

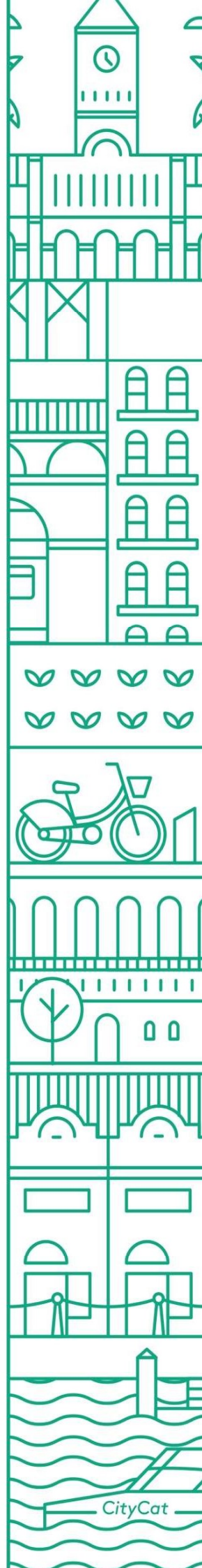
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# Taking advantage of electricity pricing signals in the digital age: Householders have their say

A summary report



**CITYSMART**  
*Brisbane City Council's Sustainability Agency*



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## Preface

Electricity is a basic and essential need, and for everyday Australians rising electricity prices impact their way of life in many ways. For consumers, ongoing price increases are at odds with the general perception that the quality and reliability of their electricity supply has not improved to any degree that warrants these increases.

Recognising that Australia's electricity system is in transition, the Prime Minister Malcolm Turnbull appointed Australia's Chief Scientist Dr Alan Finkel to independently develop a blueprint for securing our energy future.

Dr Finkel's *Blueprint for the Future Security of the National Electricity Market* released on 9 June 2017 focuses on four key outcomes: increased security, future reliability, rewarding consumers and lower emissions.

It is the outcome of rewarding consumers that is the area of research undertaken by CitySmart and the Queensland University of Technology to develop new understandings and insights.

Consumers are at the centre of the electricity market transition. In the future, where consumers can be flexible in their use of electricity supplied by the grid, consumers will be rewarded with rebates or lower prices. Other consumers will be rewarded for the value they can provide in supplying the grid with electricity and ancillary services from distributed energy resources at critical times or in locations where they can contribute to reliably supplying other grid consumers.

It will be critical that vulnerable and low-income consumers are not left behind in the transition, or unfairly called on to meet the costs of the electricity system.

For there to be changes in electricity pricing that potentially could benefit all consumers, smart (digital) technology is needed so that consumers can track both their energy use and generation capabilities and benefit from changes in electricity pricing.

Smart metering is not yet widespread other than in Victoria, where a mandatory rollout for electricity consumers was completed in 2013, and few of the 1.6 million solar systems on rooftops across Australia have smart technology installed. From December 2017, consumers will be able to voluntarily choose to have a smart meter installed, including through their retailer.

Few consumers (less than 1%) have taken up the option of flexible pricing made available in Victoria with the rollout of smart meters. However, to put this in context, while there was an awareness campaign from June 2013 to explain the changes in pricing, from the beginning of the rollout from 2009 onwards consumers were facing simultaneously rising prices and for the first-time, itemised metering costs on the bill. Furthermore, consumers were unclear how they could benefit from the changes in electricity pricing. They had no visible history of their energy use and were concerned about the potential risks of higher bills particularly if they were vulnerable or unable to change their energy use.

There have been some positive experiences with rewarding consumers for flexibility in their energy use. Examples include:

- time-of-use pricing for consumers in the Ausgrid (from 2003) and Actew/AGL (from 2010) network areas, including the Smart Grid Smart City project
- load control, with off-peak rates for specific appliances including hot water, underfloor heating and air-conditioners
- demand response payments including rebates direct to consumers in the United Energy network area and from retailers such as AGL through trials and new offers from Mojo.

While these experiences may have been positive for many consumers, they have not been of significant scale or widespread.

The purpose of this research was to step back from the case for changes to electricity pricing to underpin the future of Australia's electricity system, and from the options that pricing or demand payments could take. Instead, this research focused on consumers, their engagement with energy and the challenges and barriers they might face in this process. For the researchers, a consumer-centric approach was important. New questions were required, as well as new methods to go about seeking the answers.

The research also recognised and focused upon the growing importance of technology in consumer's lives. That is, how consumers will not only use technology to find information about electricity pricing but also how they will seek to use technology to help manage their usage in response to new pricing plans.

The output of the research was insights into how consumers engage with energy choices and pricing and creation of a new consumer segmentation model. The quantitative research particularly focuses on the population of working age (18 to 55), while drawing out different ways in which these segments intersect with measures of vulnerability. Older Australians, i.e. over 55 were not a specific group in this study, which is a limitation imposed by the resources and the nature of the research questions around digital engagement. There would be real value in future research particularly addressing the needs of older Australians, and particularly those no longer working in paid employment.

The insights and the segmentation from our research could be used to:

- better target messaging about new pricing plans
- improve the quality and relevance of that messaging to consumer behaviour and choices
- provide guidance on consumer attitudes to the technology that could play a part in empowering consumers to take up and respond to new pricing plans.

Using a blended social marketing approach, the results address what might be prevailing myths and assumptions about electricity consumers. In their place, we offer evidence-based consumer segments that are differentiated by expectations, barriers, motivators and perceptions.

Armed with the evidence from this research the energy industry will be better placed to communicate on consumer terms – in their language and on platforms convenient to them. This approach is about being truly consumer-centric, rather than using the language of regulation, rules, and industry incentives. This social marketing approach as applied to the question of electricity pricing is new to the industry. It offers a unique approach to identify new questions, and new answers which will help support all electricity stakeholders to engage with consumers in an evolving economic environment.

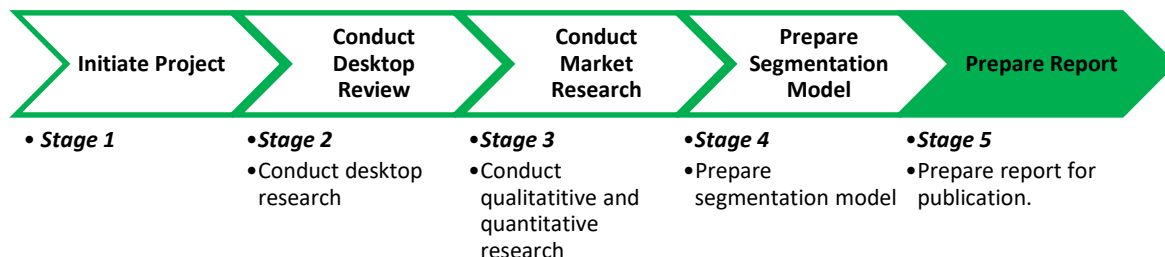
As well as presenting the research and key insights, this report also looks at how this research might be applied to engagement with consumers about new electricity pricing plans, and we offer some thoughts on directions for future research or consumer trials. We welcome feedback on these subjects and on the value of the research to consumers and stakeholders.

This research report would not have happened without the support of Energy Consumers Australia (ECA). CitySmart and QUT are grateful for the opportunity to develop new insights that will assist consumers and the energy industry. Networks and retailers across Australia were asked to participate and we would like to acknowledge the following networks for coming on board and providing feedback, insights and guidance as we progressed the research project. The collaboration project included: Energex and Ergon from Qld; Western Power from WA; TasNetworks from Tasmania; and Ausgrid, Endeavour Energy and Essential Energy from NSW.

# Executive summary

## Purpose of report

Figure 1: Research Process



This report is the final deliverable of the ECA-funded project entitled *Understanding the changing needs of residential energy consumers in the information age and the implications for electricity pricing reform*. The final report presents the results of desktop and market research, a segmentation model, key insights and implications for advocates, market participants and government. For more details on the research methodology, data and findings please contact CitySmart.

## Scope

The purpose of this final report is to provide insights on consumers that will:

- facilitate more efficient and effective education and awareness activity by the industry and other stakeholders surrounding the introduction of new electricity pricing plans.
- improve the value of digital channels and technology-based tools offered by industry and other stakeholders to consumers to help them learn about, take up and respond to new pricing plans.

Specifically, this report investigates pricing signals and utilises peak and off-peak retail pricing as a context which refers to Time-of-Use (ToU) pricing (see 'How changes to electricity pricing were explained' later in this Executive Summary). We believe that the insights in this report could also have broad applicability to a range of retail pricing options including critical peak pricing, peak demand rebates, capacity tariffs, seasonal tariffs and controlled load. (A description of the various residential retail pricing options is provided in the report by Deloitte in January 2014 for the Energy Supply Association of Australia.)

The research is a point of departure from the debate that has been underway since 2012 about the requirement for cost-reflective network pricing in the National Electricity Rules. It does not address the specific proposals put forward by electricity networks in the Tariff Structure Statements approved by the Australian Energy Regulator (AER) in 2016 and the analysis of the impacts of those tariffs.

Importantly, this report is placed within the context of the digital age, with consumers increasingly engaging with companies through non-physical means such as web pages and smartphone apps.

In this final report (as stated in the funding proposal) we:

- summarise the research activity undertaken and key findings from project Stages 2, 3 and 4
- present implications for policymakers and energy industry stakeholders
- provide a segmentation model to assist decision-makers and the industry in implementing changes in electricity pricing in the residential sector
- provide recommendations for implementation and potential trial approaches.

Table 1 provides more details on alignment of the deliverables and the contents in this report, against the funding agreement.

*Table 1: Alignment Table*

Original Deliverable	Addressed in this Report
<b>1. Summarise the research activity undertaken and key findings from Stages 2, 3 and 4</b>	This is provided in the 'Key findings field research' section, where consumer-centric insights have been drawn from Stages 2, 3 and 4 of the research.
<b>2. Present implications for policymakers and energy industry stakeholders</b>	This is summarised in the 'Implications for policymakers and energy industry stakeholders' section. Of further interest is the 'Critical success factors' section.
<b>3. Provide a segmentation model to assist decision-makers and the industry in implementing pricing reform in the residential sector</b>	A segmentation model was provided in Stage 4. This report not only includes this model, but provides further details around these segments in order to expand on the Stage 4 deliverable of recommending who to target for a digital engagement approach. As part of this section, an adapted diffusion of innovations model is presented.
<b>4. Provide recommendations for implementation and potential trial approaches</b>	Recommendations are provided in the 'Marketing recommendations for consumer programs' section. This section also builds on the delivery program implications first discussed in Stages 3 and 4.

## What is the opportunity offered by new electricity pricing?

Retailers have traditionally charged consumers the same rate for electricity throughout the day, and throughout the year. However, the costs of producing or transporting electricity are higher at times of peak demand. Peak demand usually occurs in the morning or in the evening when people make the most use of their appliances and energy in the home. The highest peak use is usually at the hottest and coldest times of the year.

With pressure on consumers because of the doubling of electricity prices in the last decade, increased attention is being paid to how consumers could voluntarily play a part in mitigating future electricity price increases.

In recent years, most attention has been focused on how to mitigate future *network* price increases, including through rule changes to pricing for the use of the poles and wires that make up the network. By charging consumers more for the use of the network at peak times, and rewarding



consumers with lower rates for the rest of the time there would be theoretically less need to invest in more network capacity to meet peak demand in the future. Both retailers and networks support this form of electricity pricing, but currently it remains optional because of the need for smart meters and unanswered questions about how potentially adverse impacts for some vulnerable consumers could be addressed. Estimates are that there could be considerable benefits for consumers if these reforms to network pricing were to be introduced in the future.<sup>1</sup>

In the retail market, there are emerging new electricity pricing plans that reward consumers for reducing their use during critical peak times, and enable consumers to shift their use to take advantage of off-peak pricing for most of the day. Importantly, new opportunities for consumers to engage as generators in the electricity market, including through models such as GreenSync, Reposit Power and Virtual Power Plants, critically depend on new electricity pricing plans for consumers to fully realise the benefits.

Apart from the need for smart meters to enable these new electricity pricing choices, if consumers are to be able to take full advantage of the potential benefits of peak and off-peak pricing, there are still two key consumer behaviour-related questions remain to be addressed.

1. To what extent are consumers willing to take up or explore these new electricity pricing plans?
2. To what extent are consumers able to respond (behaviour change), and on a sustained basis, to take advantage of these new pricing plans?

While traditional economic models of human decision-making might predict high rates of voluntary take up and rational behavioural responses to pricing signals, this optimistic prospect overlooks some important insights from psychology and behavioural economics (Stenner et al., 2015). Consumers do not always respond in the way that economic models and rule makers expect. This may have understandably led to some caution on the part of electricity retailers until they have had the opportunity to develop an understanding of how consumers are likely to respond.

This research is an important first step towards what we believe is an unprecedented opportunity. Industry and stakeholders will be able to understand consumers and their potential behavioural responses to new electricity pricing plans, and provide value-added service to consumers through digital engagement and technology, both current and emerging.

#### How changes to electricity pricing were explained

This is how the research team described to householders how electricity pricing was changing and introduced the concept of peak and off-peak Time-of-Use pricing:

*“The way we usually pay for electricity in Australia is changing. Most of us now pay the same rate all day (24/7) for the electricity we use plus a fixed charge which is set as cents per day.*

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<sup>1</sup> The Energy Networks Association (ENA) has estimated that cost-reflective tariffs can lead to savings of \$17.7 billion in present value terms over a 20-year period (Energy Networks Association, 2014).

