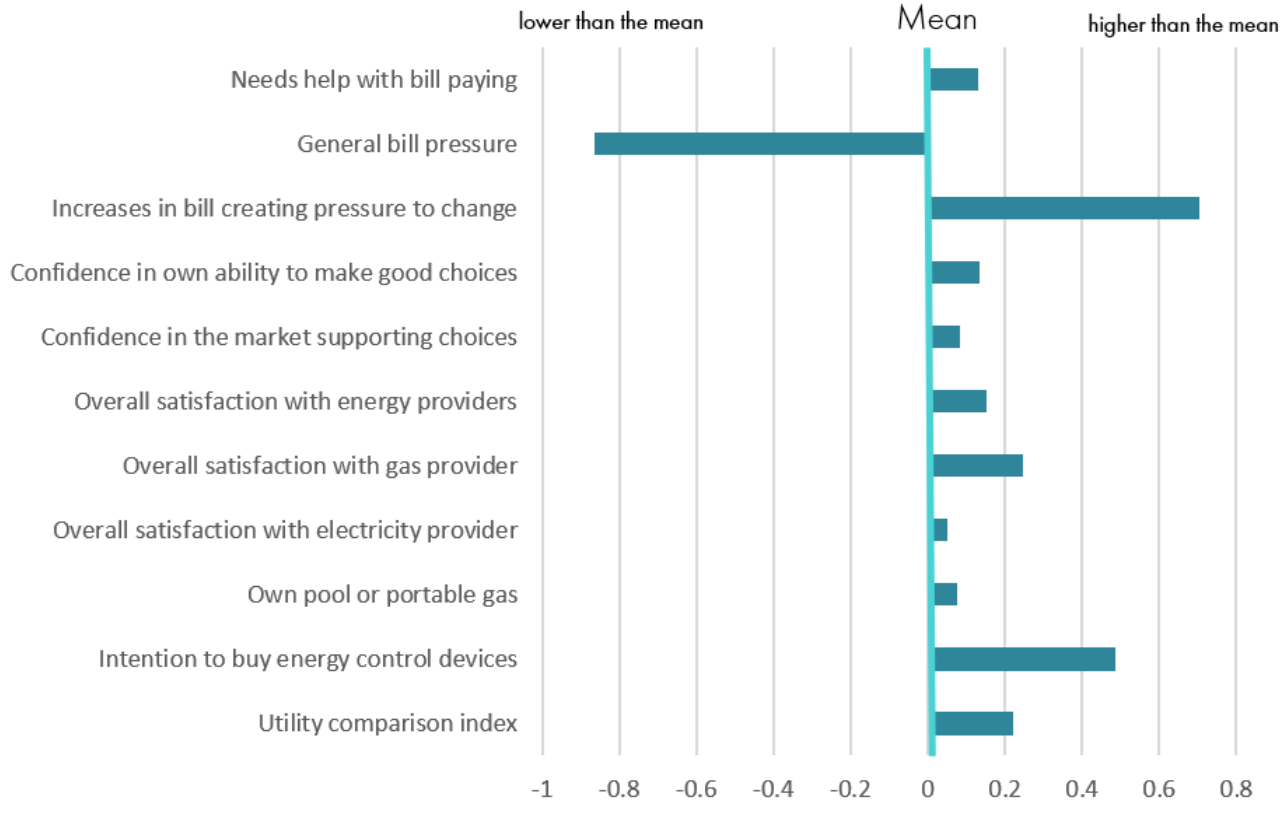


*image from Adobe stock photos

GROUP 2
Middle Australia Dependent

47% retired

19% full-time employment

12% part-time employment

AGE

55+ **68%**

34-54 **32%**

under 34 **0%**

This group under represented in WA, ACT and NT and OVER represented in QLD

FINANCE

Receive a concession	58%
Payment plan	7%
Monthly electricity bill	Under $125

comfortable	coping	struggling
0%	68%	34%

98% say that they feel financial pressure from electricity bills
46% said they had a bill larger than they expected

EDUCATION

Degree	24%
Tertiary training	40%
High school only	35%

SWITCHING

Switched electricity providers in 12mths	12%

Children under 18 at home	13%
Speak other language	9%

Two thirds of group 2 are over 55, with approximately one third between 34-55. Approximately half of this group is retired and about 40% are still working in ether full time or part time employment. Their monthly bills are all under $125 per person and close to 60% also receive a concession. This group is moderately educated with three quarters having no education or only tertiary education such as TAFE or a diploma. None of this group feel that they are financially comfortable. They are highly represented in QLD.

This group needs help with bill paying and feels under significant pressure from general and electricity bills. This group has low confidence in their ability to make good choices or that the market supports them to make good choices. They are also generally unsatisfied with their energy providers, have less energy saving devices than other groups and will most likely have a pool. However, they do intend to buy more energy efficient devices, but are probably less able than other groups to do so.

Motivation	Ability	Opportunity
High	medium	Low - medium

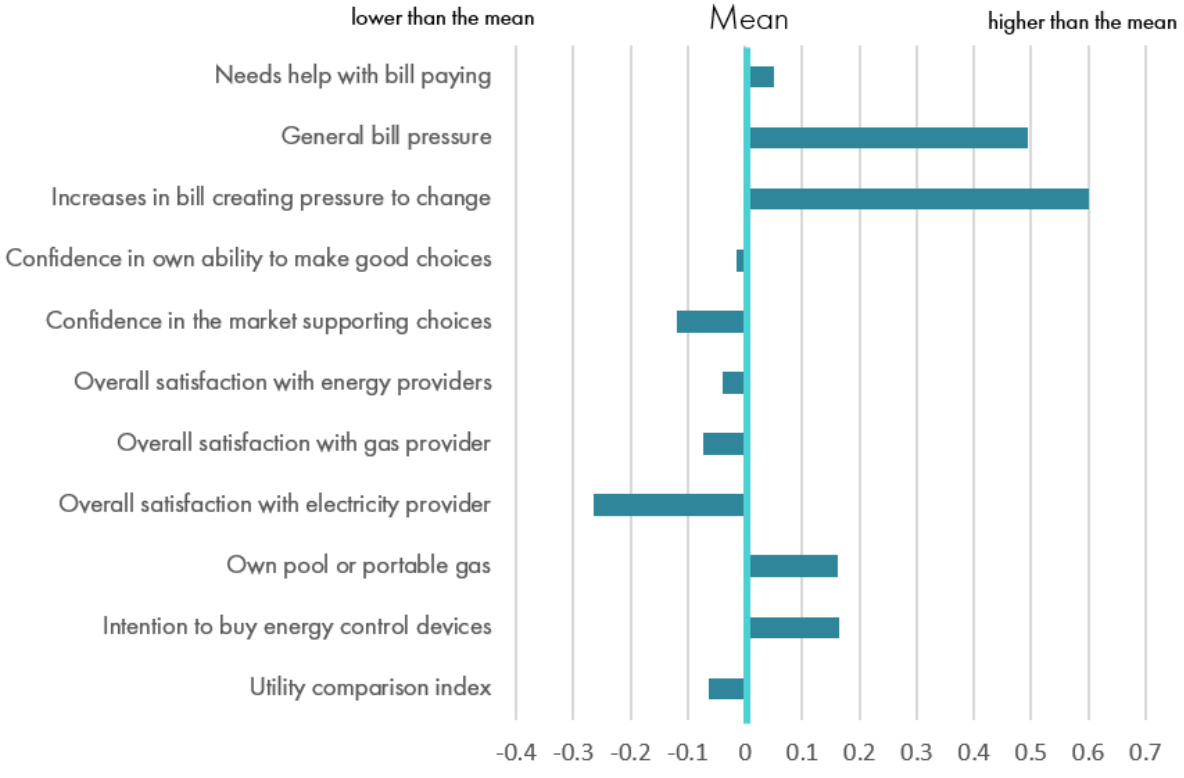


*image from austockphoto.com

GROUP 3
Dependent

AGE

- 55+ — 55%
- 34-54 — 44%
- under 34 — 0%

This group under represented in WA and ACT and OVER represented in SA and NT

- 33% retired
- 27% full-time employment
- 15% part-time employment

FINANCE

- Receive a concession — 39%
- Payment plan — 13%
- +$125 Monthly electricity bill — Over $125

EDUCATION

- Degree — 29%
- Tertiary training — 40%
- High school only — 31%

SWITCHING

- Switched electricity providers in 12mths — 16%

- 0% comfortable
- 67% coping
- 33% struggling

87% say that they feel financial pressure from electricity bill
61% said they had a bill larger than they expected

- Children under 18 at home — 27%
- Speak other language — 9%

Group 3 is split between people over 55 and between 35-55 years old. Approximately one third are retired and with 49% in the workforce. This group is moderately well educated almost 70% having more than high school education. Two thirds of this group are coping although one third are struggling with their current financial situation. Their monthly bills are all over $125 per person and 87% say that they feel financial pressure from their electricity bills. 40% receive a concession. 27% of this group have children at home which will also add to the financial pressure. They are highly represented in SA and NT.

This group is mainly below the average on most areas including intention to buy energy control devices and having more energy saving devices. They are highly dissatisfied with their energy providers and also have less energy saving devices than other groups.

This group is influenced by bill pressure and 16% had switched energy companies in the last 12mths.

- Motivation: Medium (to high)
- Ability: Low
- Opportunity: Low

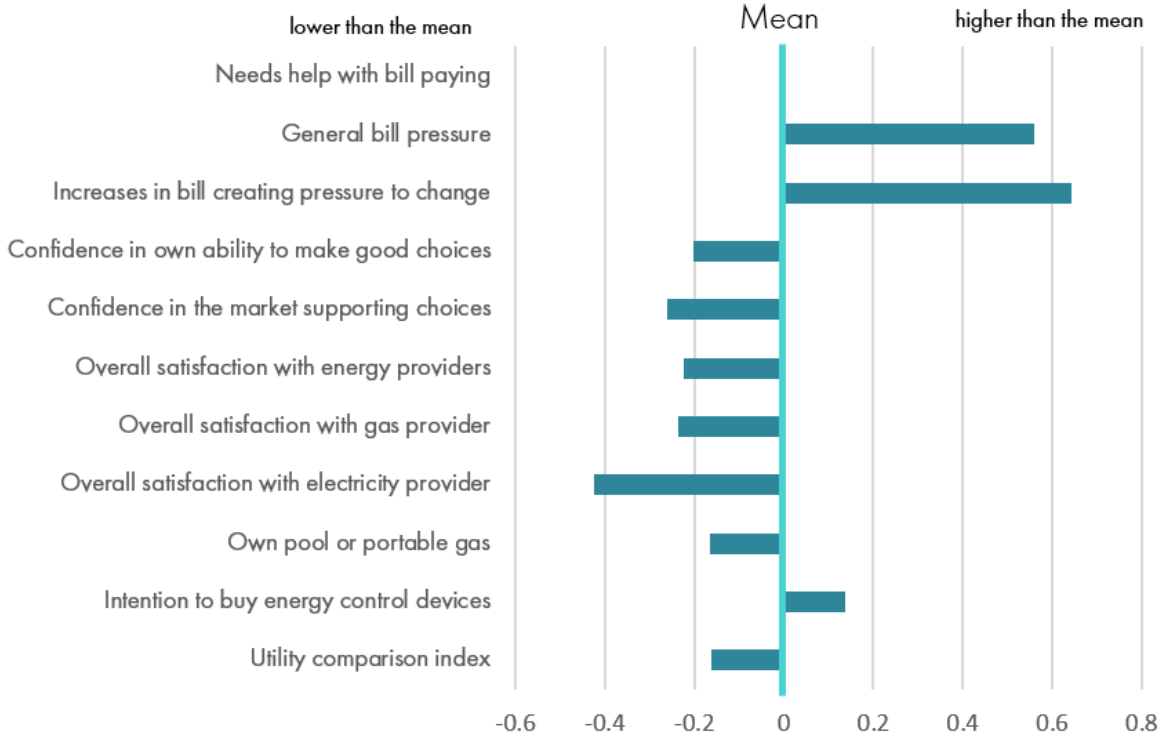


*image from istock photos

GROUP 4

Middle Australia Cautious

67% retired

13% full-time employment

8% part-time employment

AGE

55+ **85%**

34-54 **14%**

under 34 **1%**

This group under represented in NT and ACT and OVER represented in QLD

FINANCE

Receive a concession **64%**

Payment plan **2%**

Monthly electricity bill **Under $125**

68% comfortable

29% coping

3% struggling

11% say that they feel financial pressure from electricity bill
64% said they had a bill larger than they expected

EDUCATION

Degree **0%**

Tertiary training **0%**

High school only **100%**

Children under 18 at home **6%**

Speak other language **4%**

SWITCHING

Switched electricity providers in 12mths **10%**

Group 4 is predominantly over 55 (85%), with 67% of the participants retired. This group is established and most are comfortable and can cope with their financial situation. Only 11% say that they feel pressure from their electricity bills. Their monthly bills are all under $125 per person and 64 also receive a concession, which removes any real financial pressure. This group has very low education with 100% only having high school education as their education. Only 6% have children at home and very few speak a language other than English at home (4%). They are highly represented in QLD.

This group is well above the average on most areas including intention to buy energy control devices and having more energy saving devices. They have a great deal of confidence in their own abilities and are generally satisfied with energy providers.

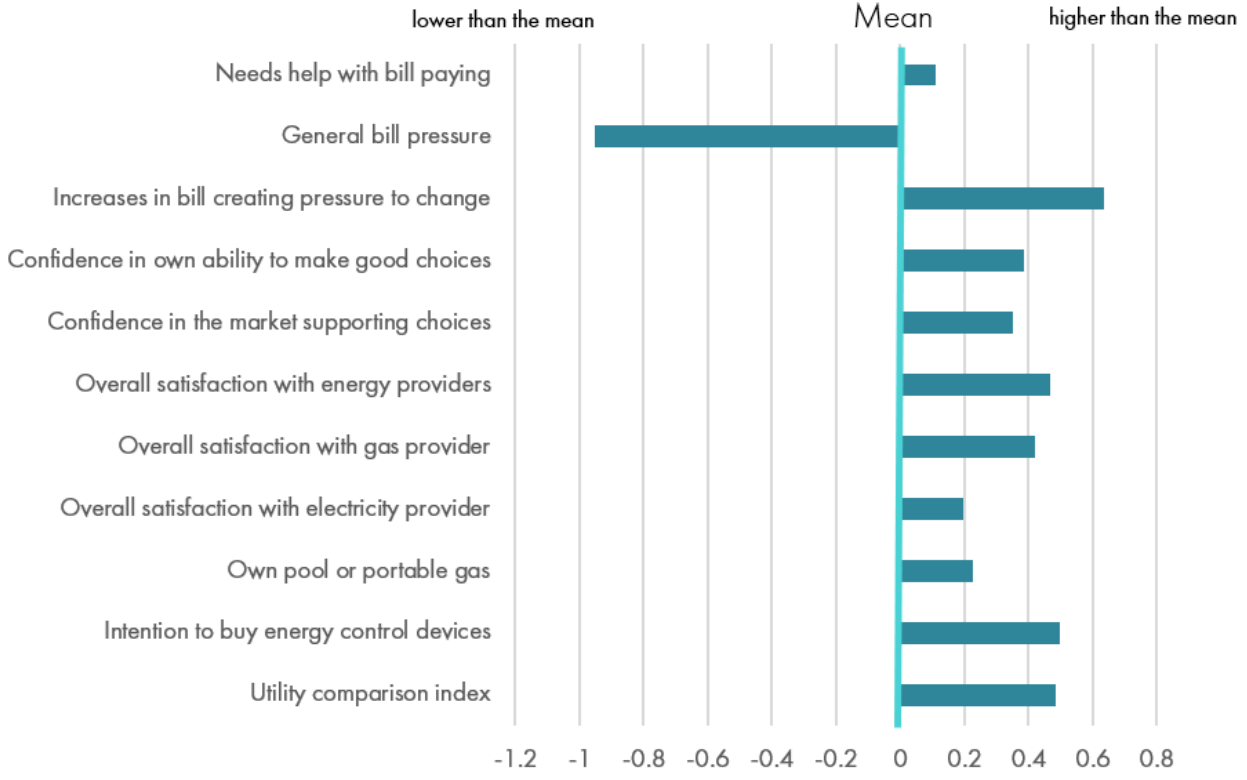
This group is less influence influenced by bill pressure, and only 10% had said that they had switched energy companies in the last 12mths.

Medium — **Motivation**

Medium (to high) — **Ability**

High — **Opportunity**

*image from Adobe stock photos



GROUP 5

Competent Cautious

AGE

- 55+ — 62%
- 34-54 — 37%
- under 34 — 0%

This group under represented in QLD and WA and OVER represented in Tas and NT

44% retired

31% full-time employment

12% part-time employment

FINANCE

Receive a concession	23%
Payment plan	2%
Monthly electricity bill (+$125)	Over $125

EDUCATION

Degree	49%
Tertiary training	29%
High school only	20%

SWITCHING

Switched electricity providers in 12mths	14%

100%	0%	0%
comfortable	coping	struggling

39% say that they feel financial pressure from electricity bill
36% said they had a bill larger than they expected

Children under 18 at home	21%
Speak other language	7%

Group 5 is divided between over 55 and those between 34-55, only 44% of this group is retired. Their monthly bills are all over $125 per person and 23% also receive a concession. However all people in this group feel that they are financially comfortable. This group is also highly educated with approximately 80% having the minimum of tertiary education with 50% having a minimum of an undergraduate degree. Approximately one fifth have children under 18 at home.

This group is influenced by bill pressure and 14% had said that they had switched energy companies in the last 12mths.

This group is less satisfied with electricity providers and generally do not own a pool.

Motivation	Ability	Opportunity
Low (to medium)	Medium (to high)	High

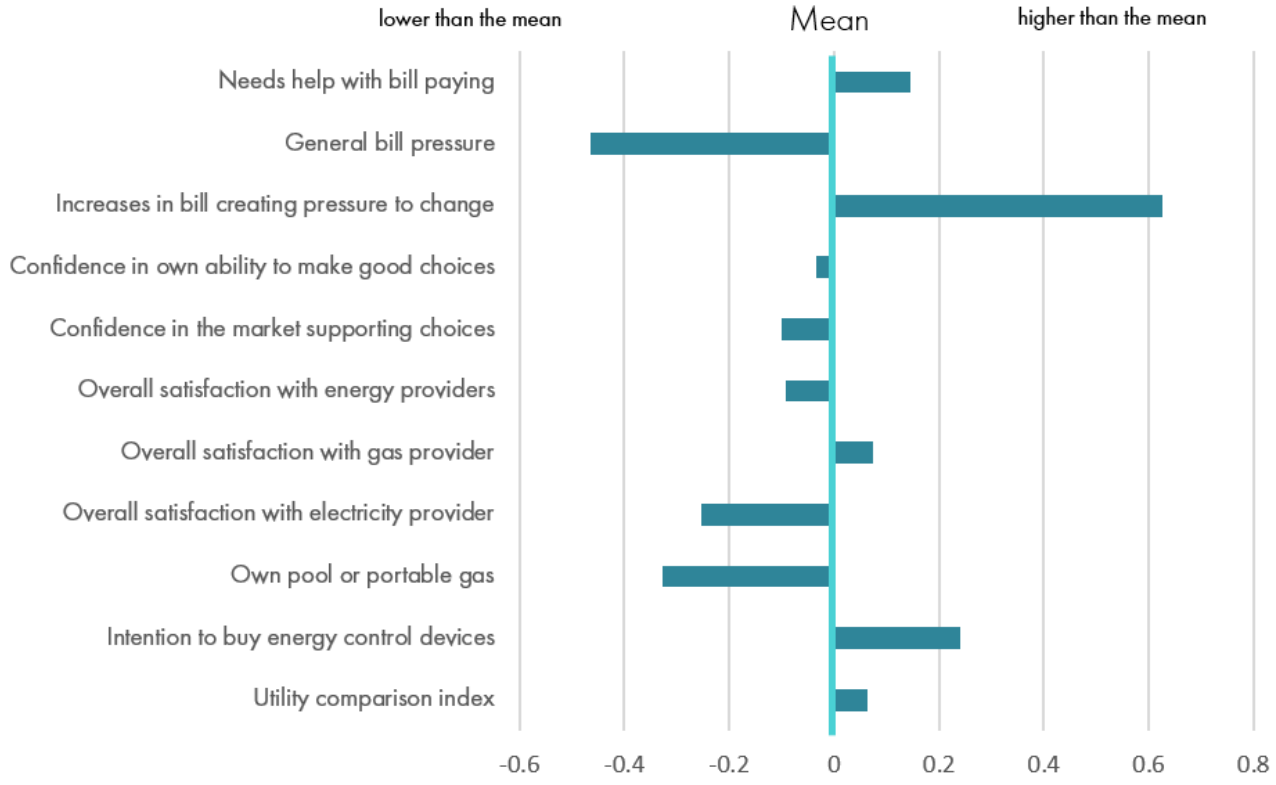


*image from www.marriagekidsandmoney.com

GROUP 6

Cautious
Hard to help

AGE

55+	0%
34-54	0%
under 34	100%

This group OVER represented in the NT

14% home duties

49% full-time employment

19% part-time employment

FINANCE

Receive a concession	21%
Payment plan	10%
Monthly electricity bill	Over $125

EDUCATION

Degree	67%
Tertiary training	33%
High school only	0%

SWITCHING

Switched electricity providers in 12mths	19%

34%	47%	19%
comfortable	coping	struggling

76% say that they feel financial pressure from electricity bill
66% said they had a bill larger than they expected

Children under 18 at home	47%
Speak other language	25%

Group 6 are all under 34 years old and is over represented in the NT. Almost 50% of this group have children under 18 at home. Their monthly bills are all over $125 per person and 21% also receive a concession. This group is also highly educated with all having a minimum of a tertiary education (33%) and a further 67% have the minimum of an under graduate degree. A quarter of the group speak a language other than English at home.

This group is generally below the average on most areas and have a low intention to buy energy control devices and having far less energy saving devices than other groups.

This group is influenced by bill pressure, and 19% had said that they had switched energy companies in the last 12mths.

Motivation	Ability	Opportunity
Low	Medium	Low

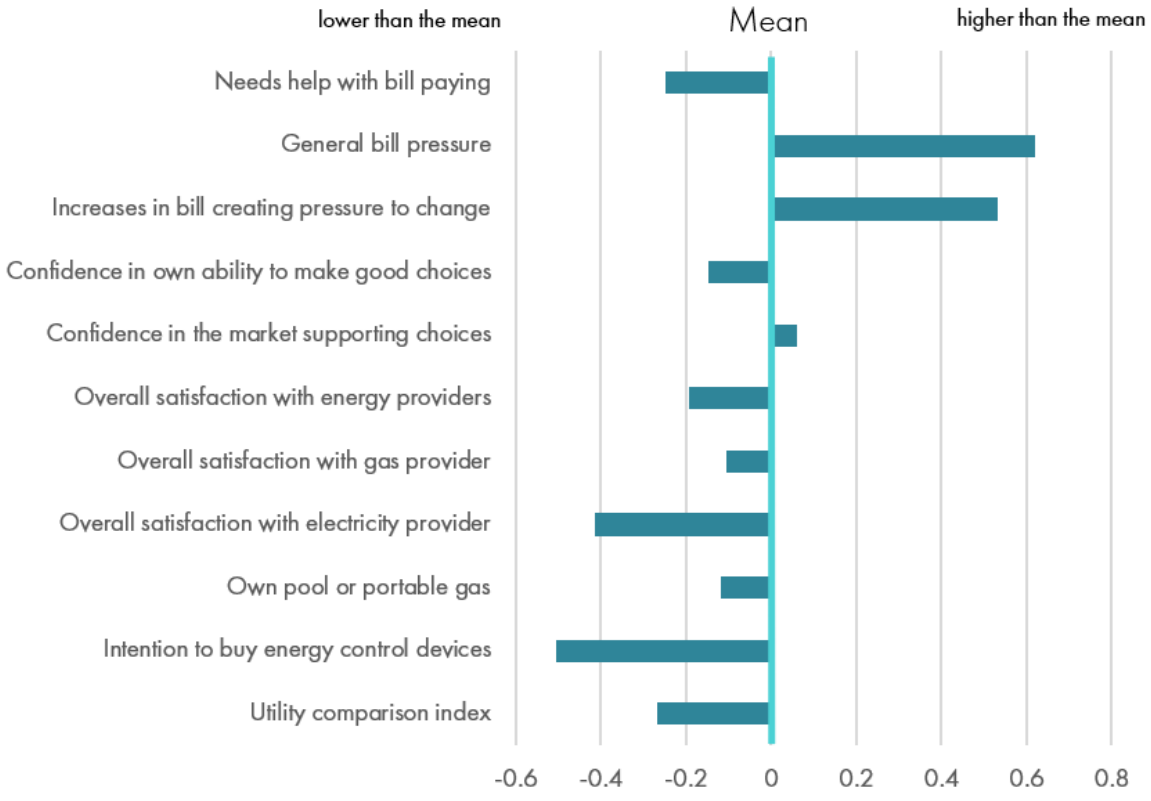


*image from austockphoto.com

GROUP 7

Competent Completers

7% home duties

66% full-time employment

12% part-time employment

9% student

AGE

55+ 0%

34-54 3%

under 34 97%

This group under represented in Tas and NT and OVER represented in ACT

FINANCE

Receive a concession 11%

Payment plan 6%

Monthly electricity bill Under $125

47% comfortable

17% coping

15% struggling

45% say that they feel financial pressure from electricity bill
38% said they had a bill larger than they expected

EDUCATION

Degree 77%

Tertiary training 23%

High school only 0%

Children under 18 at home 29%

Speak other language 25%

SWITCHING

Switched electricity providers in 12mths 20%

Group 7 is predominantly is young, with 97% of the participants under 34. This group is established and generally comfortable. Their monthly bills are all under $125 per person and 11% also receive a concession. This group is also highly educated with all having a minimum of a tertiary education (23%) and 77% have at least an under graduate degree. 30% of people in this group have children under 18 at home. This group is highly represented in the ACT.

This group doesn't need help with paying bills and is not under great pressure and believes the market is supporting them to make good choices. They have less energy saving devices than many of the other groups. They are generally dissatisfied with gas and electricity providers – although their dissatisfaction is mainly focussed on electricity providers.

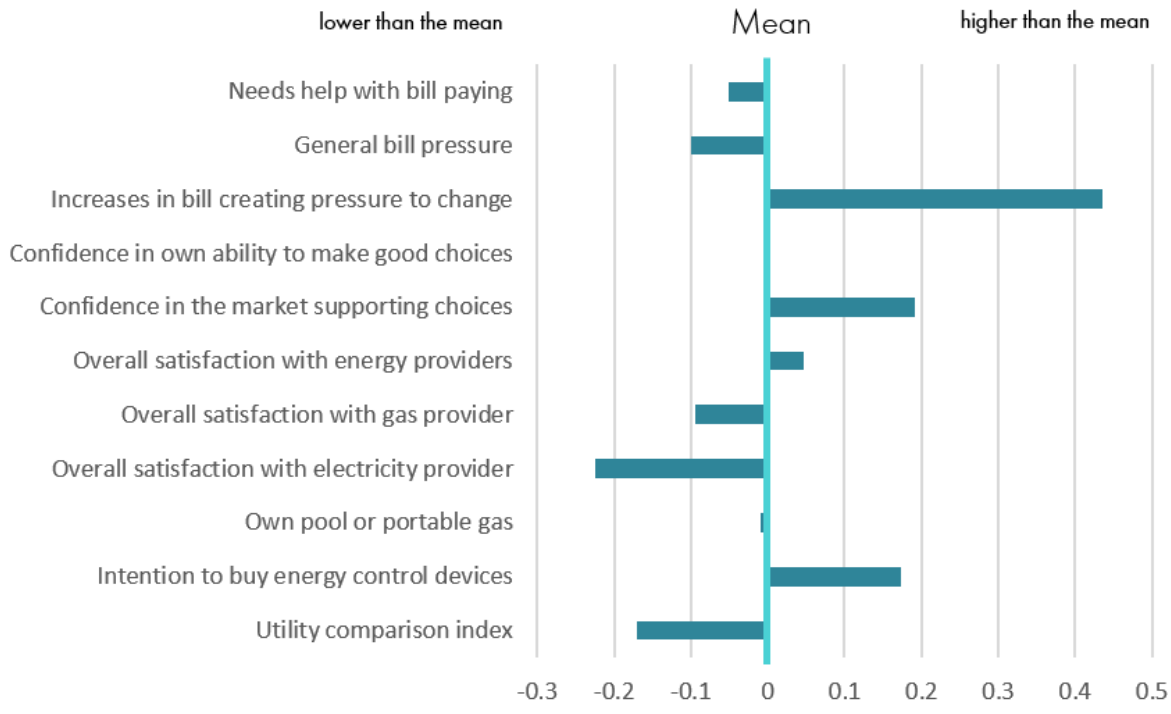
This group is influenced by bill pressure, and 20% had said that they had switched energy companies in the last 12mths. This group has the most potential to switch energy companies.

Medium (to high) — Motivation

High — Ability

High — Opportunity

*image from austockphoto.com



GROUP 8

Hard to help
Stuck

AGE

55+	0%
34-54	0%
under 34	100%

This group under represented in ACT and NT and OVER represented in SA

22% home duties

24% full-time employment

26% part-time employment

15% unemployed

FINANCE

Receive a concession	27%
Payment plan	24%
Monthly electricity bill	Over $125

EDUCATION

Degree	0%
Tertiary training	0%
High school only	100%

SWITCHING

Switched electricity providers in 12mths	1%

30% comfortable

35% coping

35% struggling

78% say that they feel financial pressure from electricity bill
63% said they had a bill larger than they expected

Children under 18 at home	52%
Speak other language	4%

Group 8 are all under 34 years old. This group has very low education with 100% highest achievement completing high school. Their monthly bills are all over $125 per person and 27% also receive a concession, and 25% are also on a payment plan. Over half of this group have children under 18 at home. A large part of this group have home duties (22%) and 15% are unemployed. This group may have a pool and intends to buy energy saving devices. However, they have low confidence in their own abilities to make good choices. Only 4% speak a language other than English at home

This group is highly dissatisfied with their energy providers.

This group says that they are influenced by bill pressure, although only 1% had energy companies in the last 12mths.

Motivation	Ability	Opportunity
Medium	Low	Low

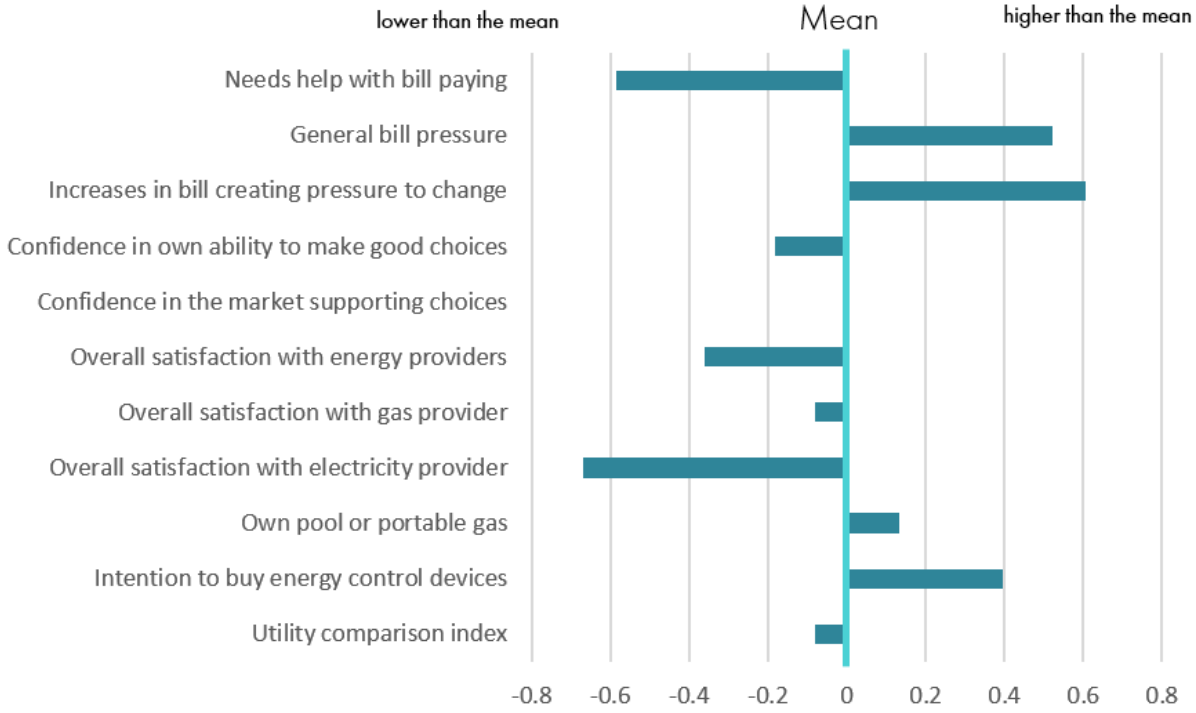


*image from globalnews.ca/radio/640toronto/?gref+640toronto

GROUP 9

Stuck

AGE

- 55+ — 0%
- 34-54 — 13%
- under 34 — 86%

This group under represented in ACT and NT

- 20% home duties
- 30% full-time employment
- 27% part-time employment
- 27% student

FINANCE

- Receive a concession — 27%
- Payment plan — 16%
- Monthly electricity bill — Under $125

EDUCATION

- Degree — 0%
- Tertiary training — 13%
- High school only — 87%

SWITCHING

- Switched electricity providers in 12mths — 1%

- 0% comfortable
- 50% coping
- 50% struggling

60% say that they feel financial pressure from electricity bill
53% said they had a bill larger than they expected

- Children under 18 at home — 33%
- Speak other language — 17%

Group 9 is predominantly younger, with 86% of participants under 34 years old. Their monthly bills are all under $125 per person and 27% also receive a concession. This group has a low level of education with only 13% having a minimum of a tertiary education and 87% have only completed high school.