*“Different electricity pricing offers are becoming available. You may be able to choose whether to fix some or all your bill, so it’s predictable much like your mobile phone plan or a fixed rate home loan. Alternatively, you may choose an offer that lets you take advantage of cheaper rates for using electricity outside of the busiest times, much like the discounts you get for hotels and airline tickets when you travel off season.*

*“Talking about electricity, the busiest or peak times are when we all want to use electricity at the same time. Typically, during the week this means before and after work, and on weekends. But peak times can also be the times of the year when it is hot, and we are using air-conditioners and pool pumps. In the coldest parts of Australia, the busiest time of the year may be winter rather than summer as we use electricity for our heating.*

*“If you choose an offer which allows you to pay different rates during the day for most of the day you will be charged less per unit of electricity used than at peak times, i.e. off-peak rates. Put another way, at peak times the rates you will be charged will be a higher rate per unit of electricity used than the off-peak rate. How much higher will depend on your electricity retailer.*

*“You can save money on your total bill, if you can reduce the use of your energy-hungry appliances during peak times, and use more electricity during off-peak times. If you and your family cannot take advantage of the cheaper off-peak rates, by using more of your electricity at off-peak times, then paying the same rate all day or choosing a predictable bill may be a better choice for you. “*

By explaining electricity pricing in this way, it is possible to apply the findings in this research to all forms of electricity pricing that charge more for peak use, and less at other times, whether it is critical peak pricing or seasonal pricing.

The research findings do not depend on the differences between the rates of peak and off-peak pricing, which is critical in studies that are designed to analyse the bill impacts.

## Benefits of this research for energy consumers

Conventional education and awareness approaches need to evolve to better meet the needs of today’s digital consumer.

This research will assist the energy industry (both retailers and networks), policymakers and stakeholders to understand the changing needs of today’s energy consumers. It will provide a segmentation model specifically for the purposes of facilitating more efficient and effective education and awareness activity. This in turn will support the implementation of changes in electricity pricing.

Our intent is to:

- support industry to make the shift to a genuine conversation with consumers
- establish a social licence to support the introduction of new electricity pricing
- enable new energy behaviours within the community to ensure the benefits are realised.

Overall, if consumers understand the new electricity pricing and the benefits that can be captured by changing behaviours they will have another tool available to them to respond to rising electricity prices.

## Benefits from collaboration

This research project has benefited from multi-disciplinary collaboration between industry and the research sector to create independent, rigorous and evidence-based insights. It demonstrates innovation in the approach, research methods used and insights generated about Australian energy consumers.

Such collaboration moves the industry towards national consistency and unity. This is important as consumers become more mobile, moving between network regions and states, expecting to encounter the same energy experience regardless of where they live.

We welcome the opportunity to extend this collaboration further, with potential opportunities for co-design between consumers and industry to develop real world electricity pricing plans, and to share the findings.

## Method summary

This research project used a mixed-methods approach, involving 45 household interviews conducted around Australia, and a large-scale national survey (1345 respondents) of energy consumers. The need for this approach was justified by a comprehensive systematic literature review (Stage 2). The data from the quantitative and qualitative fieldwork (Stage 3) were then analysed, and a segmentation model was developed (Stage 4) using a mixed-methods approach and a variety of analysis types, resulting in robust, credible and rich conclusions. The results of the research and key insights and findings in each of these stages are reported in this final report.

## Consumer-centric approach

Social marketing is a social science approach to the issue of changing behaviours for the better. Rather than simply educating or enforcing, social marketing aims to make voluntary behaviour change easier for individuals. Social marketing is inherently consumer-centric, and requires a solid understanding of the barriers, enablers and motivations around individual behaviour change. This requires an understanding of diverse groups – in this case, personas at the household level – and the application of design thinking so that individuals are engaged in the process and outcome of the behaviour change intervention. Table 2, 'new electricity segment model', summarises the goals and potential value proposition for these household personas.

Design thinking involves empathising with consumers, defining the issue, forming ideas together, developing a prototype solution, testing and then repeating the process (Interaction Design Foundation, n.d.). The method is unique in that it includes the consumer at the centre of the design process, rather than at the end, such as may be the norm in campaign and traditional marketing thinking.

Table 2: New electricity segment model

Segment	Goals	Barriers	Possible Value Proposition
<b>Ant colony</b>	Consistency, Efficiency, Stability	Needless complications, constant change, threats to our established ways.	Keep us on track with minimal disruption.
<b>Bee hive</b>	Expertise, Control, Ease	Roadblocks, failing to acknowledge our expertise, needless change.	Put the power in our hands.
<b>Flock of geese</b>	Convenience, Flexibility, Harmony	Too much effort, needing to monitor, solutions that don't consider all of us.	Keep us organised to meet our changing demands.
<b>Wallabies</b>	Freedom, Entertainment, Equality	Needless restrictions, boredom, solutions that favour authority figures.	Give us the freedom to enjoy life together.
<b>Domestic cats</b>	Comfort, Mastery, Empowerment	Too much effort, not enough power (when we want it), single-option solutions.	Serve us. Because we've got better things to do.
<b>Lion Pride</b>	Independence, Mastery, Empowerment	Roadblocks, not enough power (when we want it), single-option solutions.	Make us the masters of our environment.

This consumer-centric approach has been taken to ensure that changes to electricity pricing are viewed and understood from an energy consumer point of view. This contrasts with most research undertaken to date by the electricity utility businesses around the world, where the consumer is seen as the end user and beneficiary of the changes that are driven by the needs of the utility business.

Consumers have little understanding of what an efficient electricity utility business is, what role they play in it and why the cost of this essential service has risen so much, so quickly. As confirmed by this and other research (e.g. Strengers & Nicholls, 2012) consumers have mixed or incomplete understandings of peak-demand issues and electricity pricing choices. Yet, without their acceptance of the concept of new electricity pricing, and their adoption of new energy behaviours and household routines, Australian households will not realise the full potential of the expected benefits in electricity bills.

Households often believe that industry changes are often introduced for the benefit of the industry rather than to benefit them as consumers. This damages engagement and leads to little trust in the industry and by extension, industry members. The resulting perceptions are a material barrier to be overcome in order to deliver effective engagement.

Part of the solution and as created in the new persona segmentation model is to understand that households operate in a particular style that seeks to achieve their goals (unrelated to electricity) and this style is reflected in most of the key decisions made by the household. In fact the household operates as a buying centre, with different members performing different functions in the decision-making process and these roles change as households change.

## **The benefits of technology for supporting consumers**

Consumers are now surrounded by communications technology. They have access to an overwhelming amount of information that is sometimes conflicting, often confusing and unknowingly geographically irrelevant to them. While some platforms claim to be a single source of truth, the language used by the industry to communicate with households is not consumer centric and as a result, consumers battle to understand complex concepts presented by industry. Technology has the means to provide a single source of truth for all Australian electricity consumers using simple consumer-centric language.

Consumers make many decisions in a day (I want to be warm, I want to eat, I want to clean clothes) but cannot easily reconcile those decisions with the impact to their bill, their sense of control over electricity costs is very low. This is exacerbated by the delay in electricity behaviour change signals from their bill cycle and for many, understanding their consumption on the bill. Technology offers capability to provide consumers instant gratification and ultimately cost reduction if behaviour change can be reinforced with real time, stable and accurate data. While is not accepted or preferred by everyone (see the section on the 'Resistors') there are benefits in terms of the ability to reach consumers faster and cheaper, with real-time personalised data, in an engaging way. Consumers do acknowledge that technology will be able to help them optimise their energy usage however some consumers are not ready to surrender full technology to control and one of the root causes stems from overall lack of trust towards the industry.

For instance, during the field research (Stage 3) we discovered challenges with consumers understanding of 'time-of-use'. Because of this we needed to explain simple pricing concepts and so we created a video and a written script for the participating consumers. While both mediums were helpful for consumers, the video was more interesting and more useful, showing the potential for this technology (results later in this report) to reach and engage. Indeed, this research has shown that when presented with a range of communications options – some higher-tech than others – consumers prefer the higher-tech options to the more traditional approach. This highlights an opportunity for the energy industry to use technology to engage with consumers.

## **Vulnerable consumers are not a separate market segment**

The electricity industry has traditionally segmented vulnerable customers as a distinct group with their own challenges, barriers and motivators. This has led to similar programs to engage and support them with electricity pricing solutions, but customers identified as hardship or vulnerable often lack resources and capabilities to benefit from market-led initiatives.

This research identified that these customers in fact exist across multiple segments and would therefore benefit from a range of pricing choices that would align with their lifestyle, income, health or accommodation specifics. Approaching these vulnerable consumers as one type of segment may therefore limit the opportunity for these consumers to benefit from pricing options. Analysing our research population through a number of indicators of vulnerability (age, income, and SEIFA index) demonstrated that vulnerable customers form part of each of the segments identified in the segmentation model discussed later in this paper.

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## Glossary of key terms

<b>Diffusion of innovation model</b>	A model first proposed by Rogers (1962) which segments consumers into five categories based on their willingness to adopt an innovation. These categories are: innovators, early adopters, early majority, late majority and laggards. Once the late majority begin to adopt the new technology, market share begins to increase at a rapid rate and eventually become saturated (Rogers, 1962).
<b>Digital</b>	We are increasingly entering an age where more and more of our lives are digital, and electricity is no exception. In this report, digital is used in a variety of ways, including to refer to the “digital age” which heralds increased interactivity and automation in a non-physical realm, or to “digital engagement” or “digital assistance”, referring to engagement or assistance that is conducted through non-physical channels, such as through mobile phone apps or online portals.
<b>Persona</b>	A user-centric approach to understanding consumers, where one consumer will stand for a particular group, and be given a rich narrative (e.g. Sally the busy young executive). Based on behavioural science rather than demographic data.
<b>Positioning</b>	Positioning is a core social marketing strategy for designing the offering in such a way that it reaches and touches the hearts and minds of the target markets (Lee & Kotler, 2016).
<b>Pricing signals</b>	Using price to send a signal to consumers about the current level of demand for electricity (e.g. high demand/ usage = high price).
<b>Qualitative method</b>	Qualitative methods utilise non-numerical data, and include such techniques as interviews or focus groups. This study utilised household interviews followed by thematic analysis to draw rich insights from the data.
<b>Quantitative method</b>	Quantitative methods utilise numerical data, and include such techniques as surveys or experiments. This study utilised a survey followed by cluster analyses (statistical analysis technique) and group difference tests.
<b>Segment</b>	A data-driven approach to understanding consumers, where one segment will stand for a particular group of consumers (e.g. 18 to 25-year-old female professionals living in inner-city postcodes).
<b>Segmentation</b>	The process of breaking the market into smaller groups. Members of each group are similar to each other, and different to those in other groups.
<b>Social marketing</b>	Social marketing takes commercial marketing strategies and tactics, and utilises them to create positive change (e.g. using the marketing mix strategies to ‘sell’ healthy eating to consumers; a way to encourage positive, voluntary change).
<b>Targeting</b>	The process of selecting a segment or segments that will be targeted with a specific set of marketing strategies.
<b>ToU pricing/Time-of-Use pricing</b>	A type of retail electricity pricing whereby consumers pay more during peak times, and less during off-peak times. We use ToU to reference all forms of retail peak and off-peak pricing or rebates, in the same way that consumers understand off-peak airfares, hotel rates etc.

## Introduction

Evidence suggests people are not very interested in or engaged in the electricity market, or informed about how the decisions they make every day that impacts their bills. This puts at risk any effort to introduce new or innovative electricity pricing plans for consumers. In the face of ever-increasing prices, half of all consumers have not switched their electricity retailer or pricing plan in the past five years despite better pricing deals being readily advertised (Energy Consumers Australia). Fewer than 1% of Victorian consumers opted-in to Time-of-Use (ToU) pricing following the introduction of flexible pricing some 4 years ago with the deployment of smart meters (Energy Networks Association, 2016).

This research project looks to examine the energy consumer side of this challenge and assist the entire energy industry and policymakers to improve consumer engagement activities. Increasing the consumer acceptance and adoption of new electricity pricing moves beyond the traditional roles of some industry members into the softer and less definitive science of consumer behaviour. The findings from this research project will assist the energy industry, policymakers and stakeholders to understand the changing needs of today's energy consumer. The findings will also support the implementation of new electricity pricing that offer increased choice, benefits and flexibility for consumers.

*“Value comes from not only influencing and creating change, but also sustaining any change consumers make, so the end-to-end electricity value chain benefits.”*

Community organisations and stakeholders identified that consumers find it difficult to access and understand information about electricity pricing choices, making it hard for them to make informed and appropriate decisions. Given the complex and dynamic nature of the energy market, and evidence of a lack of consumer understanding about electricity pricing choices, it was recognised that education for consumers would be required. However, the most effective way to undertake this education was unclear. There was also limited knowledge around the needs and characteristics of different consumer groups, including their learning needs and the most effective engagement approaches.

The project team was tasked with building an evidence base around the needs and unique characteristics of different consumer segments, as well as understanding their desired learning needs and the behavioural changes required to overcome perceived barriers. The team set out to look at the consumer segment/s most likely to benefit from a digital engagement approach – one which offers the dual benefits of cost reduction when delivered at scale and increased engagement with consumers. This digital approach will help consumers to take advantage of pricing signals in a way that works for them. Value comes from not only influencing and creating change, but also sustaining any change consumers make, so the end-to-end electricity value chain benefits. Of importance to the value chain is consumer perception of the touch points that add value. As such, the project team quickly discovered that consumers do not differentiate between network and

retailer, and because of this the research did not differentiate, maintaining a consumer-centric viewpoint. These findings will offer evidence and insights for policy development and consumer education programs for the National Energy Market (NEM).