This group needs help with bill paying is mainly above the average on most areas including intention to buy energy control devices and having more energy saving devices. They are very dissatisfied with their energy providers (especially electricity) although they do have some confidence in the market, they do not have confidence in their own ability to make good choices.

Increasing bill pressure has a minor impact on this group and only 1% had said that they had switched energy companies in the last 12mths.

- Motivation: Medium (to low)
- Ability: Low
- Opportunity: Low

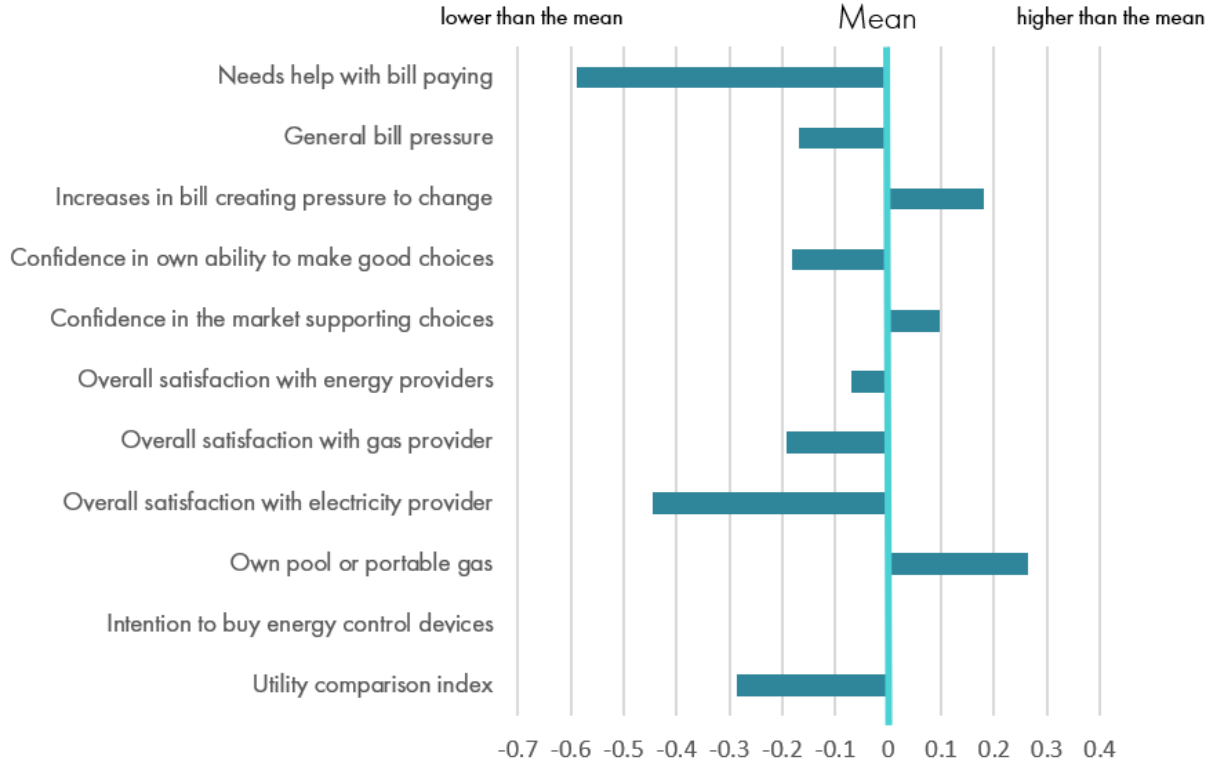


*image from kelownadailycourier.ca/news/

Where are the segmentation groups?

AUSTRALIA

NT

Average annual wage $86,762

1	2	3	4	5	6	7	8	9
24%	11%	27%	5%	22%	7%	4%	0%	0%

QLD

Average annual wage $80,304

1	2	3	4	5	6	7	8	9
25%	24%	19%	15%	10%	3%	3%	1%	1%

WA

Average annual wage $90,496

1	2	3	4	5	6	7	8	9
29%	27%	14%	11%	9%	2%	6%	0%	1%

NSW

Average annual wage $83,517

1	2	3	4	5	6	7	8	9
24%	21%	21%	9%	14%	4%	5%	0%	0%

SA

Average annual wage $75,369

1	2	3	4	5	6	7	8	9
17%	20%	26%	9%	16%	5%	5%	2%	0%

ACT

Average annual wage $94,224

1	2	3	4	5	6	7	8	9
36%	14%	13%	4%	24%	2%	7%	0%	0%

TAS

Average annual wage $71,718

1	2	3	4	5	6	7	8	9
23%	11%	22%	9%	29%	2%	2%	1%	1%

VIC

Average annual wage $80,610

1	2	3	4	5	6	7	8	9
23%	23%	19%	10%	13%	4%	6%	1%	1%

DID YOU KNOW?
2018

Australia's population increased by ca. 433,000 in 2018, the highest rate since 2008 (ABS).

Australia also experienced the some of the hottest and driest conditions on record

- National average rainfall was 422 mm - the lowest since 2005, 15% less than 2017 and 11% below long-term average.
- Rainfall was very much below average in most of inland southeast Australia, further intensifying drought conditions. Rainfall was also very low in Northern Australia, and above average in parts of WA.
- Australian average temperature was the 3rd highest on record, and mean maximum temperature the 2nd highest on record (BoM).
- Unseasonably warm and dry conditions throughout the year caused prolonged fire danger conditions (BoM).
- Average number of hot days (>35°C) was 12% higher than in 2017, including a record heatwave

Source: http://wald.anu.edu.au/australias-environment/

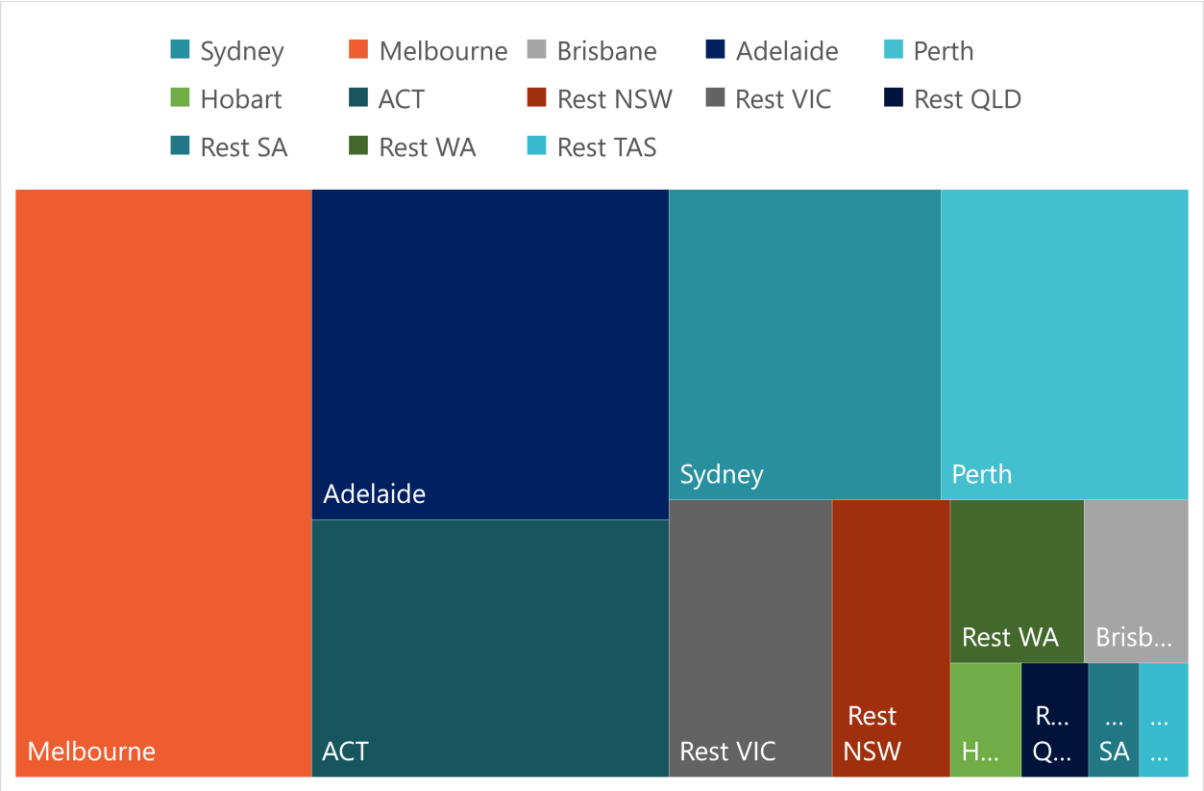
Section 3

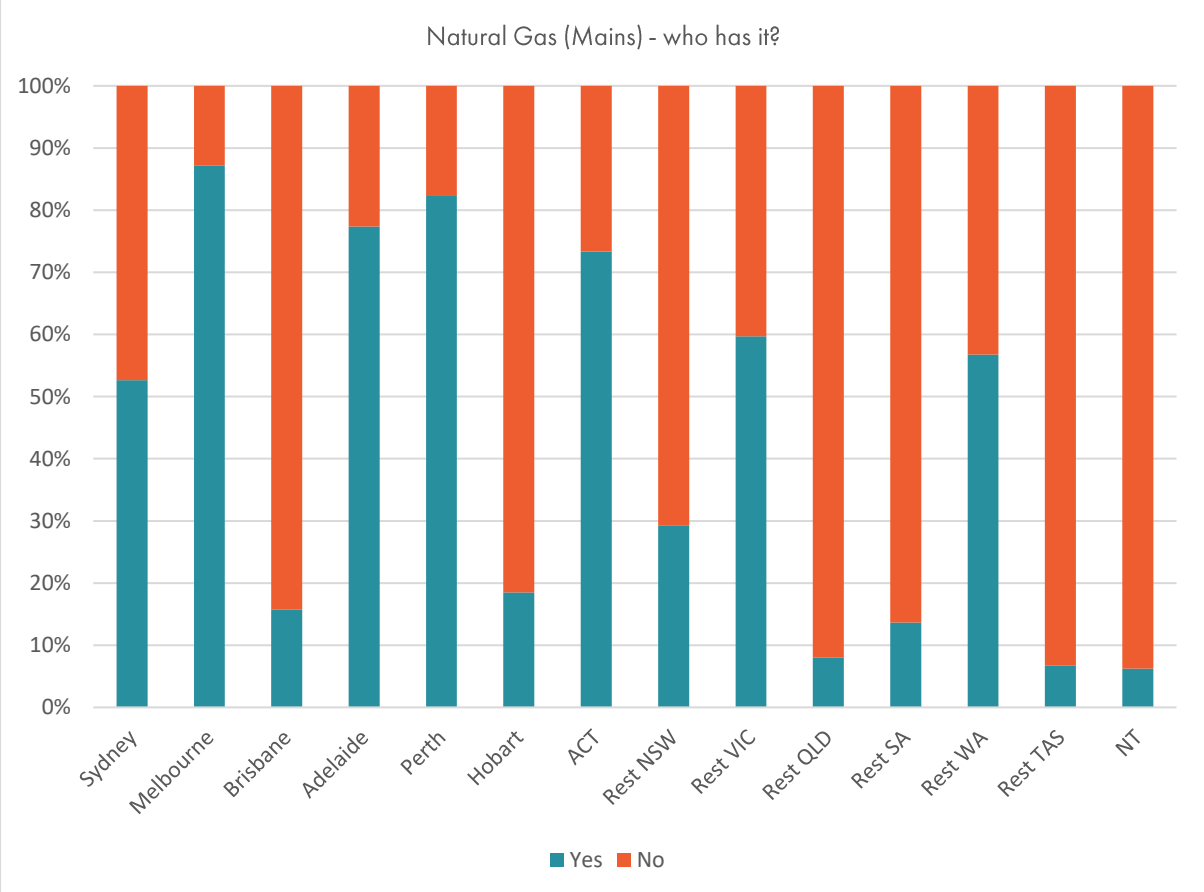
Who has what?