The following research questions evolved as part of the research process and have been explored and addressed throughout the project, with key findings selected and presented in this report:

- **RQ1** How do households use electricity and make decisions?
- **RQ2** How do households respond to retail electricity pricing, as explained by peak and off-peak pricing (ToU pricing)?
- **RQ3** How do households respond to ToU pricing?
- **RQ4** What are the key motivators and barriers for adoption of technology in ToU pricing?
- **RQ5** What are household preferences for different types of digital engagement approaches to ToU pricing?
- **RQ6** What are the motivators for face-to-face vs digitally enabled assistance in managing ToU pricing? (what is the consumer's preference for getting assistance to understand electricity pricing and understand how their behaviours impact their energy bills when using the new pricing)
- **RQ7** Which households prefer a digital approach to ToU pricing? (what is the consumer's preference for using technology to best manage price signals)

This report presents the key findings arising from qualitative and quantitative research conducted across Australia, and poses implications of this research for the energy market.

## The challenge of researching electricity pricing

Some key points about new electricity pricing:

- It predominantly relates to the cost of when you use your electricity, as well as how much of it you use at a point in time compared to other consumers.
- It is a foreign concept to many consumers in the electricity market who are used to flat rate electricity prices.
- There are currently many examples of pricing in consumers' lives that vary depending on usage and time of use.

In this study, Time of Use (ToU) pricing was used as the example because it is a general concept and easy to explain. This in turn enables participants to:

- understand the ways that pricing of electricity could change during the day (or season)
- think about what impacts this new pricing choice could have on their household
- explore how they might benefit from this new pricing choice.

The researchers believe that the findings delivered in this report would remain true for all forms of retail electricity pricing plans that charge on a peak and off-peak basis. These forms include critical peak pricing, seasonal pricing or any other pricing or rebates that requires consideration of when you use electricity, and how much of it you use, at a particular point in time compared to other consumers.

## Method

This project adopted a mixed methods approach to the research. This involved collecting, analysing, and interpreting quantitative and qualitative data in a single study to investigate the same underlying phenomenon. The approach provided a better understanding of the research problems than could be gained utilising either approach alone and ensures robustness of the results.

This method combined 45 in-depth household interviews with the results from a large-scale national survey (1345 respondents and 4000+ household members in total) of energy consumers in the National Electricity Market (NEM) and in Western Australia.

These methods ensured that data obtained provided richness from the qualitative insights, and a greater ability to generalise insights from the quantitative research.

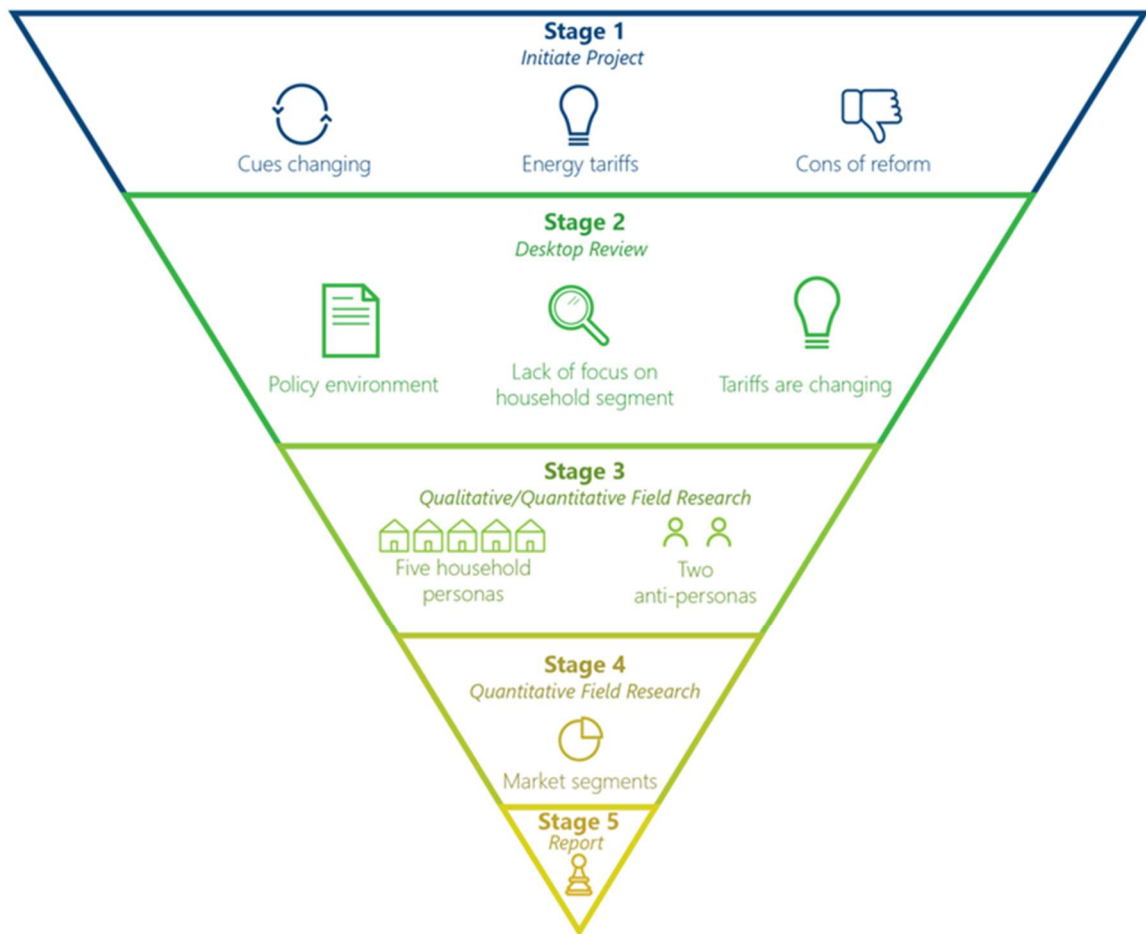
## Stages of the research

The research project contained several stages of research and analysis:

- The 1<sup>st</sup> stage of the research involved research definition and understanding.
- The 2<sup>nd</sup> stage incorporated a systematic literature review that researched and summarised currently known global information relevant to the project.
- The 3<sup>rd</sup> stage involved two phases of field research:
  - Phase 1: household interviews (qualitative) which discovered five personas and two anti-personas that existed within the general household population; and
  - Phase 2: online surveys (quantitative).
- The 4<sup>th</sup> and final stage of the research analysed the data and created a segmentation model that drew from the findings of previous stages.

Figure 2 (next page) visually represents the project stages, showing how the research process has consistently become narrower from initiation through to segmentation.

Figure 2: Connecting the Research Stages



### Stage 1 – Project Initiation:

- project management plan produced
- consortium of interested parties/funders was assembled
- confirmed the research team’s understanding of changing cues in the electricity industry
- ensured understanding of the changes to retail electricity pricing and debates about the benefits of changes to electricity pricing
- defined the scope and approach for the project.

### Stage 2 – Desktop Review:

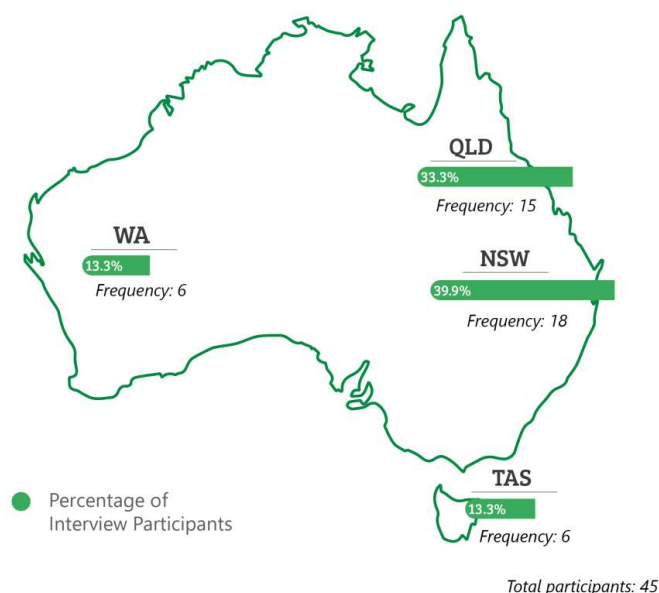
- conducted a systematic literature review, researching and summarising currently available information
- examined segmentation, the electricity market, technology and retail electricity pricing and network tariff reform
- analysed currently known information and distilled into useful insights
- began to narrow focus for field research phase (Stage 3)
- offered a global view of other sectors.



### Stage 3 – Phase 1: Qualitative Household Interviews:

- selected household interviews based on the Stage 2 finding that segmentation methods for electricity use are rarely conducted at the household level, despite electricity use being a group behaviour
- retail electricity pricing was operationalised as ToU for the purposes of the research and in the survey ToU was explained in the context of other dynamic pricing model’s consumers were already familiar with (i.e., peak and off-peak holiday and airline pricing, movie tickets, cheap pizza Tuesdays, etc.)
- the issues were analysed using thematic and visual analysis, and an inductive-deductive approach where theory and data are combined in a robust and iterative discovery process
- distilled consumers’ views regarding:
  - the electricity industry is seen as a single entity
  - terminology as a barrier
  - trust as decisive
  - electricity interest as extremely low in household routines and rituals.
- sample: 45 household interviews (see Figure 3), 118 people, females = 60 and males = 58, including single-parents, single-person households, farming or hobby farming households, blended families, couples with children, working couples, retired couples and share-houses
- the group nature of this behaviour increases its complexity and necessitated interviews being conducted at the group level
- followed a consumer-centric approach
- developed five *personas* and two *anti-personas*.

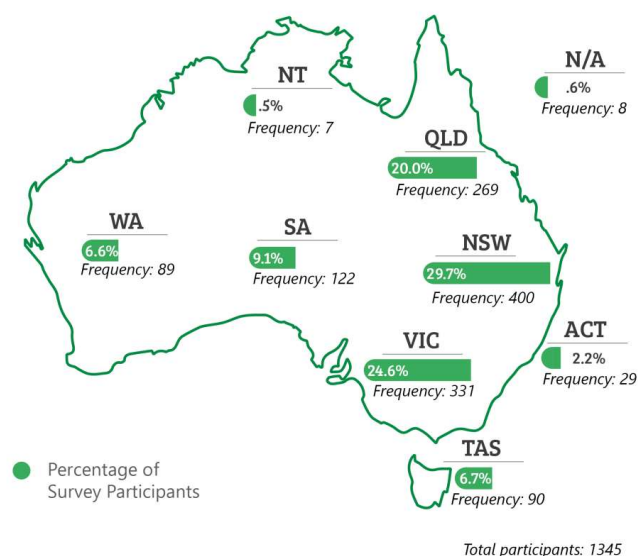
Figure 3: Sample for Qualitative Field Research



### Stage 3 – Phase 2: Quantitative Online Survey:

- the online approach ascertained the attitudes and behaviours of a large group of people
  - exposed these people to the personas and intervention methods developed during the qualitative phase
  - allowed the research team to further test the findings of the interview phase
  - analysed using a variety of statistical techniques including: frequencies, cross-tab, chi-square test, means and standard deviations, t-tests, ANOVAs and regressions
- sample: 1345 key informant survey responses (4000+ household members, see Figure 4), females = 64% and males = 36%, including single-parents, single-person households, couples with children, working couples, pre-retirement singles and couples, and share-houses.

Figure 4: Sample for Quantitative Field Research



### Important notes about quantitative design and data collection

The quantitative design seeded the argument that the introduction of new electricity pricing requires a unique and different perspective for the true benefits of this pricing reform to be realised.

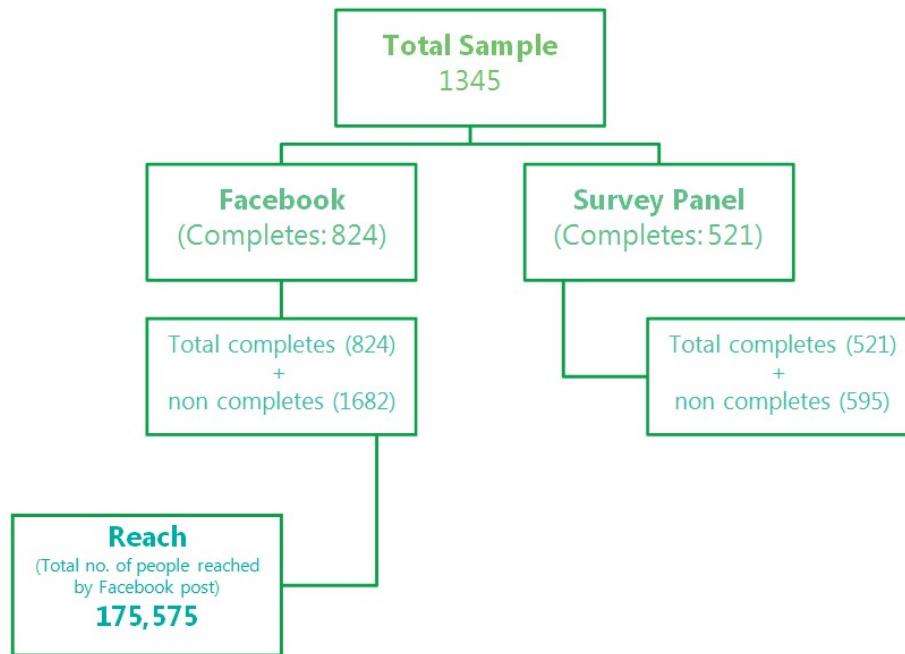
The quantitative survey covered a wide range of themes that were highlighted as important during Stages 2 and 3 (qualitative) of this research. Specifically, this included:

- the ways households make purchase decisions/ their decision-making “style”
- how households manage their electricity bill
- how households select an electricity pricing plan
- households’ knowledge about the process for changing electricity plans
- the type and style of assistance consumers preferred when considering and adopting new pricing plans
- the ways households might use technology to respond to pricing signals.
- the challenges with self-identification of a household persona.

These themes provide the starting point for networks and retailers to begin reflecting against the perspectives they have on their own consumers. Embarking on this journey allows the market participants and policy makers to develop specific insights of their own consumers (via touch points) in parallel with this research report.

Survey respondents were sought via two methods: Facebook advertisements and panel company recruitment. Both strategies were successful, as indicated in Figure 5.

Figure 5: Quantitative Sample



The survey design developed for this research on collecting data to address the research questions and objectives. A total of 1345 key informants responded to the survey (reflecting a total of 4000+ household members). The geographic coverage of the survey included all states in Australia, with the characteristics of the sample being broadly representative of the Australian population. The income levels were similar to the mean for the Australian population. Women were more represented as the key informants in the surveys; this is not unusual given that women are key decision-makers in this space and generally women are more likely to answer surveys than men (Curtin, Presser, & Singer, 2000). Home ownership in the sample was lower than the Australian population, while solar system-owners were more represented in this research than in the Australian population. The sample aligned with Australian population figures (Table 3) when it came to age, number of people in the household and household type.

Table 3: Comparison of Quantitative Sample to Australian Population

	Quantitative Sample	Population Data
Household income median	\$91,000-\$110,999	\$74,984 <sup>1</sup>
Number of people in HH	2.97	2.6
Age (median years)	30-39	37.4 <sup>2</sup>
Gender	M = 484 (36%) F = 854 (63.5%) Other = 7 (0.5%)	M = 11.83 mil (49.71%) F = 11.95 mil (50.21%) <sup>1</sup>
Household Type		
Family	54.6%	64%
Couple	20.7%	24%
Share-house	10%	3%
Single	12.3%	9% <sup>2</sup>
Other	2.5%	NA
Own/Rent	36%/46.7%	67%/33% <sup>3</sup>
# Beds/Bathroom	N/A	N/A
# Living spaces	N/A	N/A
Solar systems	29.5%	20% <sup>3</sup>
Air-Con/Heaters	N/A	75%/N/A

<sup>1</sup>Australian Bureau of Statistics, 2016

<sup>2</sup>Australian Bureau of Statistics, 2015

<sup>3</sup>Australian Bureau of Statistics, 2014

HH = household

## Survey design

Based on the findings of the qualitative interviews, it was identified that consumers lacked knowledge and understanding of ToU pricing for electricity. A short video was developed to assist the consumer in answering questions about new pricing formats. Details of consumer reaction to that video are included in Appendix A.

The survey used a range of questions to test key consumer characteristics. In particular, the survey focused on those criteria that were expected to reveal new segment structures around the household dynamic:

- the bureaucratic structure of the household
- the way the household set goals
- the methods deployed for making key household decisions
- the ways that information was gathered during problem solving.

Importantly, the survey also considered the role of technology as the engagement tool (the channel for influencing choice and behaviour change) and as a management aid for responding to price signals.

The researchers recognised that technology on its own provides no value. The challenge was to discover how technology can overcome poor information utility for the residential electricity consumer, as well as the role it plays in influencing, educating and maintaining change. To do this a baseline was created for residential electricity consumer preference:

- how technology supported household decision making now
- how technology could assist consumers to respond to pricing signals
- flags for how technology assistance could change over time.

Survey questions however were not an effective mechanism for establishing technology preferences and how that technology might assist households. Instead, scenarios were deployed as the most appropriate method to establish consumer preferences around these issues.

In the first scenario, participants were asked how they might use technology to help them respond to price signals. They were asked to choose one from each group of three:

- web 1.0 or reactive (receive information/recommendations digitally, react to information physically),
- web 2.0 or interactive (receive information/recommendations digitally, react to information digitally)
- web 3.0 or pro-active (using artificial intelligence to analyse information and automatically respond).

The second scenario sought to understand consumer preferences for learning and understanding the impacts of new behaviours. Options available included:

- high-touch (a personal approach)
- high-tech (a track and monitor style of digital interface or app)
- gamified or augmented reality to make the process more engaging.

Figure 6 depicts the range of consumer preference for technology that could be used to respond to pricing signals. Options included; reactive technologies, interactive technologies and pro-active technologies.




Figure 7 depicts the range of consumer preferences for how information could be accessed to inform and educate (how behaviours are driving energy costs). Options included: traditional face-to-face engagement, track and monitor options, and gamification/augmented reality options (sophisticated digital solutions that include instant feedback and gratification).

Figure 6: Reactive, Interactive and Proactive Technology Options to help you manage and control your usage

Option One: Reactive-tech	Option Two: Interactive-tech	Option Three: Pro-active-tech
<p>How would you like to take action to reduce your household's electricity usage (and hence, reduce your bill)? Try:</p> <ul style="list-style-type: none"> <li>Using your appliances during off-peak times, like using the washing machine and dryer after 8pm.</li> <li>Opening windows and doors to create natural cooling in summer instead of air-con.</li> <li>Only having your showers after 8pm, so you save on water heating.</li> </ul> <p>These tips and many more will help you to save energy at peak times.</p>	<p>How would you like an assistant to help you make electricity usage decisions (and hence, reduce your bill)? Now you can with our digital assistant app:</p> <ul style="list-style-type: none"> <li>You can ask the assistant how you are doing with your electricity usage.</li> <li>Make decisions in the app about how to reduce electricity – our digital assistant can suggest the best times of day to use your appliances.</li> <li>Use the app to switch appliances on and off.</li> </ul> <p>This assistance and much more will help you save energy at peak times.</p>	<p>How would you like a household manager to manage your electricity decisions for you (and hence, reduce your bill)? Now you can with our digital manager app:</p> <ul style="list-style-type: none"> <li>Without you having to ask, the manager will switch your plan with your current retailer if there is a better plan for your household.</li> <li>The manager will keep appliances switched off until the best time to use them (unless over-riden).</li> <li>You can check the app to see what the manager has been up to, but only if you want to.</li> </ul> <p>This management and much more will help you save energy at peak times.</p>

Source: Created by the researchers using iPhonefaketext.com software.

Figure 7: Face-to-face, Track and Monitor, and Gamification App Options to help you understand your usage

<p><b>Option One: Help with Making Changes to your Household</b></p> <p>To help you with managing your bill, you can book an appointment with our electricity advisor who can give you advice on things like:</p> <ul style="list-style-type: none"> <li>Renewable energy resources</li> <li>Energy efficient appliances</li> <li>Double glazing</li> <li>Draught proofing</li> <li>And much more!</li> </ul>  <p>Tell me more!</p>	<p><b>Option Two: Monitor and Track Energy in your Household</b></p> <p>To help you with managing your bill, you can book to have a smart meter installed in your home with an accompanying app. This will measure things like:</p> <ul style="list-style-type: none"> <li>Your electricity usage at different times of the day and with different appliances</li> <li>The status of electricity in your home</li> <li>Blackout/surge monitoring</li> <li>And much more!</li> </ul>  <p>Tell me more!</p>	<p><b>Option Three: Have some fun with the changes</b></p> <p>To help you with managing your bill, our app will turn learning about electricity into a fun experience for all with things like:</p> <ul style="list-style-type: none"> <li>Hold up your phone to your appliances and view their electricity usage.</li> <li>Make electricity usage changes in real time to earn reward points.</li> <li>Cash in your reward points for something fun, or get a discount on your electricity bill just for playing</li> </ul>  <p>Tell me more!</p>
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Source: Created by the researchers using public domain images (tbennett017, Portland general, and sundrv, via Flickr.com).

Included in Appendix B are further details of consumer reactions to using technology to assist with the understanding and implementation of ToU pricing plans.

## **Stage 4 – Segmentation Model:**

- conducted cluster analysis of data
- developed a segmentation model that drew from the findings of Stages 2 and 3 to present a holistic household segmentation model
- used an approach unique to the electricity industry.

## **Stage 5 – Research Report:**

- contextualised the project, presented implications and actionable insights to guide current and future strategies and research in this area.

## **What is new in this research?**

### **Household level segmentation**

Previous literature on segmentation in energy and retail electricity pricing has focused almost exclusively on individuals. This contrasts with the nature of electricity which is consumed and paid for at the household level.

The literature review conducted in Stage 2 revealed 63 segmentation articles with none specific to electricity pricing and network tariff reform, identifying a significant gap in the evidence base. The dominant form of segmentation in the studies was segmentation by individual-level (51 articles) rather than household (six articles), with only six that contained segmentation at both individual and household levels.

Overall, the literature review revealed that not only is there a lack of focus on the household for the group-level behaviour of energy consumption, but also a lack of segmentation studies in the area of electricity pricing as a whole. There has also tended to be a focus on attitudinal rather than behavioural outcomes.

### **Segmenting vulnerable consumers**

Previous studies have tended to focus on vulnerable groups as being separate from the general population, and have focused on low-income consumers (e.g. the LIEEP projects), older consumers (e.g. the Green Heart Wisdom projects) and Aboriginal consumers (e.g. the Koorie Energy Efficiency Project and Manymak Energy Efficiency Project). These projects illustrate the value of providing tailored offerings to particular groups.

While focusing on vulnerable consumers is of utmost importance, this research has created a segmentation model that encompasses the population and shows that vulnerable consumers are not separate to the population. Rather, they are included within existing segments, indicating that a maturing approach to segmentation is needed in order to reach these consumers.

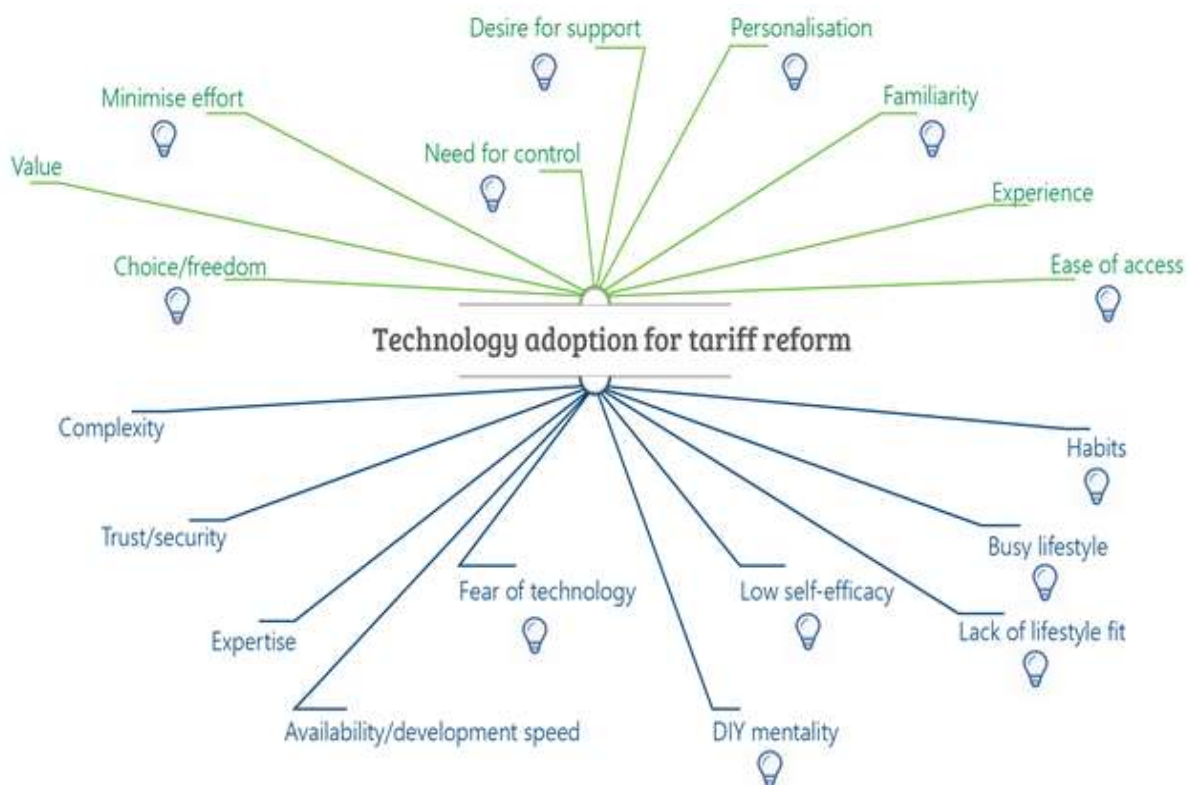
## Barriers and Motivators for technology

During this engagement with consumers on technology, we discovered barriers and motivators that provide rich insights into the household dynamics. As can be seen in Figure 8 the barriers and motivators for adoption of technology for consumer pricing options can work for or against the household.

Technology is about the value offered, the utility or the perceived benefit in making change. It cannot seem harder for the consumer as this decision making is interwoven with other competing technologies and activities that make up the function of a household.

Householders are individuals but part of a team and we found the weakest link defers to the strongest link.