back2back
Research to Design

Natural gas use by location

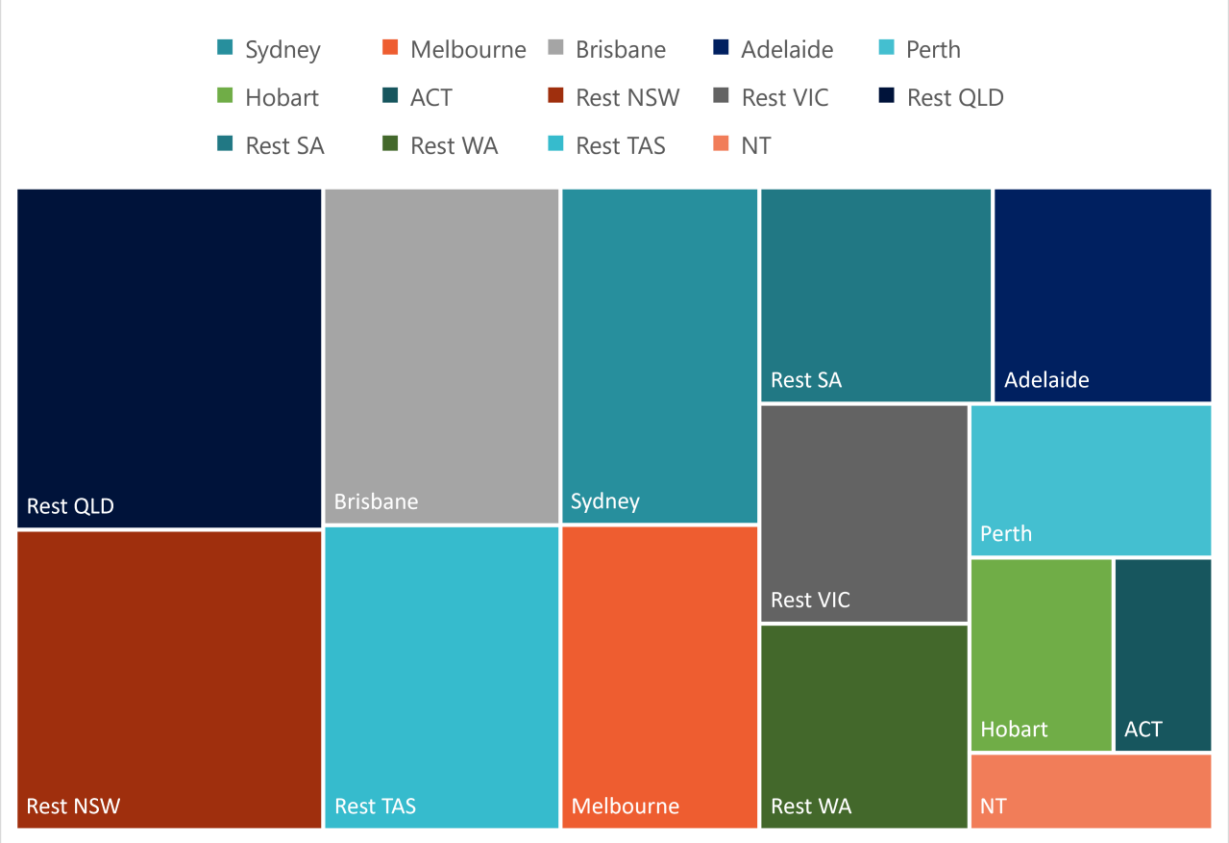
Natural gas

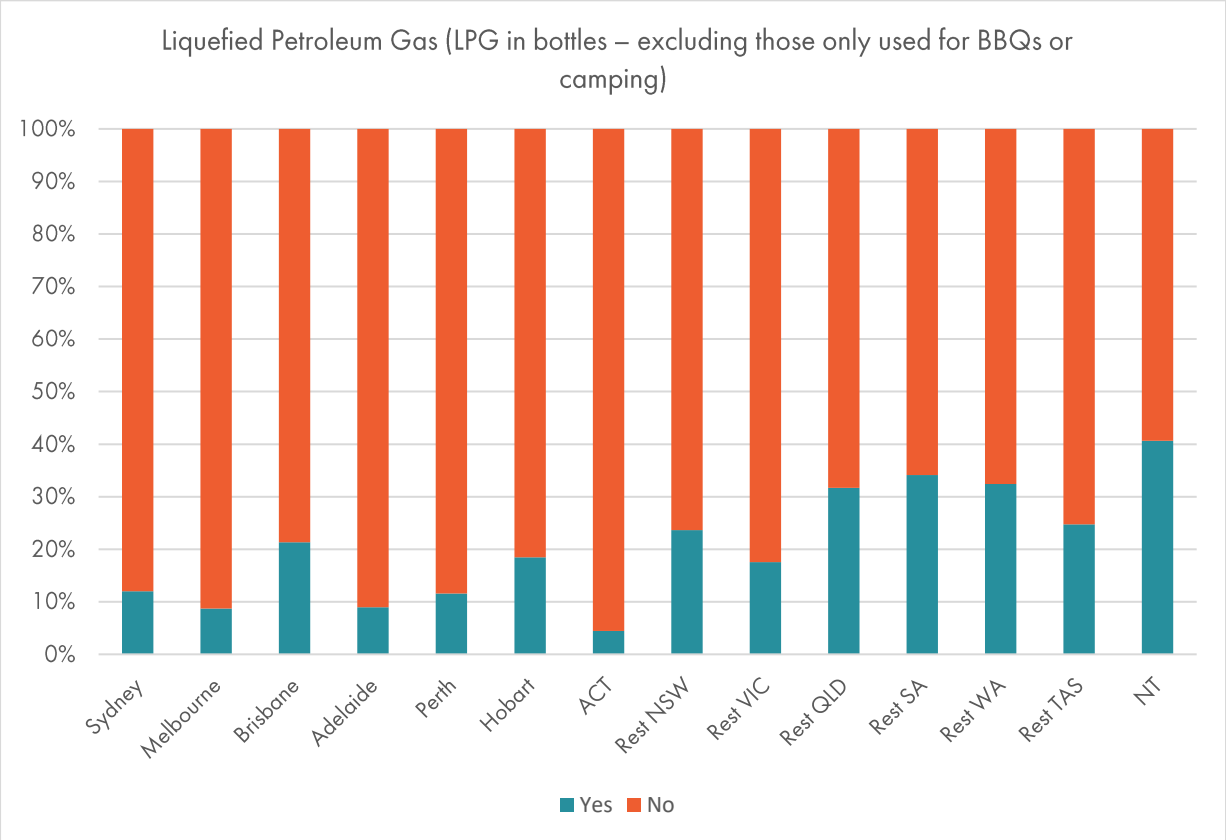




LPG use by location

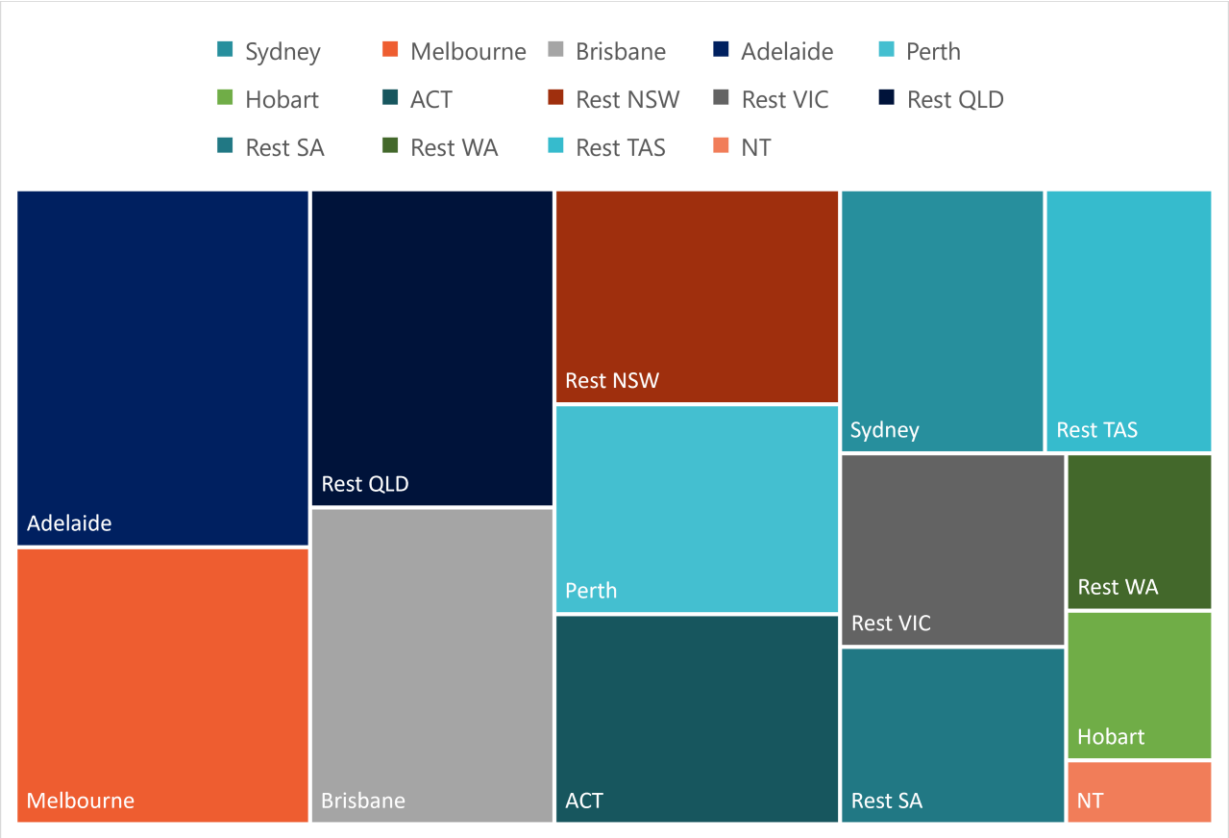
Liquefied Petroleum Gas

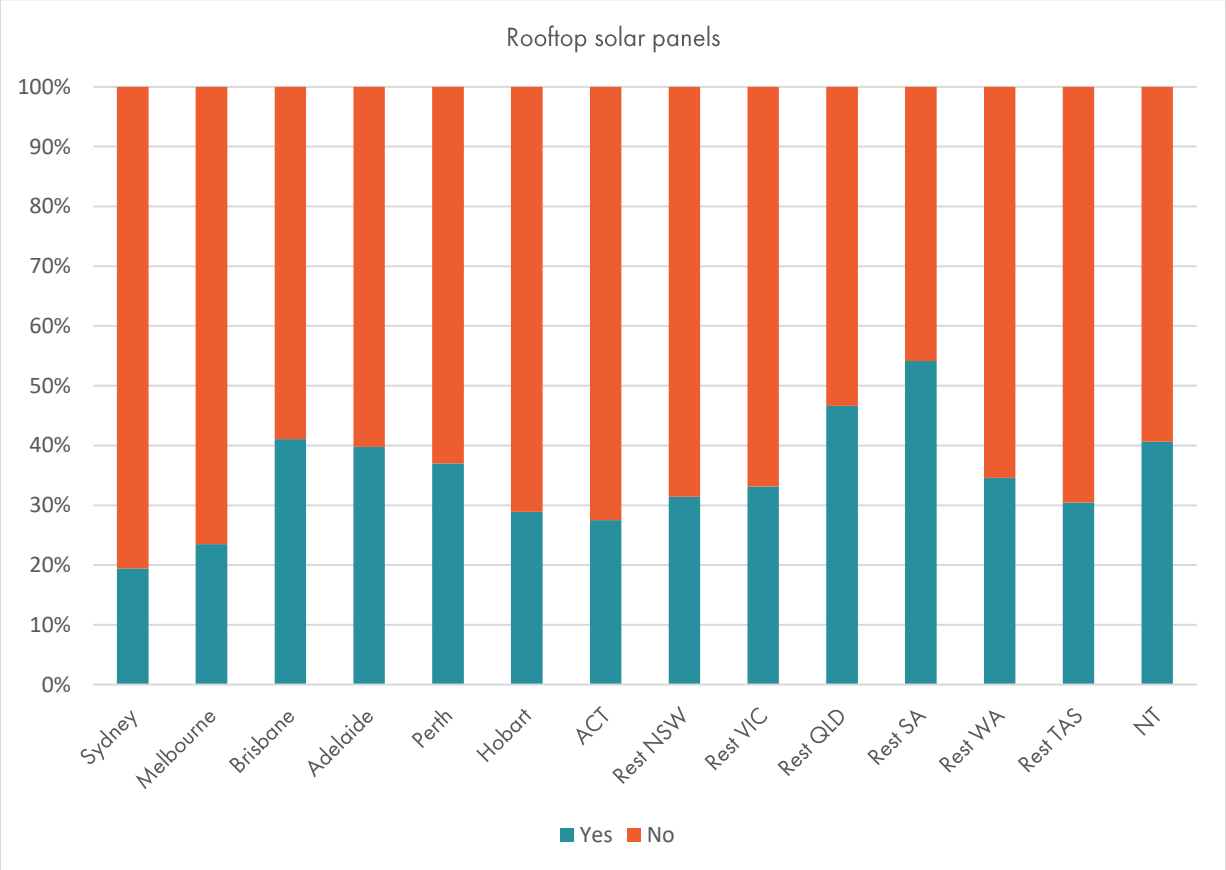




Rooftop solar panels by location

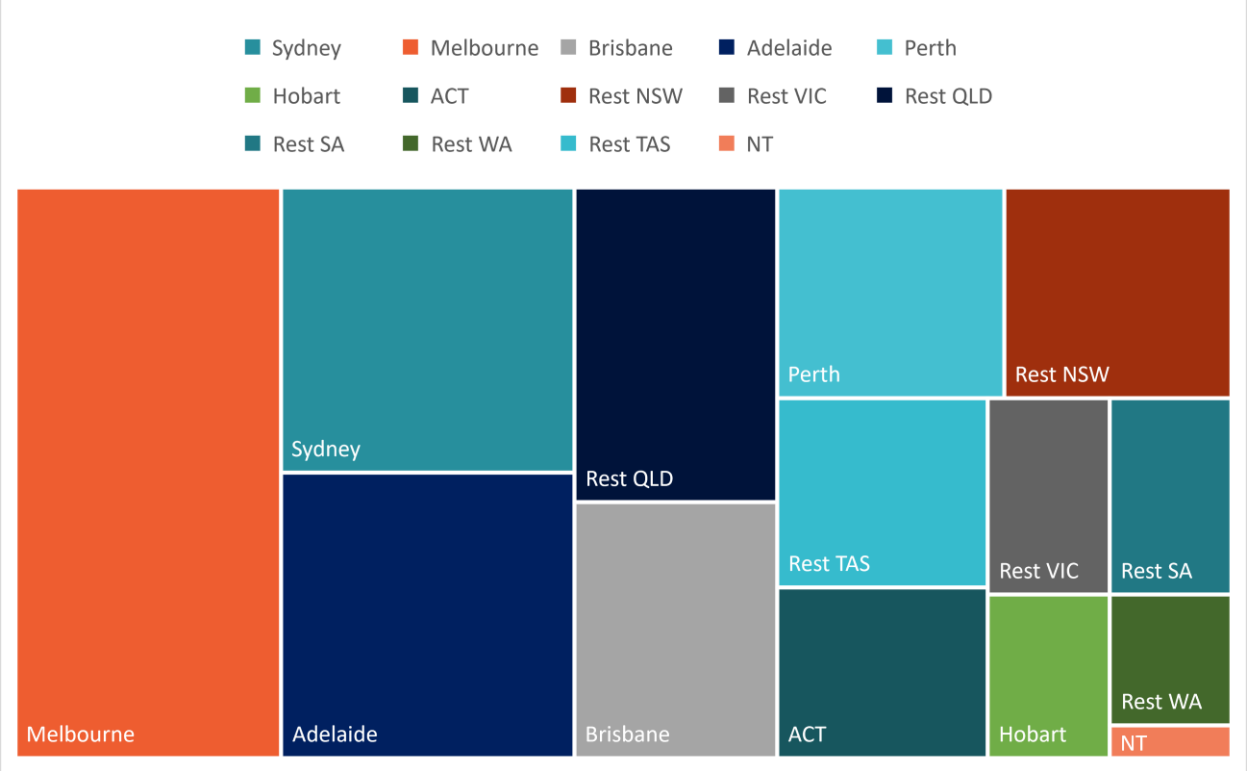
Rooftop solar panels

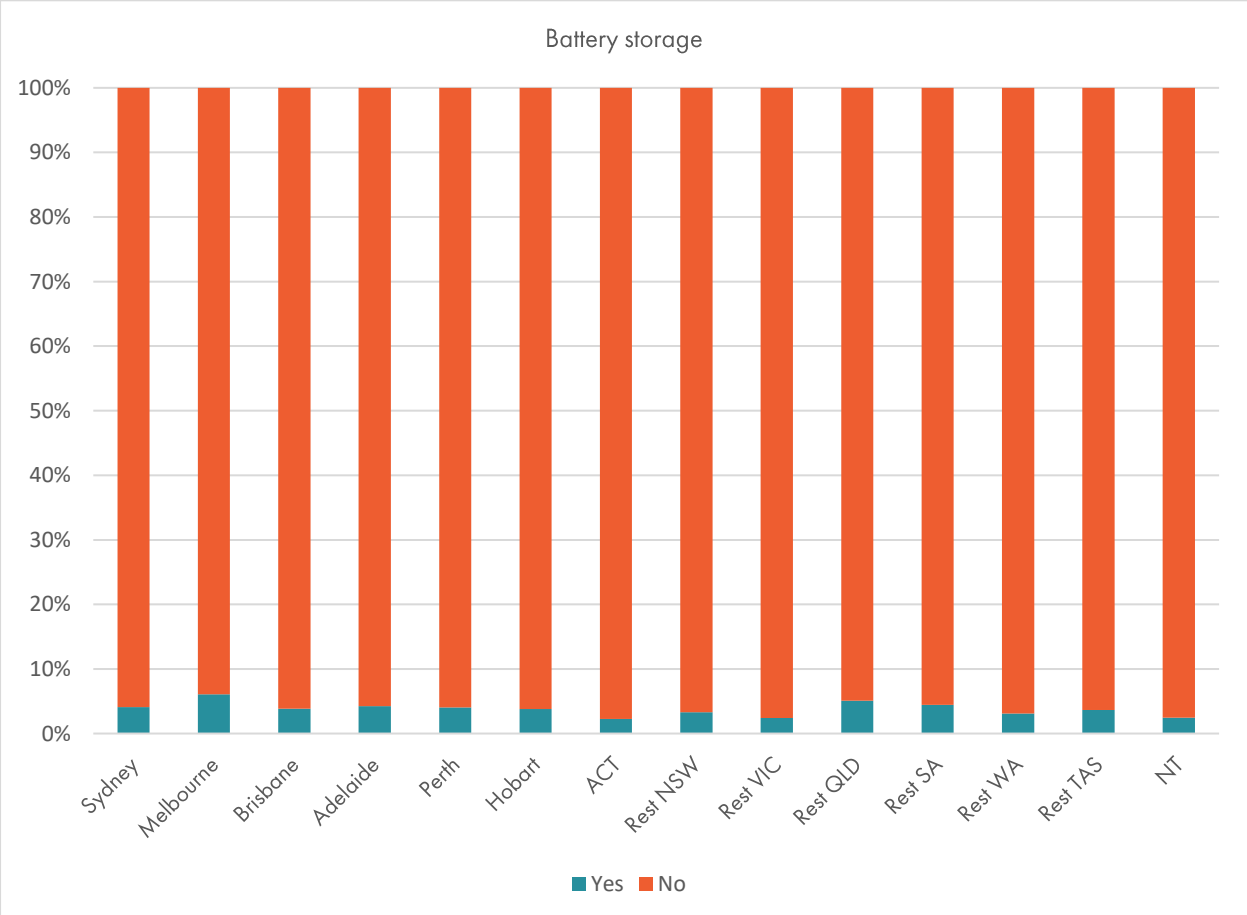