Figure 8: Technology adoption for tariff reform

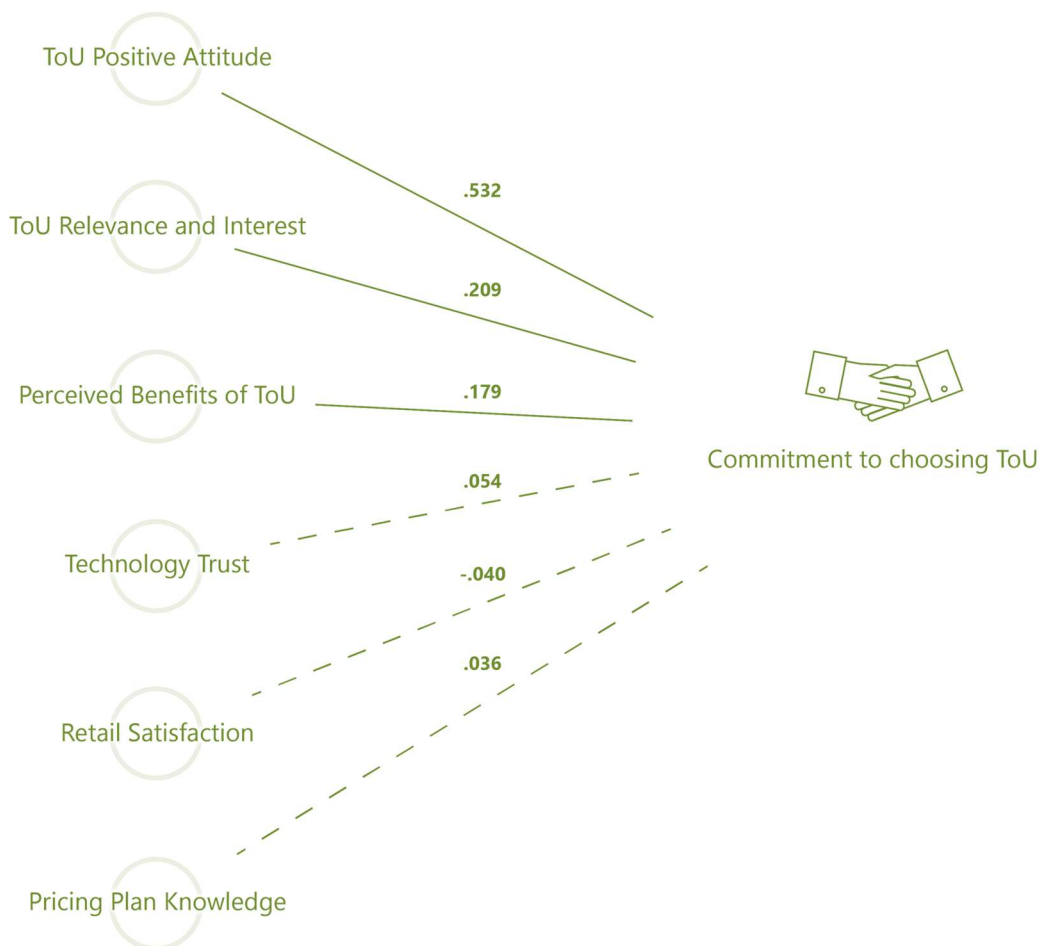




In addition to these barriers and motivators we uncovered consumer psychology drivers that could be used as predictors for consumers selecting electricity pricing options. Because the research was approached from a consumer perspective at the household level, questions asked provided new insights for the industry. Technology can assist consumers' understanding and ability to respond to their chosen pricing solution. It can do this by providing timely information on when different charge rates apply and real-time information about their consumption (Deloitte Access Economics 2015), rather than at the end of the month or quarter.

Figure 9 shows that traditional industry insights for consumer drivers such as pricing plan knowledge and retail satisfaction are less important when compared to the consumer attitude to the pricing option and its relevance for their household. The closer the number is to one (1) in this illustration, the greater the correlation.

Figure 9: Commitment to choosing ToU pricing



## Creating personas to complement the segments

Stage 2 identified a need for the current research to expand knowledge in the area of household segmentation in the electricity pricing arena. The researchers' choice to utilise both personas and segments was important in order to lay a stable and informative groundwork in this under-researched area.

Of those reports that did focus on the population as a whole, there has been an emerging trend towards segmenting impacts at the household level (Energy Networks Australia & CSIRO, 2016) and towards the idea that different interventions worked for different people (Stenner et al., 2015). However, none of these previous studies have pursued an empirical, household approach, examining attitudes and preferences using both personas and segments. A summary of previous key findings and their comparison with this project's findings is provided in Table 4.

Table 4: Comparison of Results with Prior Evidence

Source	Evidence-base	Key points in prior evidence	Comparison with this project (did we confirm or contrast)
<b>CSIRO report on <i>Australian Consumers' Likely Response to Cost-Reflective Electricity Pricing</i> (Stenner et al., 2015)</b>	Survey of 1181 participants	<ul style="list-style-type: none"> <li>Households are likely to choose a familiar option (i.e., flat-rate over cost-reflective pricing).</li> <li>Suggested that an assistant or manager-style device would aid consumers in adopting and managing new pricing plans.</li> </ul>	<ul style="list-style-type: none"> <li>This project also found a bias towards familiarity, but examined the motivators/barriers and identified segments willing to adopt new pricing plans.</li> <li>This project examined which options each segment would choose to assist them to understand and manage new pricing plans and found support for the assistant option (the interactive technology option).</li> </ul>
<b>Energex report on <i>Real Time Tariff Study</i> (Energex Ltd., 2015)</b>	No data – a strategy report	<ul style="list-style-type: none"> <li>Noted that an approach is needed that covers the whole market, rather than relying on adoption from innovators and early adopters.</li> </ul>	<ul style="list-style-type: none"> <li>This project's findings support the ability to segment the whole market, and recommend that approaches should be tailored for each segment to take advantage of segments who fall within the early adopter window, as well as those who tend to adopt later.</li> </ul>
<b>Energy Networks Australia and CSIRO report on <i>Electricity Network Transformation Roadmap: Key Concepts Report</i> (Energy Networks Australia &amp; CSIRO, 2016)</b>	No data – a strategy report	<ul style="list-style-type: none"> <li>Discusses segments by household type (e.g. couple, medium family, large family) and projected bill amount.</li> <li>Discusses the need to focus on vulnerable consumers as well.</li> <li>Proposes a market segmentation curve similar to the diffusion of innovation model.</li> </ul>	<ul style="list-style-type: none"> <li>Finds that household attitudes and behaviours are just as important for segmentation as household type.</li> <li>Segments and profiles vulnerable consumers present in the data.</li> <li>Profiles segments, allowing them to be placed on an adapted diffusion of innovation model (Stage 5).</li> </ul>

Source	Evidence-base	Key points in prior evidence	Comparison with this project (did we confirm or contrast)
<b>Low Income Energy Efficiency Program (LIEEP) and Sustainable Business Australia – <i>Our Green Home: final report</i> (Sustainable Business Australia, 2016)</b>	600 low-income households took part in either a ‘Gadget’ group or a control group	<ul style="list-style-type: none"> <li>Found that monitoring energy lowers consumption.</li> <li>Found that there are a number of different barriers to using technology, engaging with energy efficiency, and commitment to change.</li> </ul>	<ul style="list-style-type: none"> <li>This project examined consumer preferences for different ways to monitor their consumption.</li> <li>This project confirmed a number of these barriers and segmented those who would be open to a digital engagement strategy, highlighting the importance of offering different options for different segments.</li> </ul>
<b>Department of Industry, Innovation and Science, and Environment Victoria – <i>The Future Powered Families Report</i> (Yang, Martinelli, &amp; Erwin, 2016)</b>	Utilised surveys, home observation, case studies and focus groups of Australian families.	<ul style="list-style-type: none"> <li>Found that there are a range of barriers, some unique to the family segment, that prevent energy efficiency behaviours, and suggested that specific barriers need to be addressed for this group.</li> <li>A range of options/approaches should be offered to ensure energy-efficiency behavioural changes.</li> </ul>	<ul style="list-style-type: none"> <li>Our study also found a number of barriers that need to be addressed – the barriers should be tackled in line with the profile of the segment experiencing the barrier (i.e. an Ant persona and a Cat persona should be approached differently – see The Segmentation Model chapter).</li> <li>Our study also found that different options for energy efficiency have differing degrees of preference for each segment.</li> </ul>

## Limitations and how these were addressed

As with all research, the different phases of this project had some limitations. These were addressed through the research design as much as practicable.

- The quantitative study gathered responses from a single key informant, which can lead to bias in the results, as this person must answer with their impressions of their own household. However, this limitation is reduced using qualitative inputs that provide a more holistic view of the household during the interviews.
- The quantitative study used a non-random sample and this limits insights (it was also slightly female-dominant), but is balanced by the more purposive and diverse sample achieved during the qualitative phase of the research. At the same time, the quantitative work adds robustness and confirmation to the results initially provided via the qualitative interviews.

It should be noted that the segments discovered during the cluster analysis were the result of the stated variables used. The use of more or different variables would result in different numbers and types of segments. The choices of variables to define households were therefore selected and validated through a robust inductive–deductive approach that has permeated all stages of this research.

## Key findings of field research

At different stages of the project, the researchers identified a number of findings that should be considered when designing any engagement for consumers related to introducing new pricing plans.

### The language of energy is not consumer-centric

**From stage 2 (literature review) and stage 3 (research):**

Pricing signals, like most issues in the energy industry, were seen as complex in nature. The observation was that the industry, policy makers and stakeholders had fallen into the trap of trying to explain and justify the concept to consumers in terms of 'how it works' rather than 'what the benefits are'.

Consumers had trouble with the language when it was not clear and concise and non-technical in nature. Consumers emphasised the need to use plain language, with no jargon, to focus on key benefits and the consumer actions required to activate the benefits rather than explaining the technical aspects of why pricing signals were needed. The researchers identified a range of examples of how other industries communicated the same issue in consumer-friendly terms (e.g. cheap pizza Tuesdays, surge pricing with Uber).

Consumers also indicated a move away from traditional static media and text-heavy websites, instead enjoying the availability of on-demand, interactive and visual information. Mail-outs and flyers were widely ignored and unread and websites requiring click throughs to source information did not resonate. The implication was that, not only is language important but the correct channel and the right format (e.g. simple visuals) are critical. These observations extended to include how and where bills were delivered. Overall, care and critical analysis in all engagement activities was seen as a key to building a social licence for ongoing engagement.

### Lack of national approach confuses and deters

**From stage 2 (literature review) and stage 3 (research):**

The internet is not always geographically specific, and yet the interviews indicated that this is a prime source of information when households face decisions such as pricing plans. Retailers have made clear efforts to localise information searches for consumers. However, when those searches extended outside of online retailer sites, the messaging from the rest of the industry and from other industry commentators (including media) across Australia was inconsistent. This included definitions, electricity pricing parameters and terminology.

Technology provides an opportunity to alleviate this confusion and invite consumers into a shared understanding. It has the potential to provide engagement and could communicate using a consistent lexicon (national standard on language and definitions). This could make a national conversation more transparent for consumers. From the point of view of establishing trust, this is an important consideration.

## There is a lack of trust and credibility in the energy market

**From stage 2 (literature review), stage 3 (research) and stage 4 (analysis):**

Previous reform across the electricity industry supply chain has often been carefully designed with consumers needs in mind, yet the execution has failed to convey or deliver those benefits and resulted in negative media coverage. The frequency of those reported failures coupled with the growth in news and information channels has resulted in continual reinforcement of negative industry sentiment. This has badly damaged consumer trust in the industry.

Established perceptions therefore become a prime barrier to the successful introduction of new pricing options. Consumers are likely to see electricity pricing changes as an extension or reincarnation of previous pricing problems or previously voiced issues regarding privacy, health or safety.

Additionally, inconsistencies in jargon and the expression of opinions rather than facts further isolate the truth. Their natural tendency of consumers to lean on populist media noise reinforces this lack of trust in the industry.

Consumers understand that there are often two sides of the energy debate but they need to understand those positions in a simple and non-politicised, non-commercial manner.

It is this constant fear of a hidden agenda that will persist if no clear source of truth exists. The collective industry will benefit from aligning their social responsibility with consumer expectations, a step towards building credible messaging.

## There is a need for a credible source of communication

**From stage 2 (literature review) and stage 3 (research):**

Consumers and consumer advocates alike are sometimes suspicious of motives surrounding any change to electricity pricing and policy. Part of this issue stems from a lack of effective, consistent, consumer-centric communication.

Reports of questionable sales practices are widespread amongst the population and they have decreased consumer trust in retailers. The result is that education and awareness campaigns conducted by retailers, our primary contact channel, may be tainted by similar suspicion.

This does not indicate that retailers do not have a role to play in these changes. Indeed, the quantitative research found that the entire industry has been 'tarred with the same brush' and so needs to build trust. But there is an opportunity for a trusted agent to speak on behalf of, or create messages for, the *entire market* with a cohesive and consistent message, and with a transparent agenda.

The researchers discovered messaging in the network and retailer space with altruistic consumer visions and goal statements. However, when probed a little deeper in search of real consumer-

centric support, solutions offered were simply about changing a 'pricing plan' or behaviour and offered very little perceived consumer benefit. Consumers expect and want more than this from the industry.

## Consumers have a general household-decision style

### From stage 3 (research):

While the research did reveal the expected difference between low and high involvement decision-making for the household, it also found that for some households there is a tendency to make decisions the same way regardless of what the decision is about. This means that consumers are likely to apply the same lens to decisions about new electricity pricing plans that they apply to pay TV or internet pricing decisions. The research was clear that if consumers care most about price then all similar decisions are viewed through that lens. A household that researches heavily before any decision on pay TV will take the same approach when choosing an electricity pricing plan.

In addition, many of these similar decisions do not take priority in the daily rituals and routines of households. The implication is that the electricity industry as a whole has less bandwidth (time allotted in their consumers' already busy lives) in which it can build trust, position the options and create sustained change.

## Households operate as a buying centre

### From stage 3 (research):

The different segments uncovered in this research illustrate just how similar households are to business buying centres. Just like in businesses, members of households can have individual roles to play, share common goals and even operate like 'departments'. Individual decisions and group decisions are also markedly different, partly because decision-making often occurs as a form of 'inter-departmental cooperation', with gatekeepers, decision-makers, users and purchasing centres working together to achieve their ends. Changing household behaviour therefore requires influencing and support by some departments during that change.

Associated with this finding is the dynamics of group development. This is where changes to the household such as moving residences, household numbers shift (child moves out, friend moves in), and financial shifts (spouse returns to work, university student gets a part-time job) result in changes in the buying centre behaviours. A household moving through decision-making stages of forming, storming, norming, performing and adjourning (Tuckman & Jensen 1977) provides the electricity industry with a further means to reflect if they understand the journey their consumers are on with pending electricity pricing changes.

## There is a disconnect between consumer decisions and outcome

### From stage 3 (research):

For consumers, making the decision to turn on the air-conditioning did not feel like an electricity decision. It was seen as a comfort or a convenience consideration. Rather than asking “Do I want to use this electricity?” consumers were actually asking “Does turning on the air-conditioning make me feel better?” Furthermore, as there was such a long time period between bills – generally three months – consumers saw little connection between their behaviour and its outcome. This was one of the reasons for consumer confusion over high bills.

This meant that both energy-positive and energy-negative behaviours were ‘hidden’ in the three-month average. Behavioural science indicates that attention must be paid to the ‘reinforcement schedule’ in order to drive positive behaviour change. In essence, the action and the outcome must be connected soon enough so that consumers can discern a connection. This means the gap between using electricity and receiving a bill should be short enough to provide effective reinforcement and lead to consumer clarity over their bill.

Technology can also address this problem by offering consumers real-time feedback, and hence a much more effective reinforcement schedule. This is one of the significant opportunities for consumer-centric change offered by electricity pricing changes. Instant gratification can be used to reinforce the positive results of behaviour change and thus the benefit of the chosen electricity pricing plans.

## Consumers see industry as beneficiaries of electricity pricing changes

### From stage 2 (literature review) and stage 3 (research):

When electricity pricing changes were explained to consumers it was usually seen as an industry-led initiative and not a consumer-led one. Therefore the consumer perceived electricity pricing changes as negative, and likely a cost to them. Because consumers were not the ones to identify the problem (supply and demand) they also did not see the need for the proposed solution (peak and off-peak pricing). As mentioned previously, consumers filled in the blanks with information they had picked up elsewhere and this information was often negative.

Communication from the industry needs to centre around the consumer and how electricity pricing changes are solving one of *their* problems, not the industry’s problems. After all, energy efficiency is asking the consumer to use their electricity in a way that may not be as convenient for them. Indeed “Function/Sacrifice” to “Feeling/Indulgence” model indicates that pleasure and indulgence derived from the home environment must be high in order to move away from feelings of restriction and sacrifice, and move towards a home that consumers *want* to live in (White, 2017). Incorrectly placed messaging around energy efficiency can be actually be perceived as energy rationing and negatively impacting on their lifestyle or comfort.

Increasing the awareness of benefits may be achieved through the positive associations that consumers themselves have identified: the potential for lower bills/increased value for money and the chance for increased control and greater visibility.

## Consumers desire on-demand, meaningful and real-time data

**From stage 2 (literature review) and stage 3 (research):**

The research highlighted consumers' desire to be able to access information on their terms and when they need it. This need for instant access to information, products and services is fuelled by a growing range of on-demand offers (e.g. Netflix, Uber and Deliveroo) and the rise of Lifelogging (the quantified-self movement). More than ever before, consumers are demonstrating an appetite for immediate, personally meaningful data.

The implications for energy efficiency and/or usage monitoring are clear. Face-to-face interactions (whether one-on-one or market) sacrifices this convenience of accessing the data at a time that suits. It is increasingly becoming the least preferred as a means of engagement as digital disruption throughout our lives shifts expectations to 'service me'. Consumers want to engage when they feel like it, no matter the time of the day or night.

Smartphones have become the ubiquitous and powerful 'gateway technology' for engagement. With respect to energy information, smartphones do not suffer from the perceived shortcomings of previous technology (in-home displays) that failed to resonate in the longer term.

The other opportunity associated with this finding is the issue of only one or two people engaging with the bill. Technology can help democratise behavioural decisions through wider sharing of information which can be used to align the household's electricity pricing choices with their actual behaviours.

## Consumers want technology to help them deal with electricity pricing changes

**From stage 3 (research):**

In the quantitative research:

- 57% of consumers preferred to use fully digital tools to control responses to price signals (interactive or proactive) and another 30% at least wanted to receive real time prompts to take action (even if they preferred to physically be in control of that action). Only 13% preferred to have no real-time, digital assistance to help them respond to price signals.
- Similar results were recorded when questioned about preferences for understanding how their actions impacted on their power bills (i.e. getting assistance to understand behaviours). 73% of consumers favoured the higher-tech options such as track and monitor information or gamified, augmented reality options.



These results suggest there is a clear opportunity to use a digital engagement approach to provide this support and to help consumers feel they have the information they need to respond to new pricing plans.

Important considerations here are ensuring that the set-up is effortless and that consumers understand that the technology (whether app or dashboard) is working to benefit *them*, not their retailer. The interface should be friendly, personalised and supportive, but should steer clear of appearing to impose controls on consumers. It should offer options for how consumers can engage with it and how much control they would like to surrender to the technology.

Whilst apps for smartphones and tablets provide the most pragmatic way to engage consumers for pending electricity pricing changes, the industry should continue to ask 'what's next or what's coming' in the consumer engagement technology space, including virtual assistants and artificial intelligence.

## Not all consumers want to surrender control to technology

### From stage 3 (research):

In the quantitative research, consumers were questioned about how they might use technology to assist them to respond to electricity price signals. The majority of consumers indicated a preference for interactive technology (36%), as they valued the opportunity to engage with the technology before a response occurred (e.g. turning off appliances). Only 21% of consumers preferred a proactive 'set and forget' style of technology that could help them manage responses to price signals.

Those who chose the proactive technology tended to see it as more of a 'silver bullet' and believed that once they made this choice they could proceed with their lives and not have to think about their electricity use again because someone (or something) was doing the thinking for them. This is a trend in digital disruption where consumers are comfortable to almost sub-contract low cognition decisions, or decisions perceived as trivial, to a technology so the consumer can re-allocate their thinking resources to what they see as more important issues or concerns.

Those who did not choose this proactive technology option tended to be those who wanted more control, who did not trust technology, or who saw this as a restriction on their autonomy. That said, trends show consumers starting to feel more comfortable about allowing technology to assist them in more direct ways. For example, consider the increasing instances of predictive recommendations that are occurring in our digital lives driven by analysis of previous behaviour.

As consumer trust in technology continues to mature, it is clear that this opportunity should be routinely revisited by the energy industry as it affects consumer expectations of the solutions provided.

## Consumer adoption of technology is governed by key themes

### From stage 3 (research):

The research identified a range of themes about how consumers can engage with technology for support, learning or fun:

- **Theme 1: Use** – Consumers want to use technology in a way that works for *them*. Technology must contribute significant value over existing options that consumers have access to for managing and seeking support with their electricity usage.
- **Theme 2: Ease of use** – Consumers should not have to devote a lot of effort to the implementation or use of any new technology.
- **Theme 3: On-demand** – Consumers are focused on immediate and useful information. With so many other industries offering on-demand options, energy has an opportunity to partake in this connected and engaged future.
- **Theme 4: Fun** – Consumers are often interested in having fun (or at least, making electricity discussions less dry via the use of technology). This is particularly strong as a method of engaging younger users or group households.
- **Theme 5: Points** – Some consumers suggested rewards and recognition programs would be valuable and welcomed.

## There are some critical factors that need to be considered when introducing new electricity pricing plans

### From stage 2 (literature review):

In considering past electricity pricing choices, a number of key success and failure points emerge that are important when creating and deploying future programs (see Table 5).

*Table 5: Summary of Key Success and Failure Factors of Past Initiatives*

Key success factors of previous electricity pricing initiatives	Key failure factors of previous electricity pricing initiatives
<ul style="list-style-type: none"> <li>• The use of automated technology to assist response (hot water switching, time switching)</li> </ul>	<ul style="list-style-type: none"> <li>• Poorly designed and complex pricing options</li> </ul>
<ul style="list-style-type: none"> <li>• Providing real-time communications through multiple channels and platforms</li> </ul>	<ul style="list-style-type: none"> <li>• Underfunded trials that finish too early</li> </ul>
<ul style="list-style-type: none"> <li>• Providing mechanisms that limit bill shock</li> </ul>	<ul style="list-style-type: none"> <li>• Poor consumer communications and targeting</li> </ul>
<ul style="list-style-type: none"> <li>• Incorporating easy-to-use feedback technology</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate focus on the consumer</li> </ul>
<ul style="list-style-type: none"> <li>• Carefully designed pricing options</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer fatigue issues</li> </ul>
	<ul style="list-style-type: none"> <li>• Negative media coverage</li> </ul>
	<ul style="list-style-type: none"> <li>• Incentives that don't match perceived effort</li> </ul>
	<ul style="list-style-type: none"> <li>• Perceived technology health risks</li> </ul>

## Vulnerable consumers are not a separate market segment

### From stage 4 (analysis):

Vulnerable customers continue to remain a key consideration for policy makers, regulators and industry participants when considering a transition to new pricing plans. These customers may not have the resources, capability, lifestyle, income, health or accommodation that allows them to be as flexible in their energy use as others.

Traditionally, the industry has considered this group as a separate, distinct group with their own challenges, barriers and motivators. This research identified that vulnerable customers are not all alike. Indeed, at-risk consumers exhibited the same wide range of preferences, attitudes and response to stimuli found in the wider population.

Analysing our research population through a number of indicators of vulnerability (age, income, and SEIFA index) demonstrated that vulnerable customers form part of each of the segments identified in the segmentation model discussed later in this paper.

The implications of this finding are that a single approach for vulnerable customers is unlikely resonate or engage widely. This issue is outlined in more detail later in this document.

## The Segmentation Model

New pricing options for Australian electricity consumers are on the horizon. The challenge is to engage with consumers in an effective manner so that new electricity pricing is adopted, and then to ensure that consumers that can be flexible and adjust their behaviour to unlock the benefits of the new electricity pricing in the longer term.<sup>2</sup>

This segmentation model identifies six distinct market segments which can be targeted for initial adoption of these pricing choices and associated technological support. These new market segments provide an important basis for the targeting and positioning of marketing strategies to encourage the adoption and usage of new pricing structures in Australian households. In particular, the use and implementation of this segmentation model will ensure optimal resource allocation while encouraging Australian households to adopt new pricing (Rundle-Thiele, et al. 2015).

The marketing process that uses segmentation involves selecting one or more of these segments to target and then creating a specific positioning strategy that uses their specific motivators and overcomes their perceived barriers. This approach drives choices of marketing mix strategies (see Figure 10). Once the segment has been treated, you then reset and repeat the process.

*Figure 10: Stages of Utilising the Segmentation Model*



Consumer segmentation is typically the product of cluster analysis performed on the quantitative data. This research project was somewhat unique insofar as the qualitative data was first used to create consumer personas and these personas were then used to help inform the segment creation. Together, the resultant consumer profiles create a robust set of hybrid segments offering a comprehensive understanding of the six consumer groups.

The research team was unable to find another Australian consumer study that had deployed such a methodology and this is considered ground-breaking for the residential electricity consumer industry.

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<sup>2</sup> Not all consumers are able to be flexible in their energy use, including households in which some members have medical needs that require a constant temperature.

## Household personas

Prior to the identification of the segments, the research team created consumer personas.

Personas are a composite sketch of a part of your market, illuminating goals or motivations that are common amongst that group:

- they are roles with specific character traits (goals, challenges, values, fears)
- they provide a touchstone for creating content, someone who you can try to meet the needs of
- they are created by a combination of data (quantitative) and educated guesses (qualitative insights)
- they resonate with consumers who can reflect against personas and ponder what-if scenarios
- they help marketers to understand them more intuitively and thus focus more easily on meeting their needs and delivering meaningful and relevant content and messaging.

The qualitative research revealed five household personas and household two anti-personas that should be considered when introducing new pricing plans for electricity. The personas were given animal names because:

- the animal imagery is more culture-neutral, age-neutral and gender-neutral
- certain animal behaviours and traits are intuitive and relatable
- they will ensure consumers are not unintentionally anchored to the wrong persona
- they are respectful and unlikely to cause offence to consumers (compared to names such as established elites, poorer-greys or status oriented).

These original personas include the Ant Colony, the Beehive, the Flock of Geese, the Wallabies and the Cat Family. The anti-personas also used animal imagery and included Camels (who like things to stay the way they are), and the Brumbies (who do not want to be told what to do).

Anti-personas represented households that are likely to resist the use of technology. Given that the scope of this research included researching how technology could be used to help consumers understand and manage these price signals, it was important that they be identified and omitted from the quantitative research phase as a means of improving the clustering.