Battery storage ownership by location

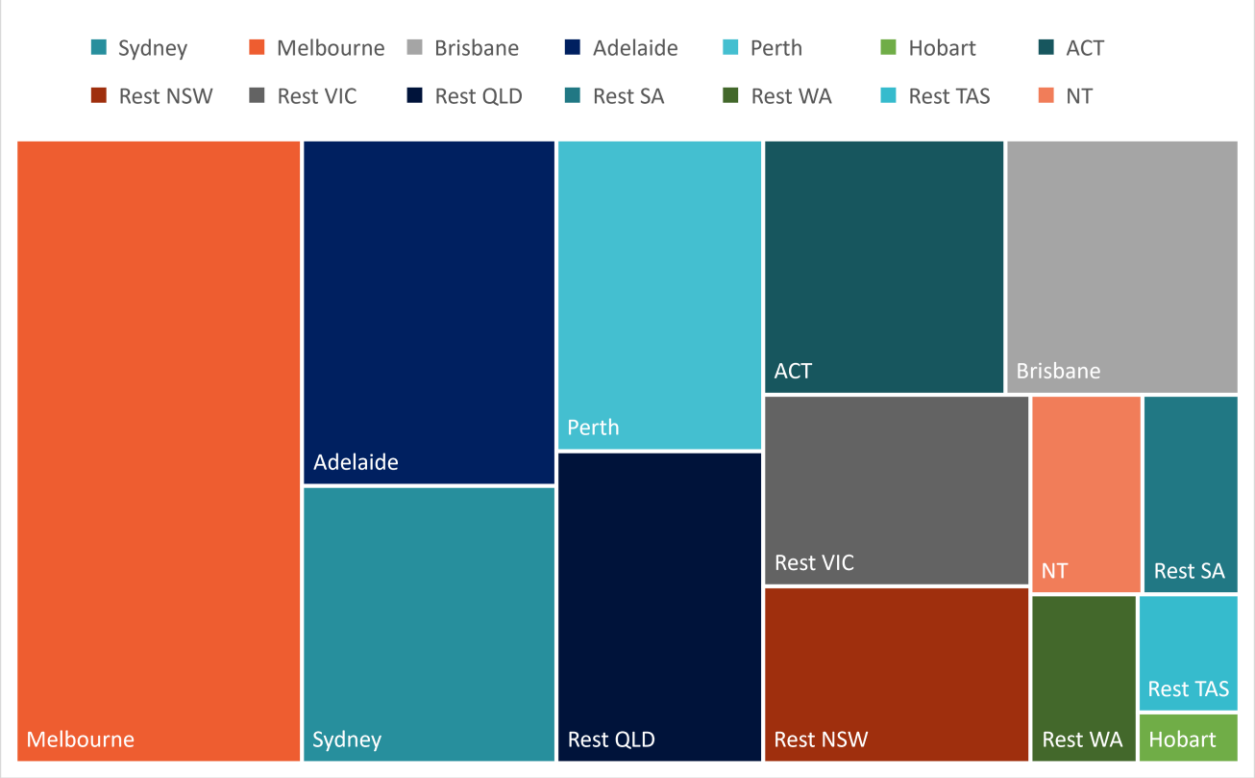
Battery storage

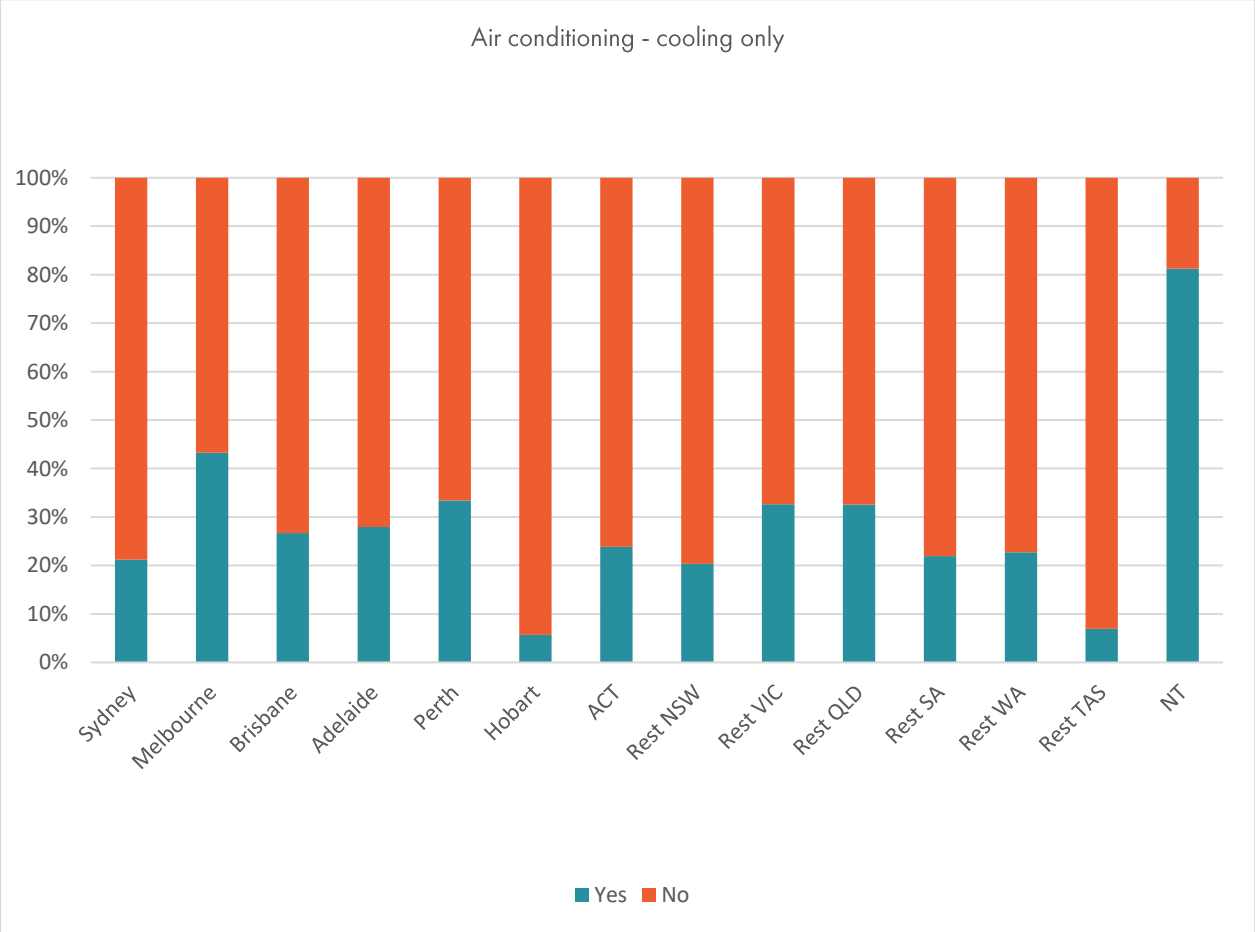




Air conditioning use by location

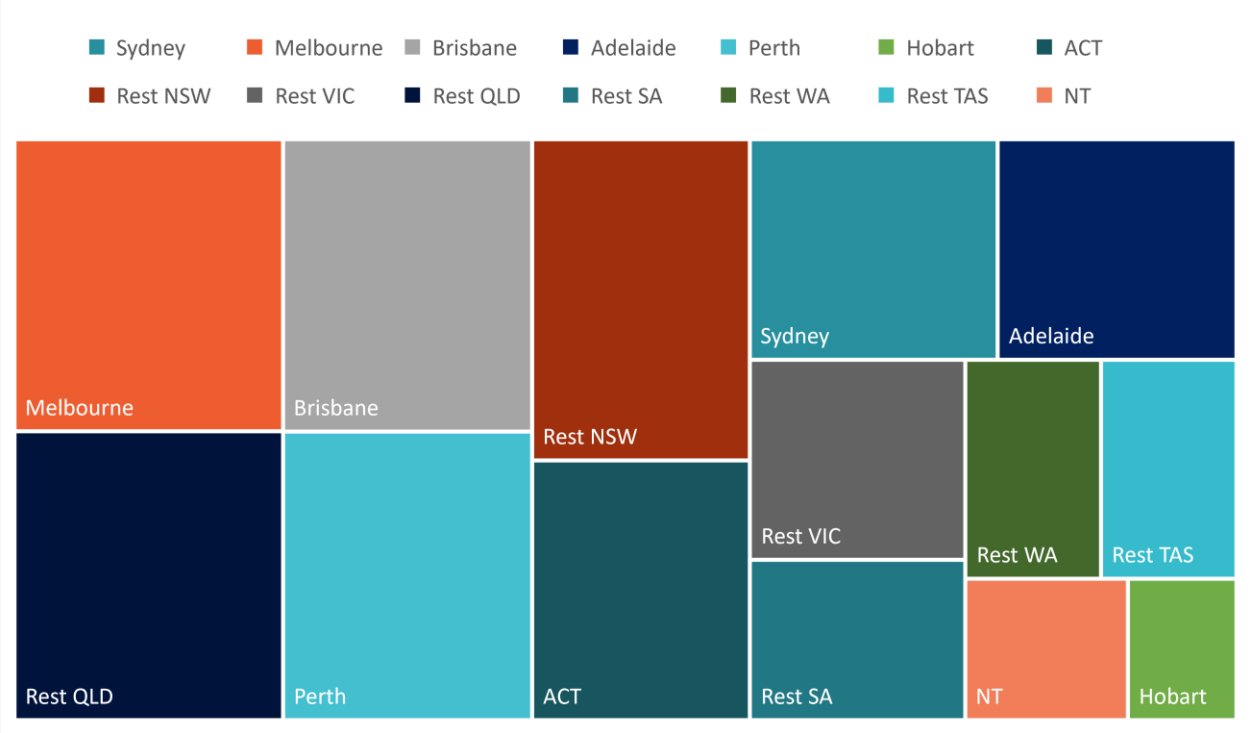
Air conditioning

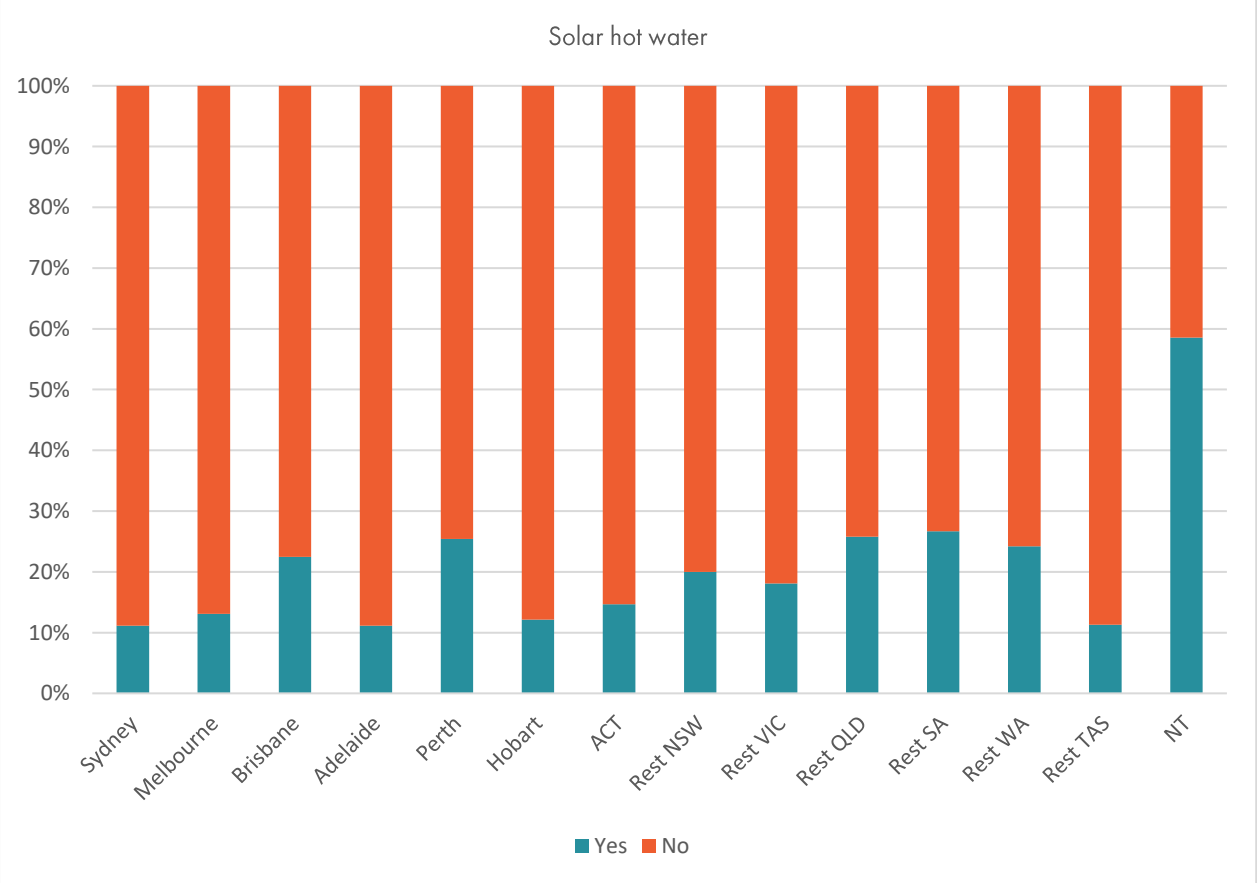




Solar hot water use by location

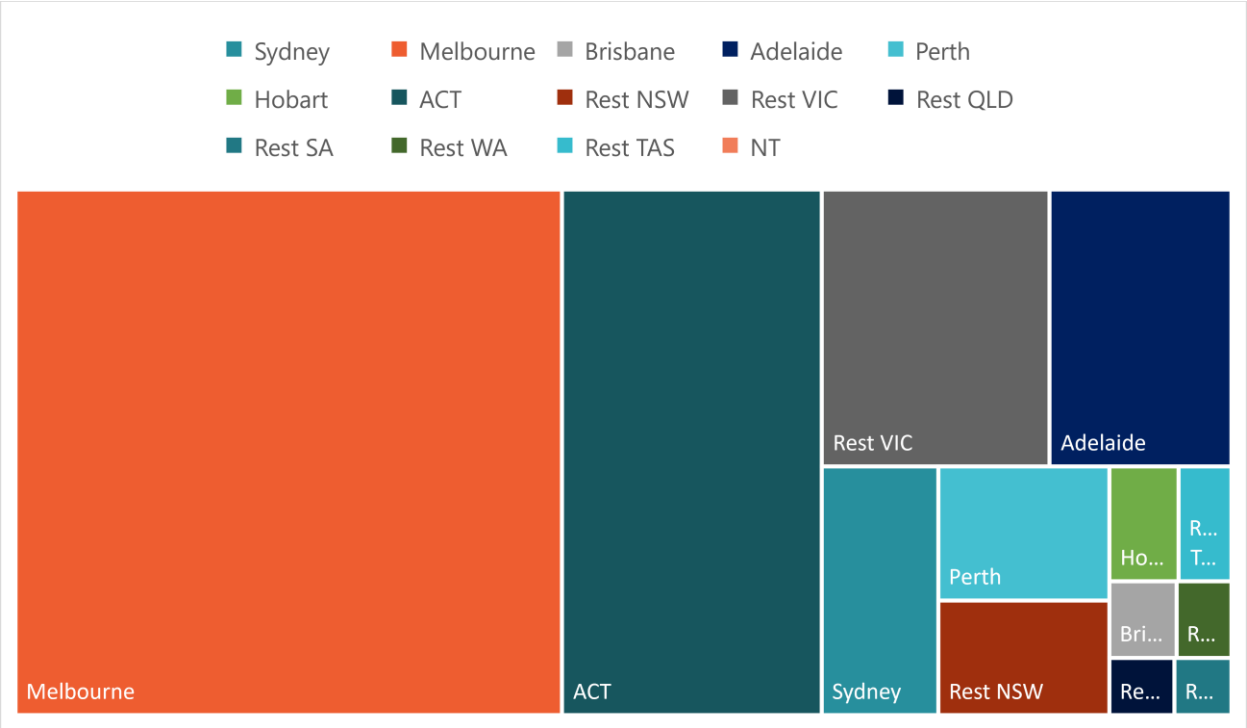
Solar hot water

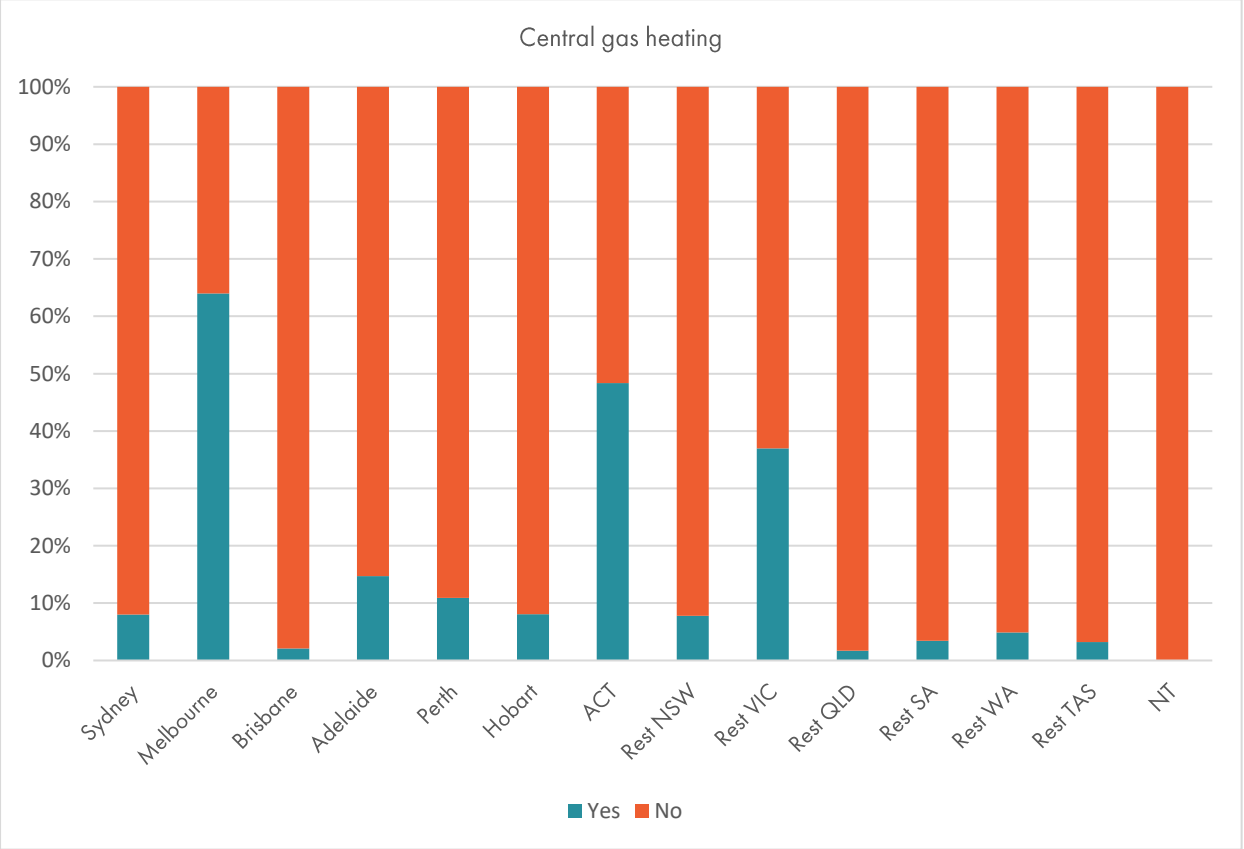