The Camels were found to generally relate to older consumers who had finished work and while the team discovered that calendar age does not affect technology savviness, working age does. Consumers who were still working, whether aged 50 or 70, maintained higher levels of technology maturity compared to retirees of any age who had either maintained or degraded their comfort with technology.

Camel numbers were reduced by capping the age of survey respondents at 55 years old (not an ideal filter but expedient given limitations on researcher resources). The Brumbies persona contained people of all age groups and could not be actively excluded from the quantitative phase.

## Consumer segments

The personas (developed during the qualitative research) then informed the segments (the quantitative research), which were discovered via a statistical process called cluster analysis. Segments were defined by their elemental traits, being those traits that are fairly stable over time and not likely to vary when making household decisions across a range of products or services. These elemental traits included:

- the way goals were set in the household (were they based on consensus or subject to coercion, trade-off or self-interest)
- the organisational structure of the household (was it bureaucratic and strict or organic and ad hoc)
- the way households made a decision (were decisions made by “upper management” or did everyone have a say)
- The way that households gathered information for decisions (did they take a passive approach, gathering whatever was at hand or would they actively search and collect information).

Of these traits, the ways that household goals were set was found to be the key differentiating factor between segments.

Households’ surface-level traits (those that can vary by situation and changeable over time), were then used to profile the segments in more depth:

- Attitude and preferences for using technology to manage household challenges (do they want control over management decisions or are they happy to delegate simple decisions to the technology)
- Attitude and preferences to gathering information (from come and talk to me to give me a dashboard and I will work it out to give me engaging apps and tools to make it easier for my family and I to understand and engage).

The quantitative analysis identified six distinct market segments within the sample. Upon examination, these segments bore some resemblance to the persona groups that had been identified. Specifically, four of the segments were very similar to four of the original personas (see Figure 11).

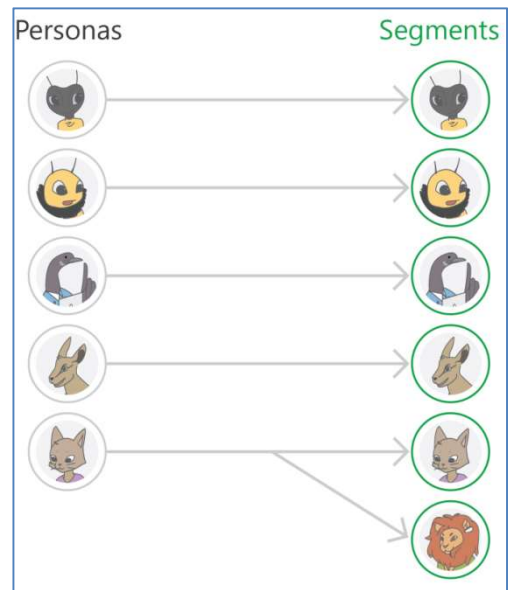
1. **Ant Colony** (a cohesive household operating like a ‘well-oiled machine’ where everyone has a job)
2. **Beehive** (a team of experts who all work together to achieve the best solution)
3. **Flock of Geese** (an adaptable household where members take turns leading the flock)
4. **The Wallabies** (a flexible household that is primarily focused on fun and lifestyle)

Figure 11: Personas vs Segments

The remaining two segments represented some of the Cat household traits, but diverged from each other in a few key areas. Hence, the person split into two segments:

5. **Domestic Cat Family** (a household that values independence and comfort and moves at their own pace)
6. **Lion Pride** (a household that wants to master its world).

A summary table of the quantitative characteristics of each segment is provided in Appendix C.



## Visual profiles of each segment







Figures 13 to 18 contain visual profiles of each of the segments identified, and provide their key characteristics and preferences for using technology to respond to price signals and to access digitally-enabled advice and assistance (please see Figure 12 for a legend to the infographics). This information on the characteristics and preferences of different segments should be used to tailor marketing campaigns. Details regarding barriers and value propositions are discussed in the section following this (see Table 7).

The profiles include:

- basic household demographics based on which category had the highest percentage of responses (e.g. the income given in the Ant Colony is the bracket reported by the highest percentage of Ant Colony households).
- the scores for each defining criteria relative to the other segments are offered in gauge form, along with the description of each segment and their goals.
- preferences for using technology to respond to price signals (relative to the other segments), with small ticks indicating that the segment prefers an option relatively less than other segments, and large ticks indicating the segment prefers an option relatively more than the other segments.
- preferences for accessing information and assistance to understand and manage price signals (relative to the other segments), with small ticks indicating that the segment prefers an option relatively less than other segments, and large ticks indicating the segment prefers an option relatively more than the other segments.

It should be noted that all of these segments prefer a high-tech approach over a high-touch approach. A suggested approach would be to overlay current CRM data and insights against the persona profile infographics to augment old segmentation models into this new model. This will be explained further in the report.

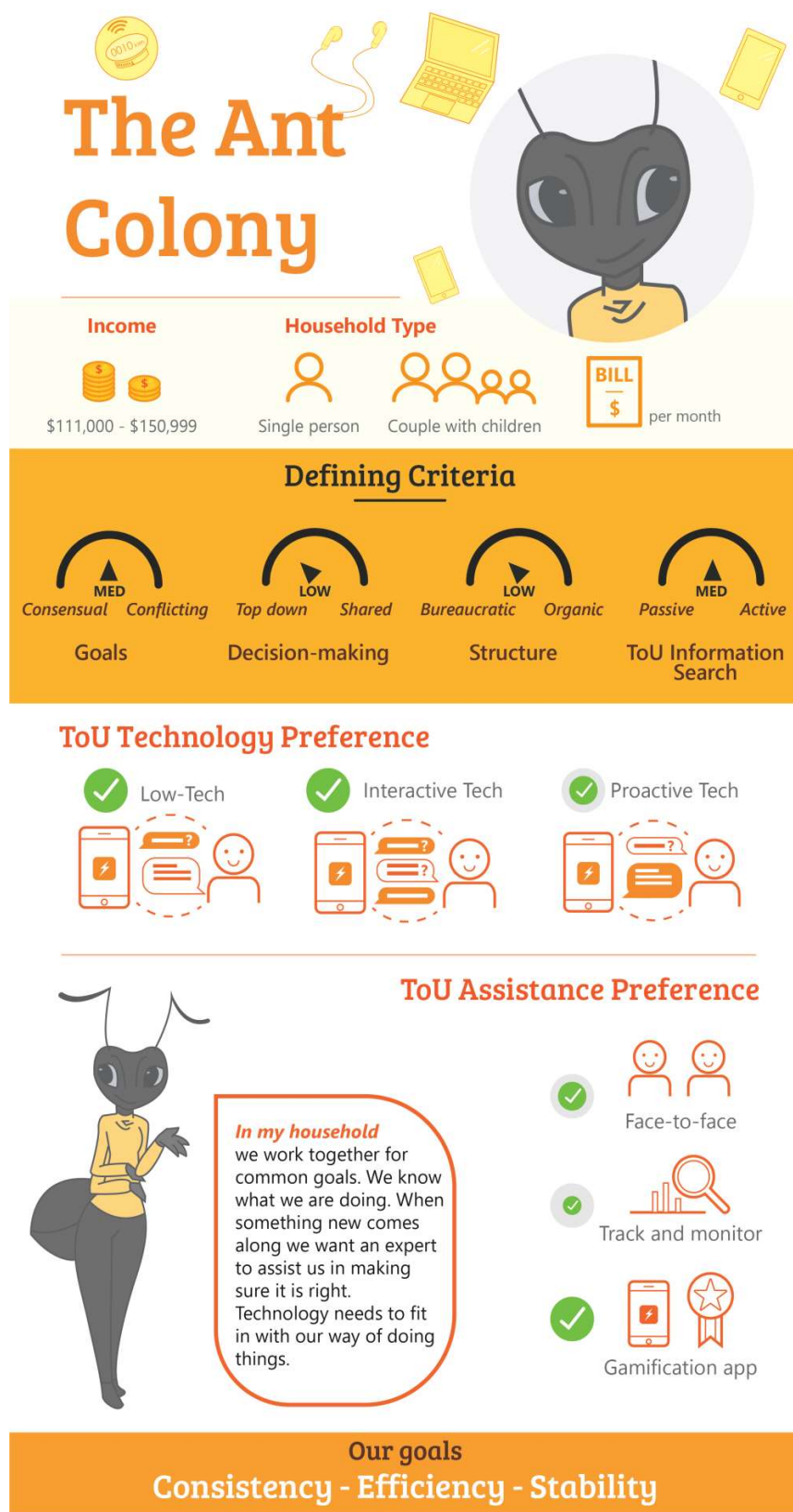
Figure 12: Legend for Infographics

Income Level	 \$71,000-\$90000	Prefer this option less than other segments	
Household type	 Couple with children	Prefer this option the same as other segments	
Bill size \$ Low, \$\$ Ave, \$\$\$ High	 per month	Prefer this option more than other segments	



## Segment 1 – Ant Colony

Figure 13: Visual Profile of the Ant Colony Segment



The Ant colony is comprised of two distinct household types: single people and couples with children. They have a higher income than the average for Australian households.

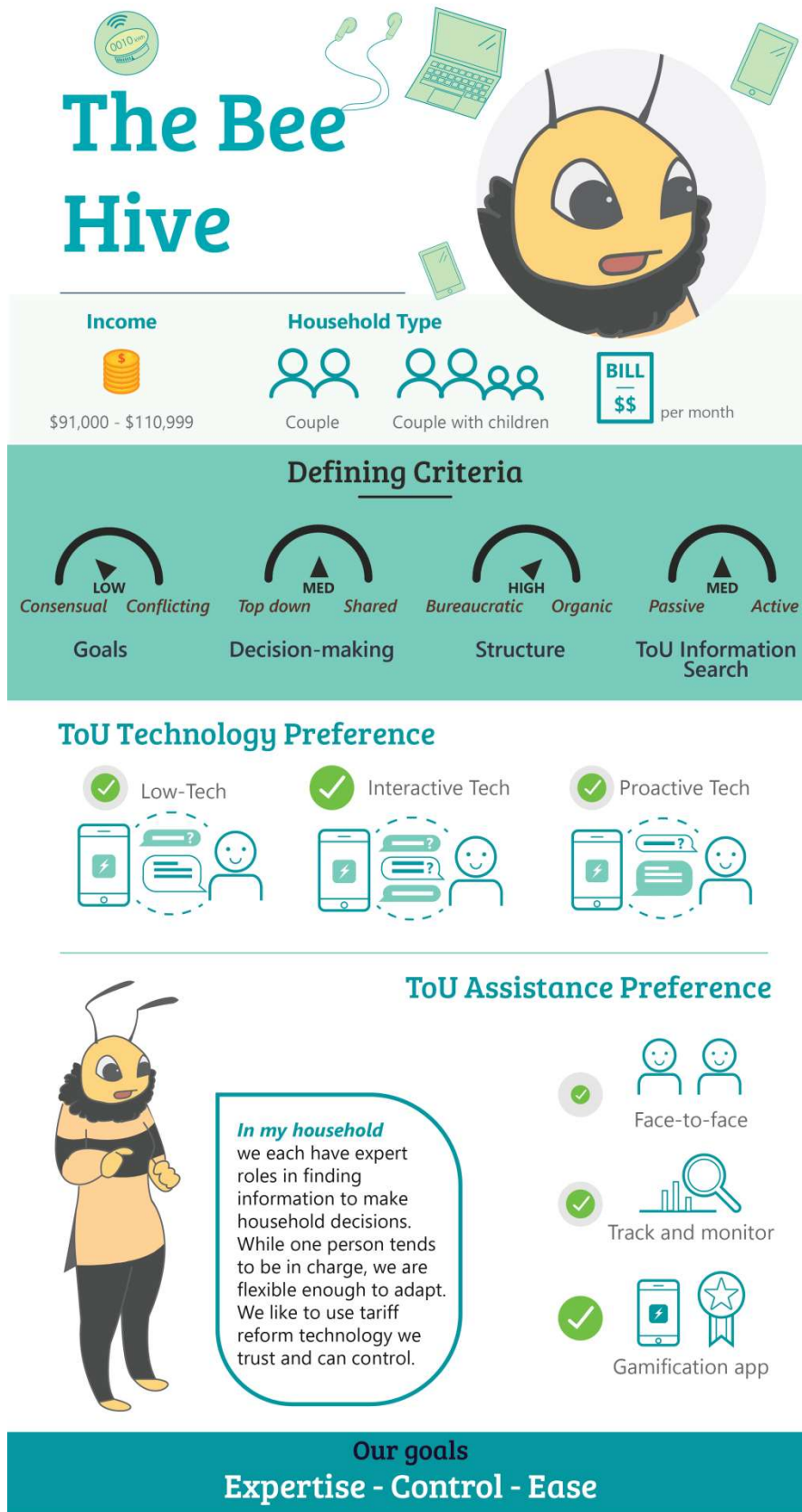
Ant Colony households tend to agree about their goals most of the time, and many of their decisions are made by a single person in control. They tend towards a more business-like and regimented structure, and only seek out information if necessary – the ant colony already knows that its way of doing things works, so are in no hurry to change unless there is an obvious benefit.

Compared to other segments, ant households tend to prefer low-tech and interactive technology solutions for responding to price signals, and are less interested in proactive technology. When seeking assistance to understand price signals and how their behaviour impacts their bills, they prefer a gamified (fun and engaging) approach just as much as other segments whilst they are less inclined to want to utilise face-to-face engagement or track/monitor technology.

All in all, the Ant Colony is capable and well-structured, but won't say no to a little assistance if it suits their household.