Central gas heating use by location

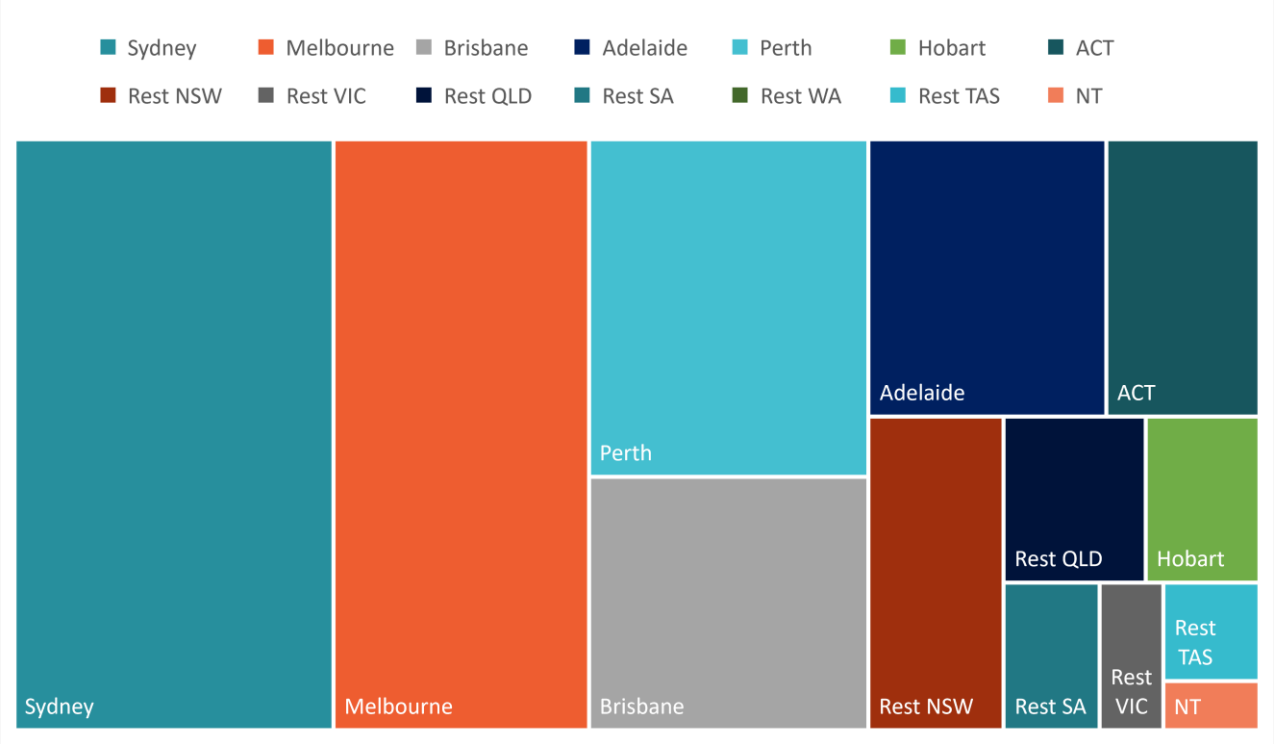
Central gas heating

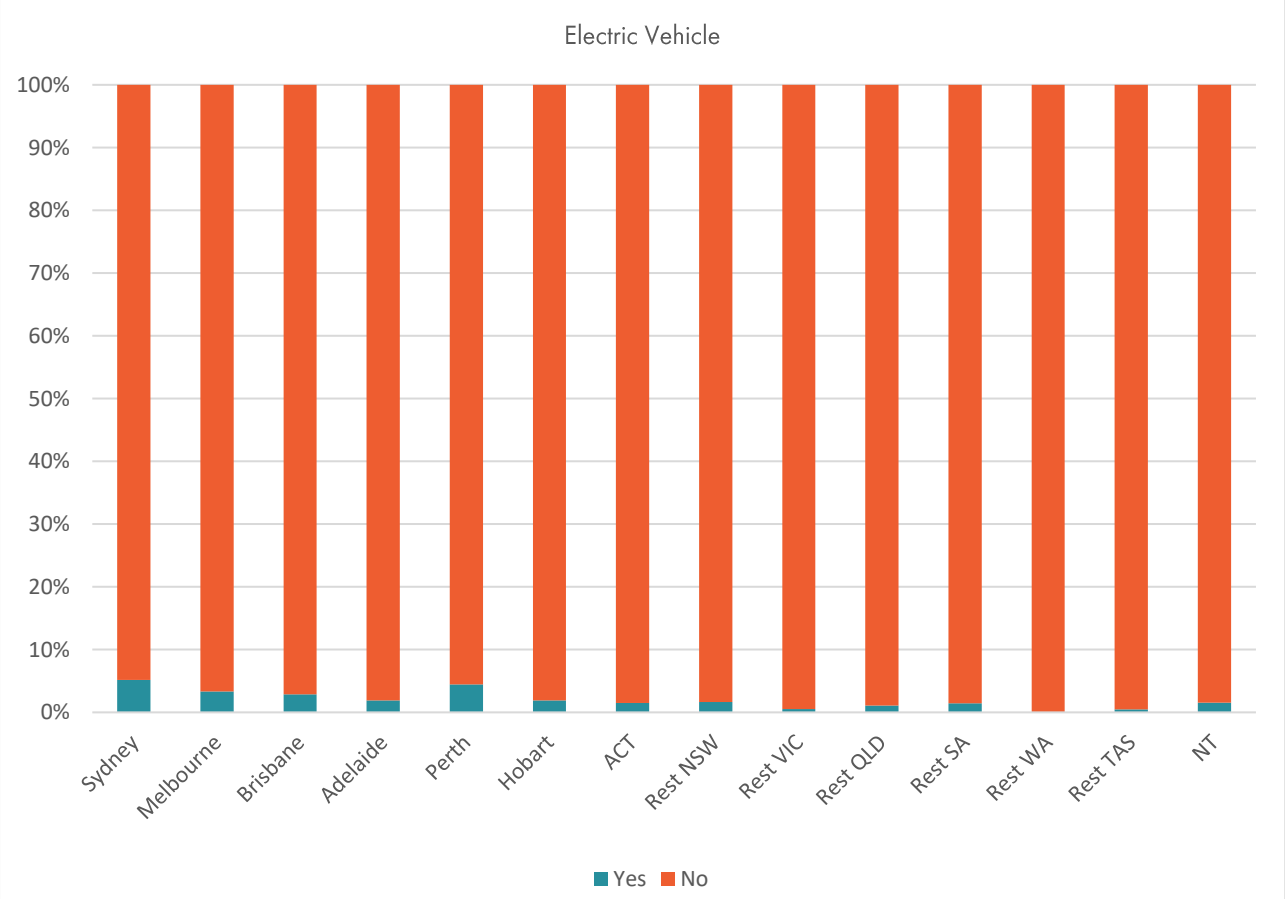




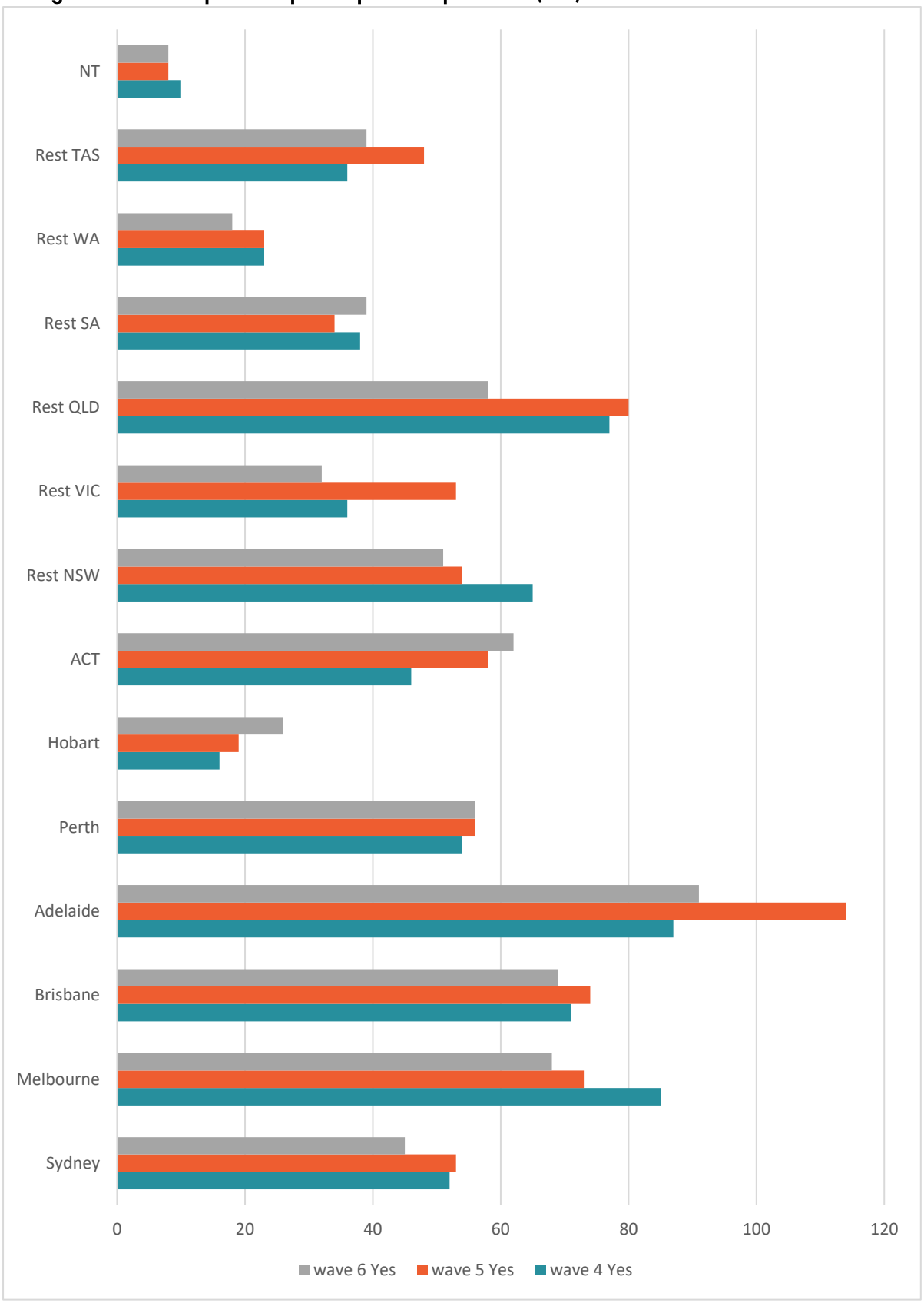
Electric vehicle ownership by location

Electric vehicles



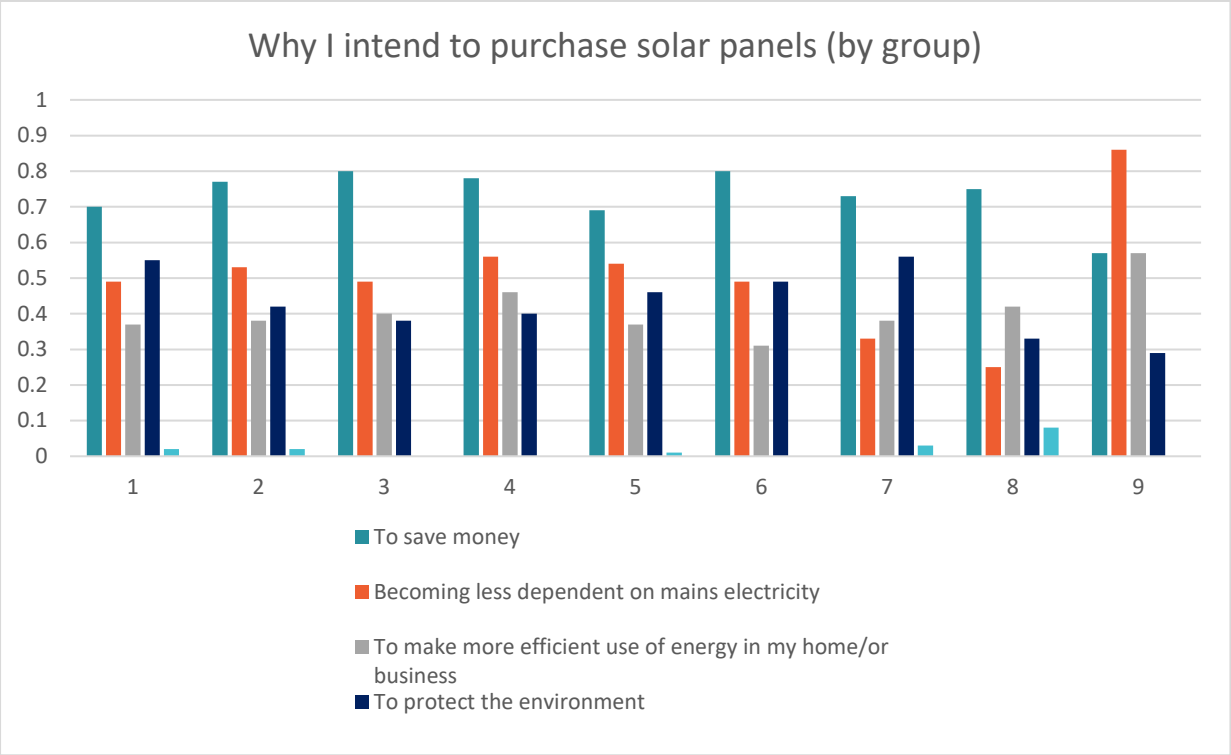


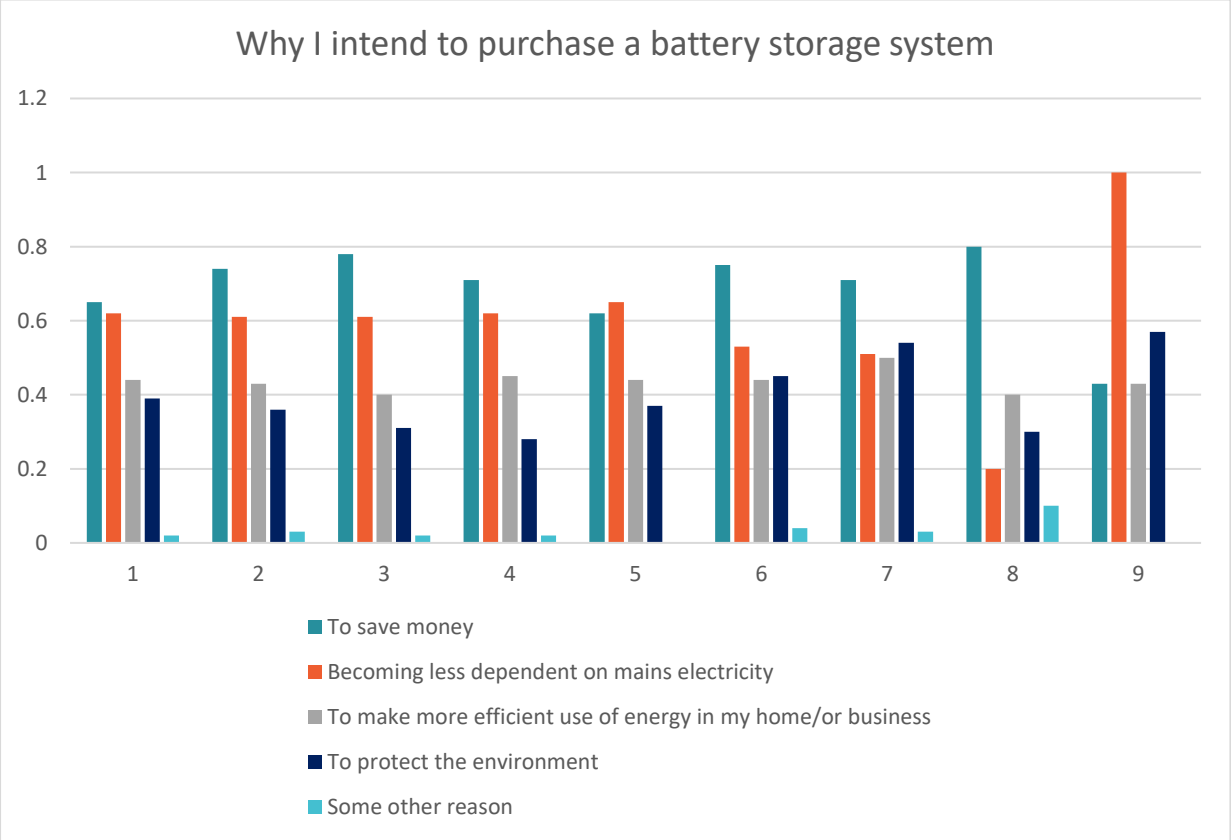
Changes in solar roof panels reported per state per wave (4-6)

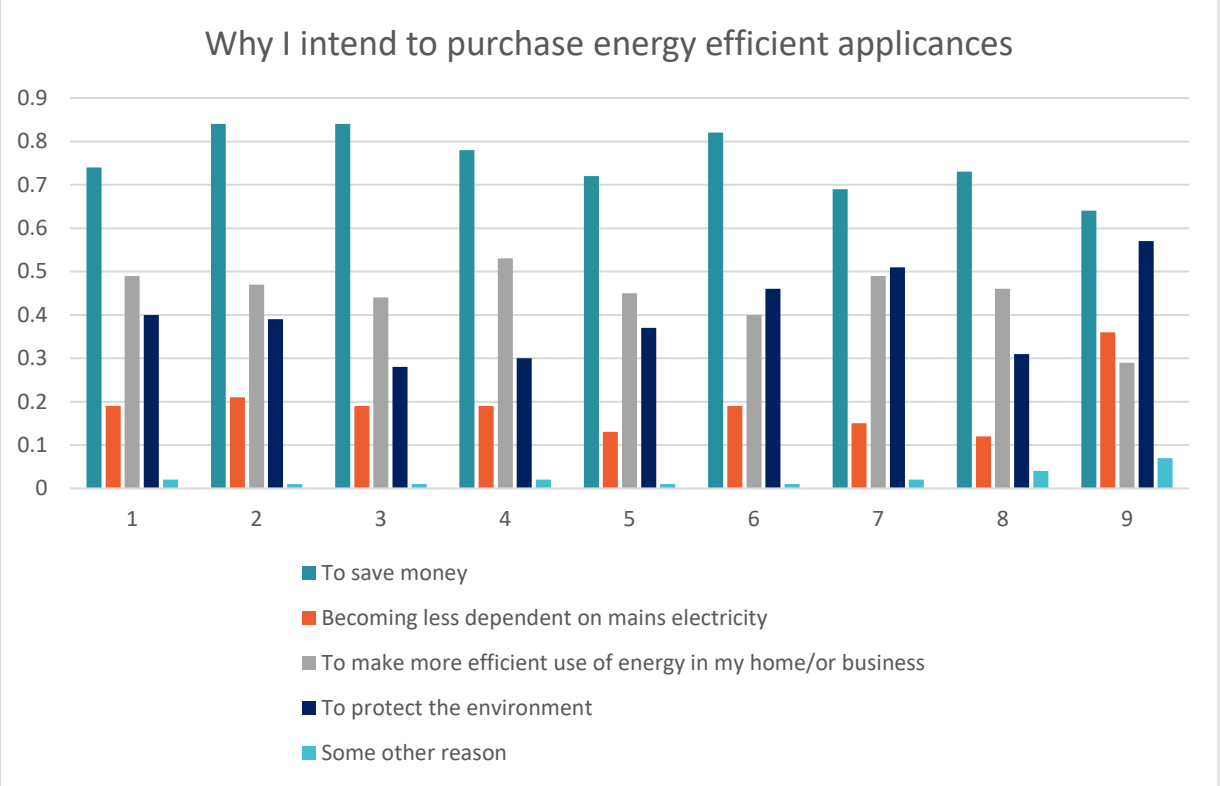


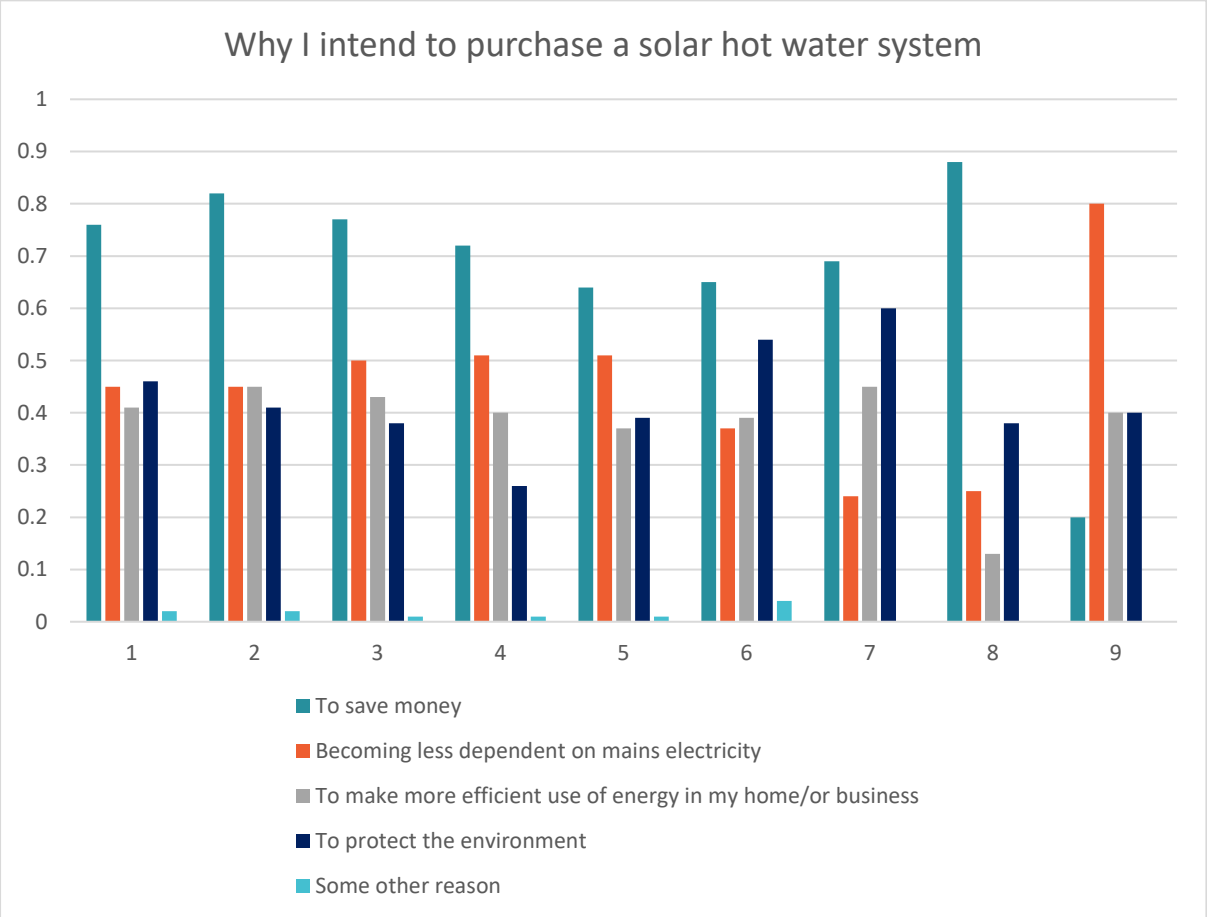
PURCHASE INTENTIONS ACCORDING TO GROUP

The following section outlines consumer attitudes according to the segmentation model grouping (as identified in Section 2).






Why I intend to purchase energy efficient applicances
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
9
To save money
Becoming less dependent on mains electricity
To make more efficient use of energy in my home/or business
To protect the environment
Some other reason


Why I intend to purchase a solar hot water system
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
9
To save money
Becoming less dependent on mains electricity
To make more efficient use of energy in my home/or business
To protect the environment
Some other reason

Appendix

METHODOLOGY

The research reported in this document is based on existing data collected through the Energy Consumer Sentiment Surveys. The Energy Consumer Sentiment Survey is a long-term project for Energy Consumers Australia designed to provide information on household and small business consumer sentiment with a focus on the three key areas of satisfaction, confidence and activity. The survey is undertaken every six months and it tracks changes in sentiment and detects trends which can inform energy market and policy development in the long-term interests of consumers.

Table 1 - Overview of waves, dates and issues impacting consumer attitudes and perceptions

Wave no.	Report date	Dates in field	What else was happening at the time?	Season
wave 1	Jul-16	30 March - 14 April 2016	Extreme heatwaves in various parts of Australia	summer
wave 2	Dec-16	25 Aug - 5 Sept 2016	Loss of Basslink in Tasmania. Retail price deregulation was introduced in South East Queensland (SEQ) on 1 July 2016	winter
wave 3	Jul-17	30 March - 6 April	Heatwaves - closure of power station in Hazelwood	summer
wave 4	Dec-17	11 Sept - 21 Sept		winter - spring
wave 5	Jun-18	19-27 March		summer
wave 6	Dec-18	Sept - Oct		winter - spring
wave 7	Jul-19	TBA	Not included in this analysis	summer

THE ANALYSIS PROCESS

Researchers conducted qualitative and quantitative data analysis based on the data provided by ECA. The following outlines the two main approaches.

QUALITATIVE ANALYSIS

Existing reports from Essential Research, ACIL Allen were reviewed along with other material available from research databases and the powershift reference group research. Research from these were analysed according to state, consumer type and wave. The research was then also reviewed for thematic issues. These have been reported in the following section.

QUANTITATIVE ANALYSIS

Six data files were provided by Essential Research and ECA, as well as questionnaires and weighting for the samples. An initially mapping was conducted across waves of questions and consistency in coding. A total of 299 questions were mapped across the six waves. Missing data was significant across the waves due to realignment and creation of new questions. Where possible, new questions have been matched to previous questions to enable trend analysis across waves. Consequently, results are reported where data is available. Some questions only have data available for a subset of the waves. Tables showing a subset of waves are reflective of the questionnaire design. Back2Back has provided the full data analysis as Excel workbooks to ECA.

Multivariate analysis was conducted in SPSS.

A weighting variable was created according to state representativeness and consumer type (business or home consumer). Where appropriate, weighting has been applied to analysis and calculations. Weighting was not used for segmentation analysis.

Table 2 - Weighting according to state and consumer type

	Sample percentages		Weighted percentages	
	Consumer	business	Consumer	Business
NSW	19.70	25.90	31.96	33.21
VIC	19.80%	28.30%	25.74%	25.76%
QLD	14.80%	17.30%	20.03%	20.03%
SA	14.80%	10.20%	6.99%	10.37%
WA	9.90%	11.50%	10.47%	6.92%
Tas	10.00%	3.10%	2.11%	1.81%
ACT	9.80%	2.80%	1.67%	0.69%
NT	1.10%	0.80%	1%	1.22%

All items were reviewed for skewness and kurtosis, assessment of descriptives was conducted to determine the impact of outliers on the data. Several questions had extreme outliers. In such cases, the outliers were identified and removed from the specific analysis only.

ANOVAs were conducted across the primary demographics according to wave, state and consumer type.

Several new variables were created to enable segmentation and because of factor analysis during modelling. These are reported in context.

SAMPLE

Sampling was previously conducted for the primary research through online panels and surveys were completed using an online survey instrument. Online surveys are at risk of non-response bias. Where potential bias has been identified across waves, within states or other demographic characteristic (such as employment type), this has been noted in the analysis.

Sample size by location of unweighted data

Table 3 - Sample size by location (unweighted)

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total
Sydney	269	266	323	289	291	305	1743
Melbourne	360	382	364	396	317	369	2188
Brisbane	191	188	170	170	191	197	1107
Adelaide	290	285	264	253	260	247	1599
Perth	211	211	195	156	160	166	1099
Hobart	95	85	95	69	66	79	489
ACT	213	212	206	205	204	205	1245
Rest NSW	183	185	160	182	200	187	1097
Rest VIC	109	91	109	121	147	117	694
Rest QLD	153	164	176	167	170	161	991
Rest SA	49	57	60	74	66	73	379
Rest WA	33	35	37	67	70	58	300
Rest TAS	120	124	120	136	142	133	775
NT	32	27	21	20	22	24	146
Total	2308	2312	2300	2305	2306	2321	13852

The sample consisted of a range of 17 consumer types and were classified according to the following categories when completing the survey. Table 4 shows the raw data for types of participants and overall proportion of the final dataset.

- Business consumer – self-employed – main decision maker (at work)
- Business consumer in full-time employment - main decisionmaker (at work)
- Business consumer in part-time employment - business main (at work)
- Business consumer in full-time employment - joint decisionmaker (at work)
- Business consumer in part-time employment - business joint (at work)
- Business consumer in full-time employment - joint decisionmaker (at work)
- Business consumer in part-time employment - business joint (at work)
- Home consumer - self-employed - main decisionmaker (at home)
- Home consumer - in full time employment - main decisionmaker (at home)
- Home consumer - in part-time employment - Main decision maker (at home)
- Home consumer - home duties main decision maker (at home)
- Home consumer - retired main decision maker (at home)
- Home consumer - unemployed main decision maker (at home)
- Home consumer - student main decision maker (at home)
- Home consumer - home duties joint decision maker (at home)
- Home consumer - retired joint decision maker (at home)
- Home consumer - unemployed joint decision maker (at home)
- Home consumer - student joint decision maker (at home)

Table 4 - No of participants according to consumer, employment status and decision maker type

Unweighted sample	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total
1E - BUSINESS Self-employed - main decisionmaker	93	74	137	91	141	100	636
1D - HOME Self-employed - main decisionmaker	134	51	97	54	70	84	490
2D - HOME In full time employment - main decisionmaker	589	580	534	402	481	474	3060
3D - HOME In part-time employment - business Main	265	226	285	232	200	224	1432
4A - Home duties main	103	111	100	94	68	107	583
5A - Retired main	342	300	387	527	552	481	2589
6A - Unemployed main	48	69	69	68	42	72	368
7A - Student main	28	54	30	24	19	23	178
4B - Home duties joint	95	114	132	119	67	110	637
5B - Retired joint	212	207	238	311	402	302	1672
6B - Unemployed joint	45	38	60	32	29	30	234
7B - Student joint	40	28	29	27	15	34	173
2E - BUSINESS In full time employment - main decisionmaker	145	223	91	162	104	150	875
3E - BUSINESS In part-time employment - business main	47	60	36	47	34	47	271
2F - BUSINESS In full time employment - joint decisionmaker	16	37	24	15	22	20	134
3F - BUSINESS In part-time employment - business joint	4	6	5	9	2	5	31
2F - BUSINESS In full time employment - joint decisionmaker	55	82	29	54	34	41	295
3F - BUSINESS In part-time employment - business joint	34	41	22	40	37	33	207
	2295	2301	2305	2308	2319	2337	13865

SEGMENTATION

The participants in the Energy Consumer Sentiment Survey were categorised according to the following potential types of energy consumers. Consumers are predicted to fall into one of nine categories according to the segmentation model (ACIL Allan). The segmentation model was used to categorise and profile clusters.

Motivation

Opportunity

High ability

Complacent

Key relevant characteristics:

- Have good literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings don't justify the perceived effort
- Not currently on the best energy deal

Enthusiasts

Key relevant characteristics

- Have good literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings justify the perceived effort
- Not currently on the best energy deal

Competent

Key relevant characteristics

- Have good literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings don't justify the perceived effort
- Already on the best energy deal

Completers

Key relevant characteristics

- Have good literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings justify the perceived effort
- Not currently on the best energy deal

Medium

Middle Australia

Key relevant characteristics

- Have reasonable literacy, numeracy, problem solving and research skills so able to look at alternative energy deals, if the process is not too complex
- Prepared to put in some time and effort to realise cost savings, but not too much
- Have chosen a better energy deal, but is not the best available

Low to Medium ability

Cautious

Key relevant characteristics

- Don't have the literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings don't justify the perceived effort and complexity
- Already on the best energy deal

Dependent

Key relevant characteristics

- Don't have the literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings justify the perceived effort and complexity
- Not currently on the best energy deal

Low ability

Hard to help

Key relevant characteristics

- Don't have the literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings don't justify the perceived effort and complexity
- Already on the best energy deal

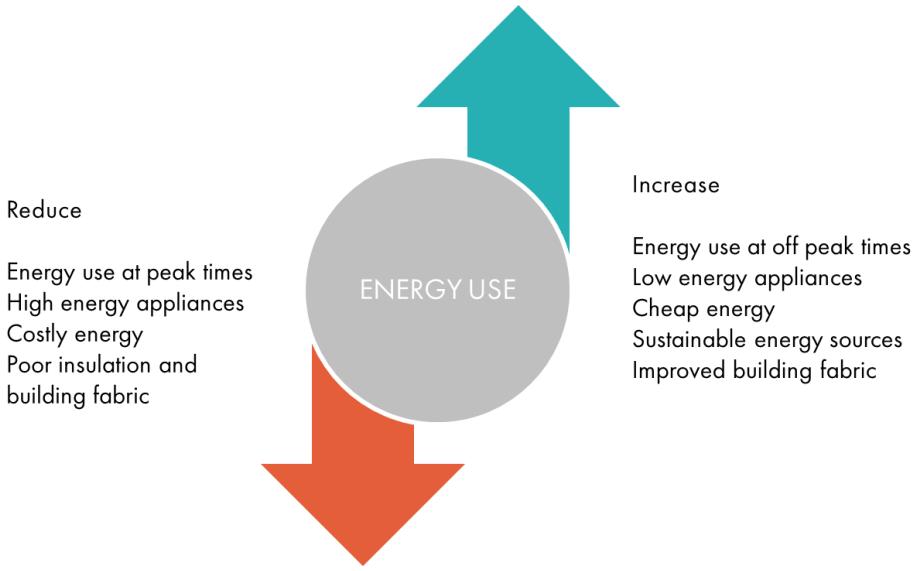
Stuck

Key relevant characteristics

- Don't have the literacy, numeracy, problem solving and research skills to look at alternative energy deals
- Perceived cost savings justify the perceived effort and complexity
- Not currently on the best energy deal

MODELLING

Survey items were categorised according to alignment with the segmentation model and the proposed relationships between variables. There are two primary types of consumer behaviours desired to manage energy use. The segmentation model may be used to increase or decrease certain behaviours based on consumer opportunity, motivation and ability.



The relationship between variables in the model

Figure1 - Desired consumer behaviours

The Segmentation Framework and previous research reports were used to understand and model consumer behaviour. The ACIL Allen report identifies three clear drivers of decisions which include: motivation, opportunity and ability. Consumers make choices regarding energy use according to those factors. These factors then lead to a consumer's willingness to attempt to change behaviour (intention). Intention leads to decision making. This model of consumer decision making is aligned with the seminal decision making model proposed by Ajzen[2].

Consumers are assumed to make the following choices:

- Choose a better energy deal
- Choose alternative energy source
- Choose to improve building fabric and fixed appliances
- Choose more efficient fixed appliances
- Choose more efficient plug in appliances
- Choose the way energy is used
- Choose to use less energy at peak times

These choices then lead to behaviours such as: using less energy, saving money on energy and using more sustainable energy devices (or sources). However, the relationship between decisions and outcomes is moderated by the effectiveness of the system (i.e. how well the consumer is supported to achieve the desired outcomes). This relationship is modelled in Figure 2.

[2] Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi: Doi: 10.1016/0749-5978(91)90020-t

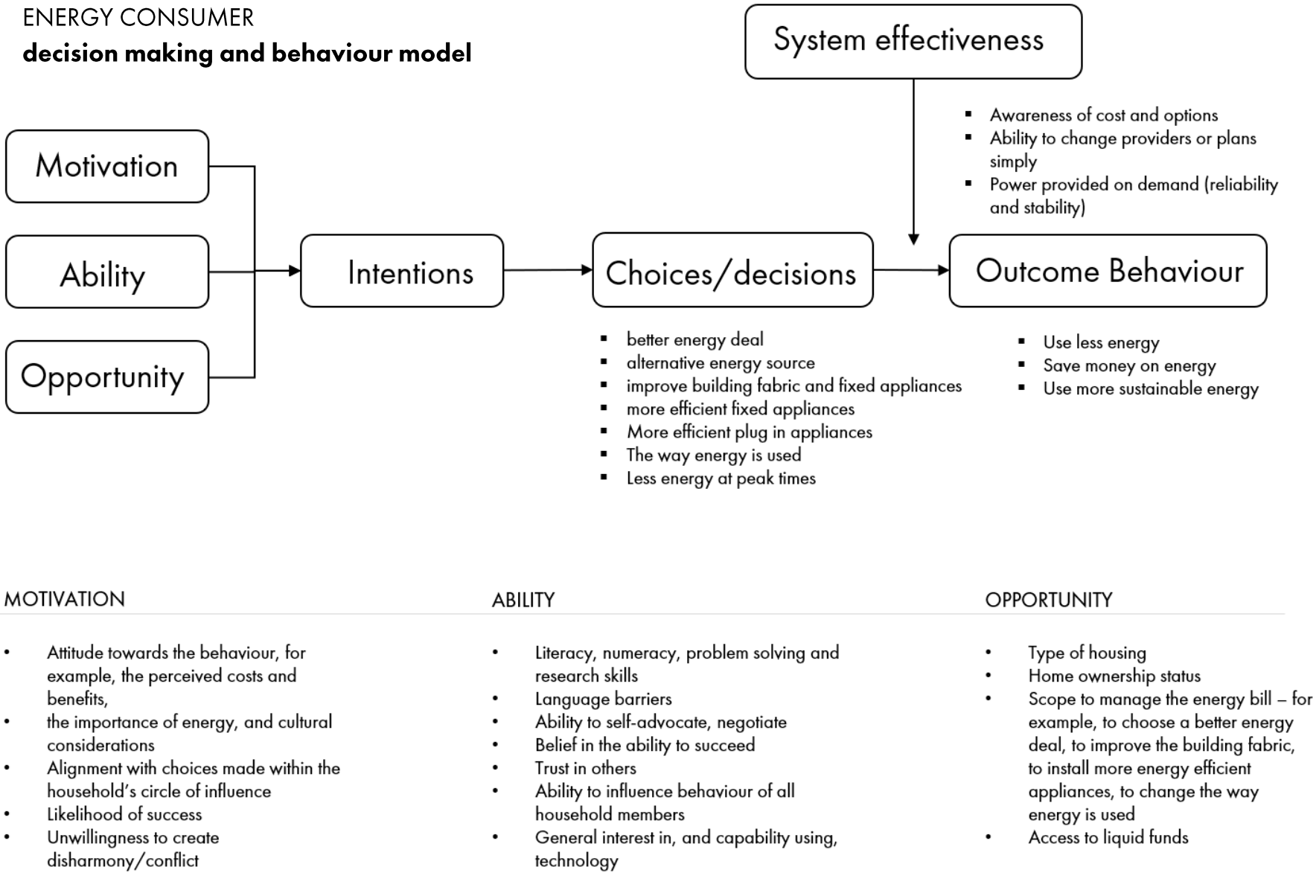


Figure 2 - Consumer energy decision making and behaviour model

EXAMPLES OF THE MODEL

applied to energy attitudes, choices and behaviours

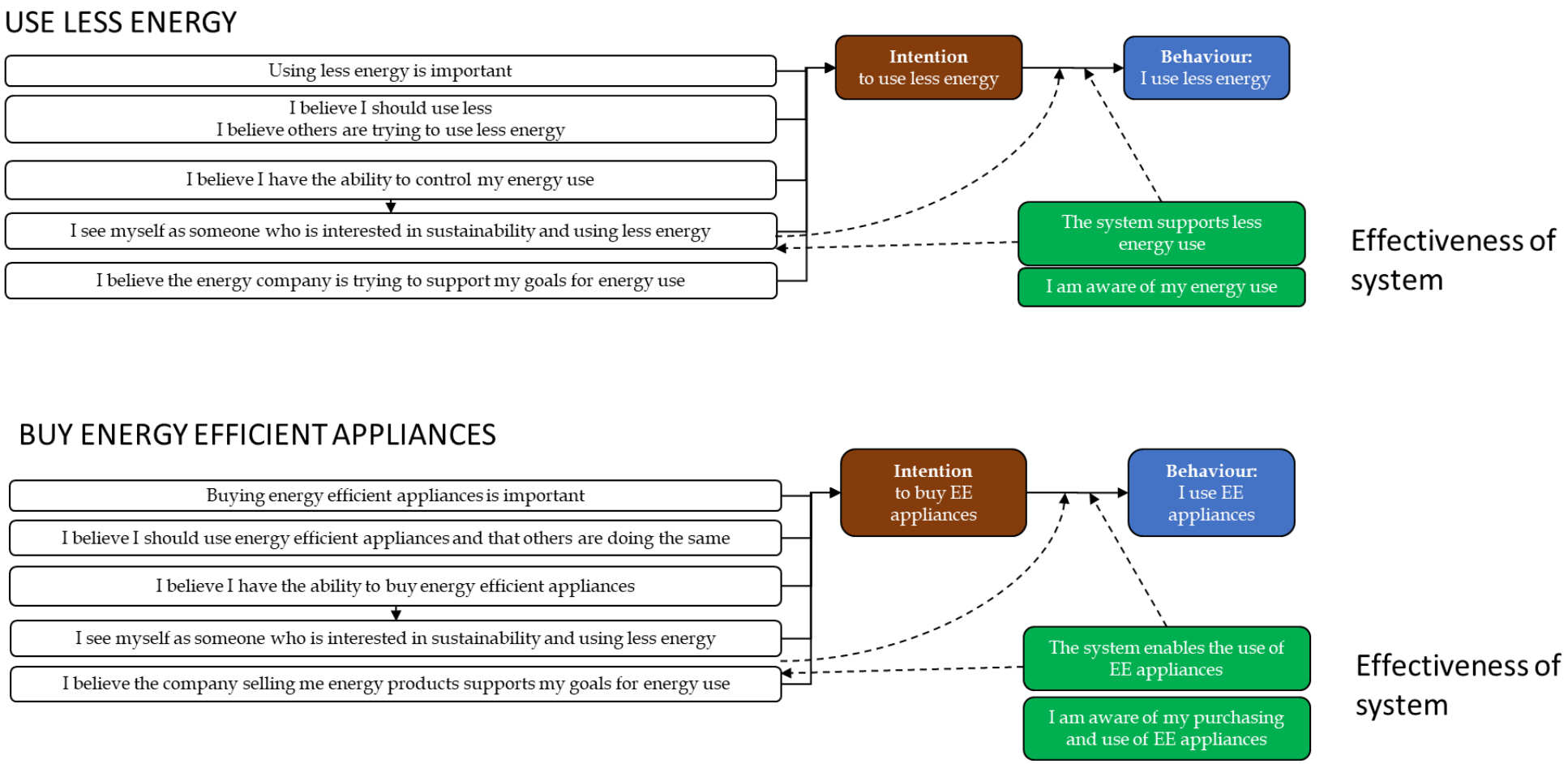


Figure 3 Examples of the applied consumer energy decision making and behaviour model

Researchers then used the Energy Consumer Decision Making and Behaviour Model to determine alignment between the existing Energy Consumer Sentiment Survey items and possible variables in the model. Several constraints were identified. There were no questions in the survey that could be used as dependent variables for actual outcome behaviour. The only variable available to use as a proxy was *average bill per month*. However, due to different pricing structures across the states and waves, this cannot estimate actual energy usage. Other possible outcomes were identified such as switching behaviour, intention to use less energy (A41 to 4) (only represented in waves 4-6) and financial pressure to change companies. However, these factors were not significant predictors in the data and so were not modelled.

Data on decisions or choices were also limited in the dataset as well other attitudinal data such as energy consciousness. Energy consciousness was measured in wave one but was not continued in the subsequent waves. Limited items were available in each of the motivation, ability and opportunity dimensions. Although there were insufficient items to create reliable factors for each of these dimensions, enough data was available for comparison and profiling for the segmentation. Therefore, comparison of the factors for motivation, ability and opportunity has been conducted in the clustering and segmentation section only. Due to these limitations, the following regression models were assessed to assist in understanding the factors that influence the measured behaviours and attitudes.

REGRESSION

Regression was used to determine the relationship between the primary variables. Average monthly electricity bill is predicted by several factors as shown in the model including how the electricity provider compares with other utilities, whether the person owns solar devices, ownership of heating devices, pool ownership and bill pressure.

The factors that determine the average bill per month per person

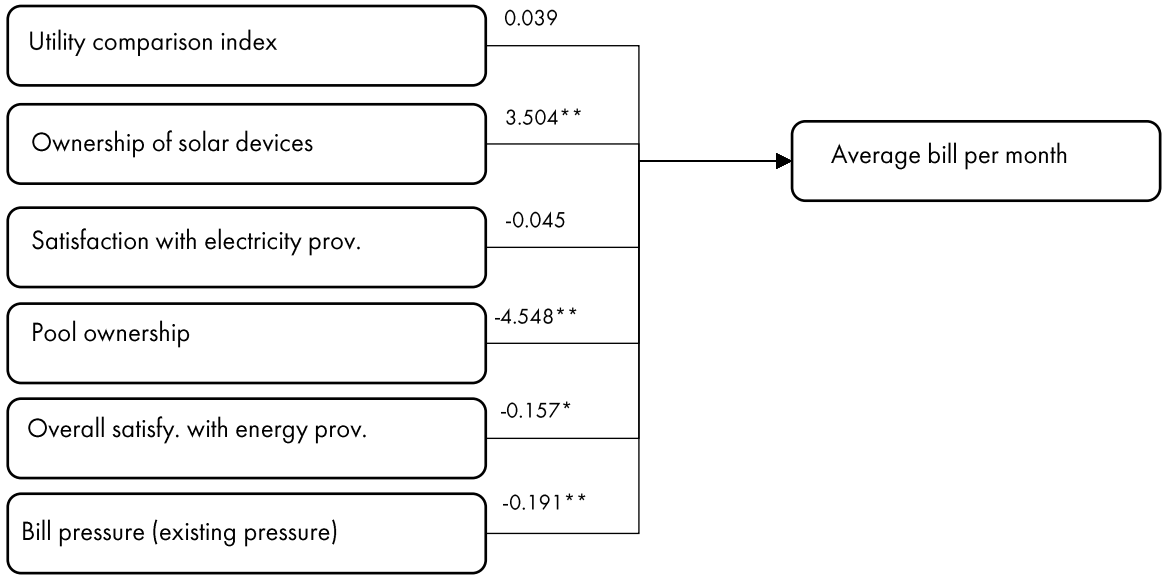
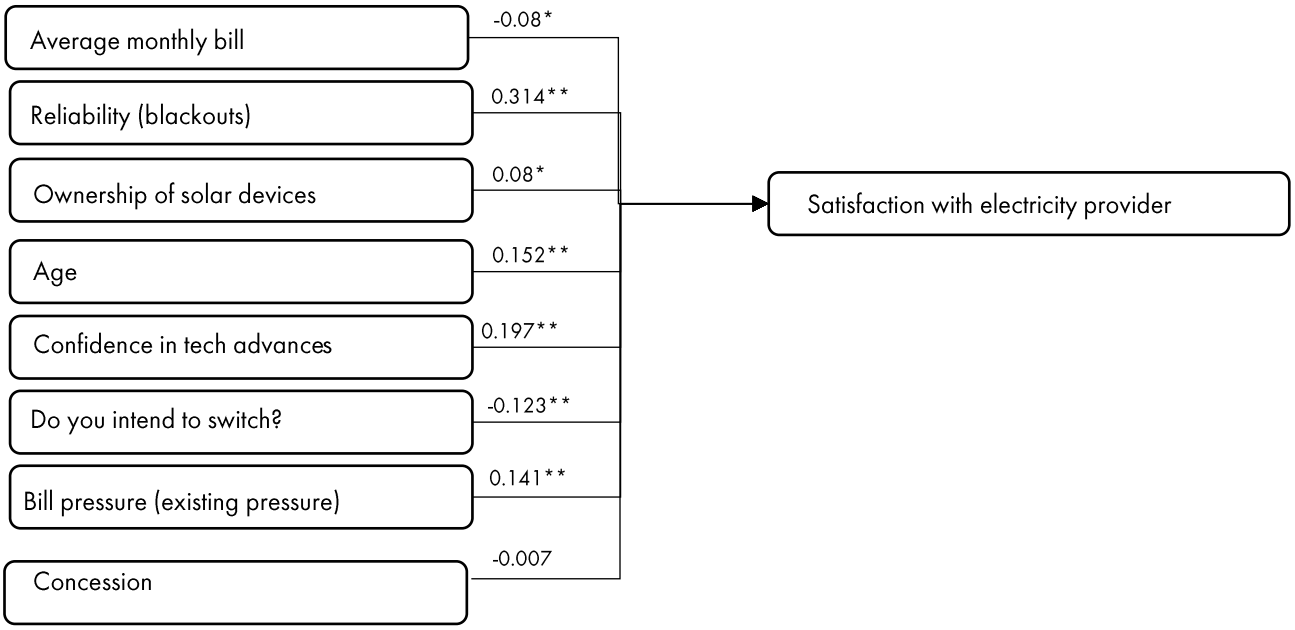


Figure 1 - Regression path model for Average Monthly Electricity bill

The factors that determine satisfaction with energy provider



**p<0.00 *p<0.05

Figure 2 - Factors that determine satisfaction with energy provider

Back to Back Research Pty Ltd
Cleveland, QLD 4163

Contact: jo.langham@back2back.com.au