## Segment 2 – Beehive

Figure 14: Visual Profile of the Beehive Segment



The Beehive is comprised of two distinct household types: couples without children and couples with children. They have a moderate income which is in line with the average Australian household.

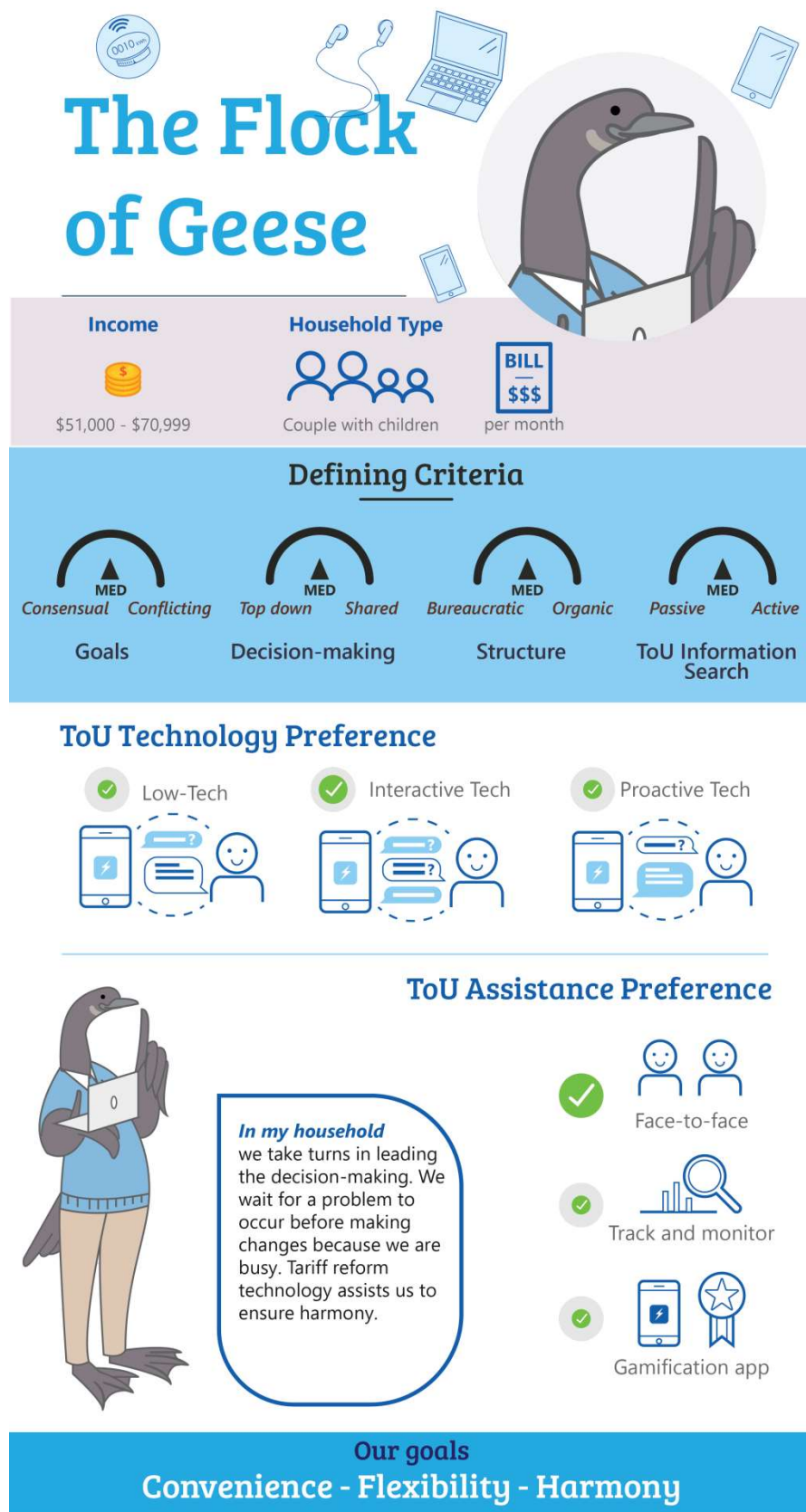
Beehive households tend to agree about their goals most of the time, and their decisions can be made either by the acknowledged expert, or made together, depending on the decision. They tend towards a more organic and flexible structure and only seek out information if necessary. The beehive trusts in its own network of experts, so will change when there is a benefit that is clear to them.

Compared to other segments, Beehive households tend to like interactive approaches to technology that would help them respond to price signals, but are still moderately interested in both proactive and low-tech options. When seeking assistance to understand price signals and how their behaviour impacts their bills, they prefer a gamified (fun and engaging) approach more than other segments and favour face-to-face engagement or track/monitor technology less.

All in all, the Beehive is self-reliant and in control, but won't say no to a little assistance if it is fun and interactive.

## Segment 3 – Flock of Geese

Figure 15: Visual Profile of the Flock of Geese Segment



The Flock of Geese is comprised primarily of couples with children. They have a lower income which is approaching average for Australian households.

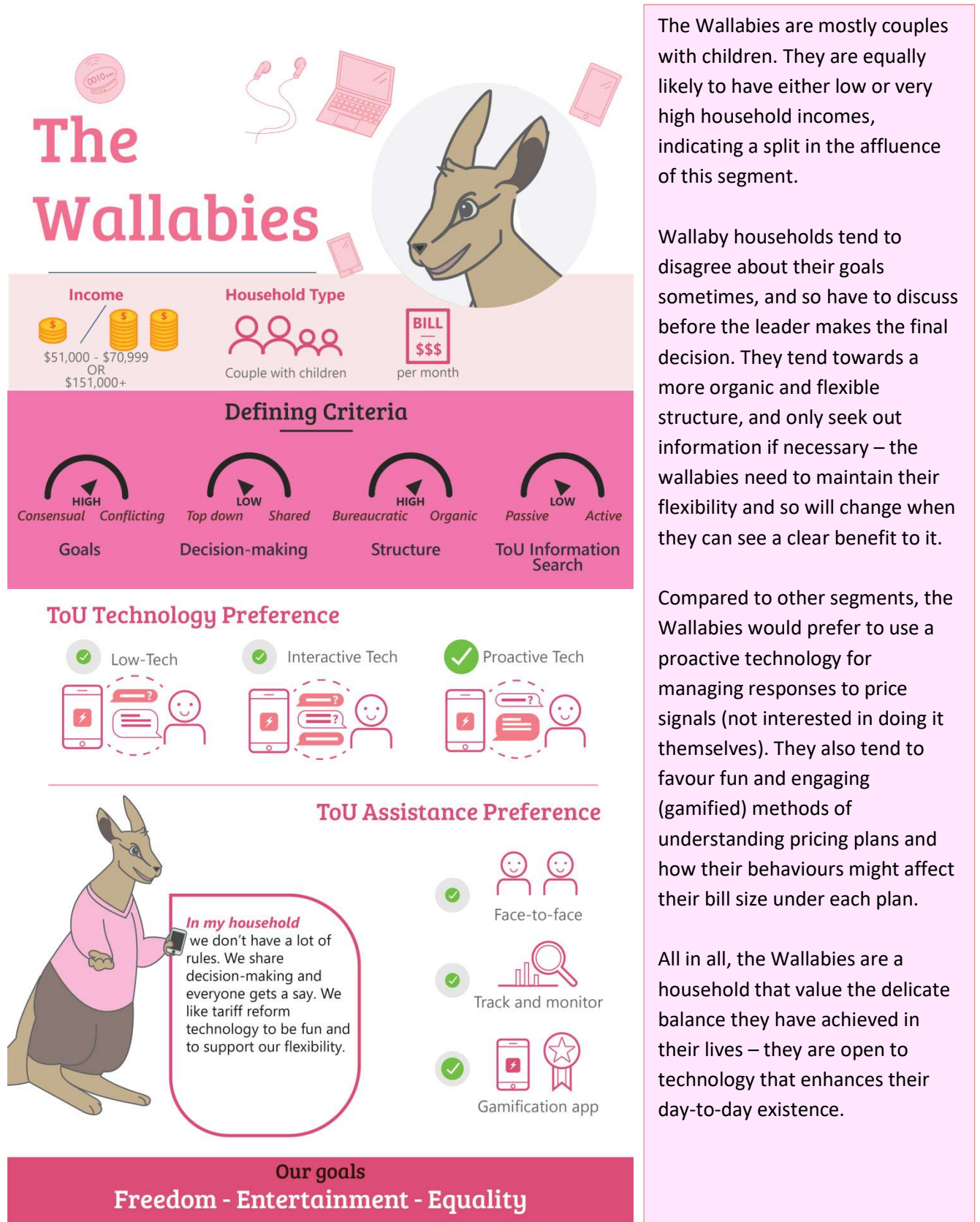
Geese Flock households tend to negotiate about their goals most of the time, and take a middle-of-the-road approach to authority in the household; leadership may change, with no one person in charge. They only seek out information if necessary – this household is busy and flexible, so are only interested in change if there is an obvious benefit that does not require more effort from them.

Geese Flock households do not have a strong technology preference but would tend to prefer interactive technology to manage price signals over other methods (they are less interested in low-tech and proactive technology for this purpose). They would also tend to seek out face-to-face assistance when trying to understand price signals and how their behaviours impact their bills (this is stronger than in other segments). Fun and engaging (gamified) content and track/monitor information is less appealing.

All in all, the Geese Flock are a household that needs to remain flexible in order to maintain their frenetic pace smoothly.

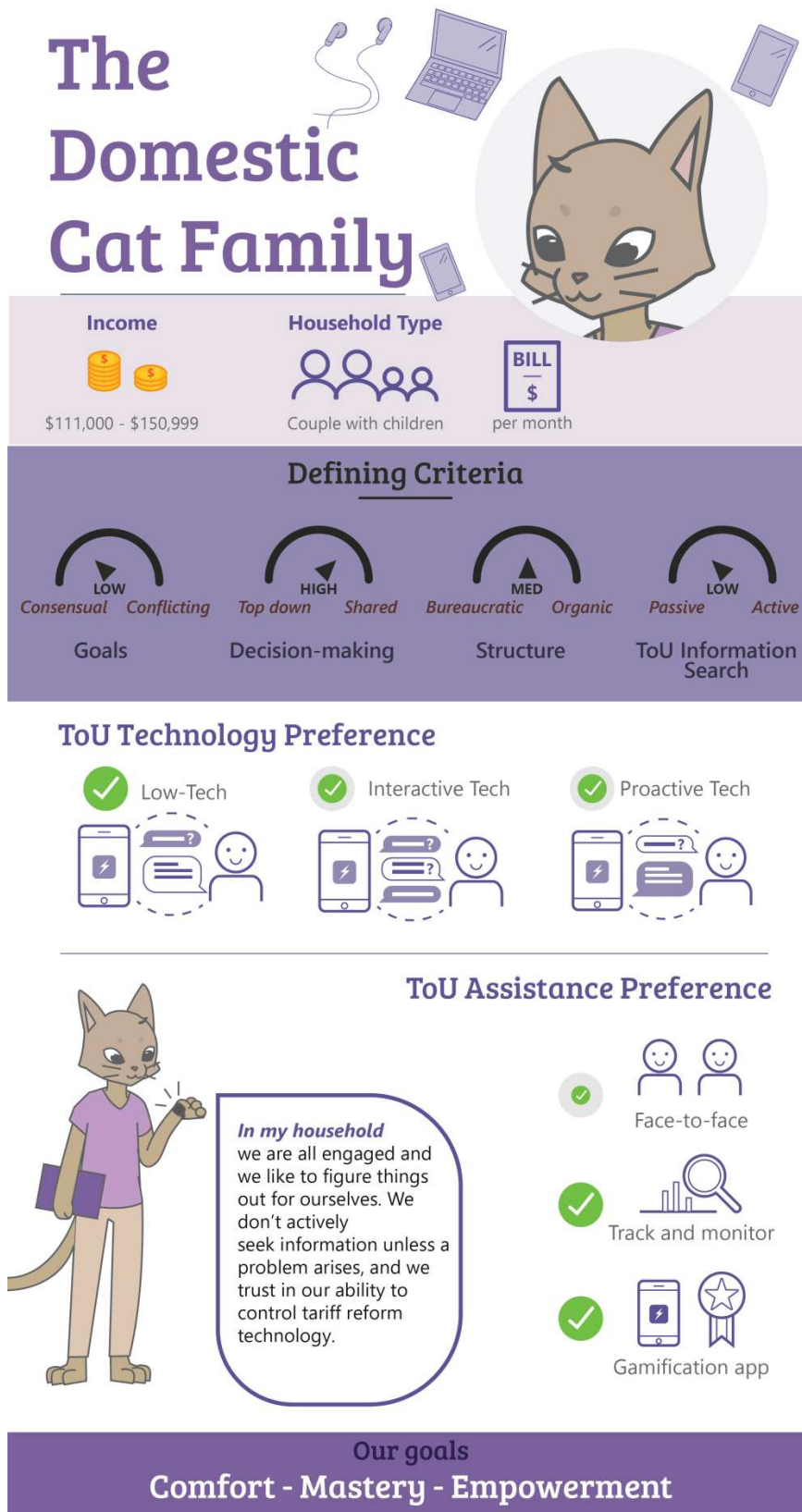
## Segment 4 – The Wallabies

Figure 16: Visual Profile of the Wallabies Segment



## Segment 5 – Domestic Cat Family

Figure 17: Visual Profile of the Domestic Cat Segment



The Domestic Cat Family are mostly couples with children. They have a higher income than most other segments, and higher than the average for Australian households.

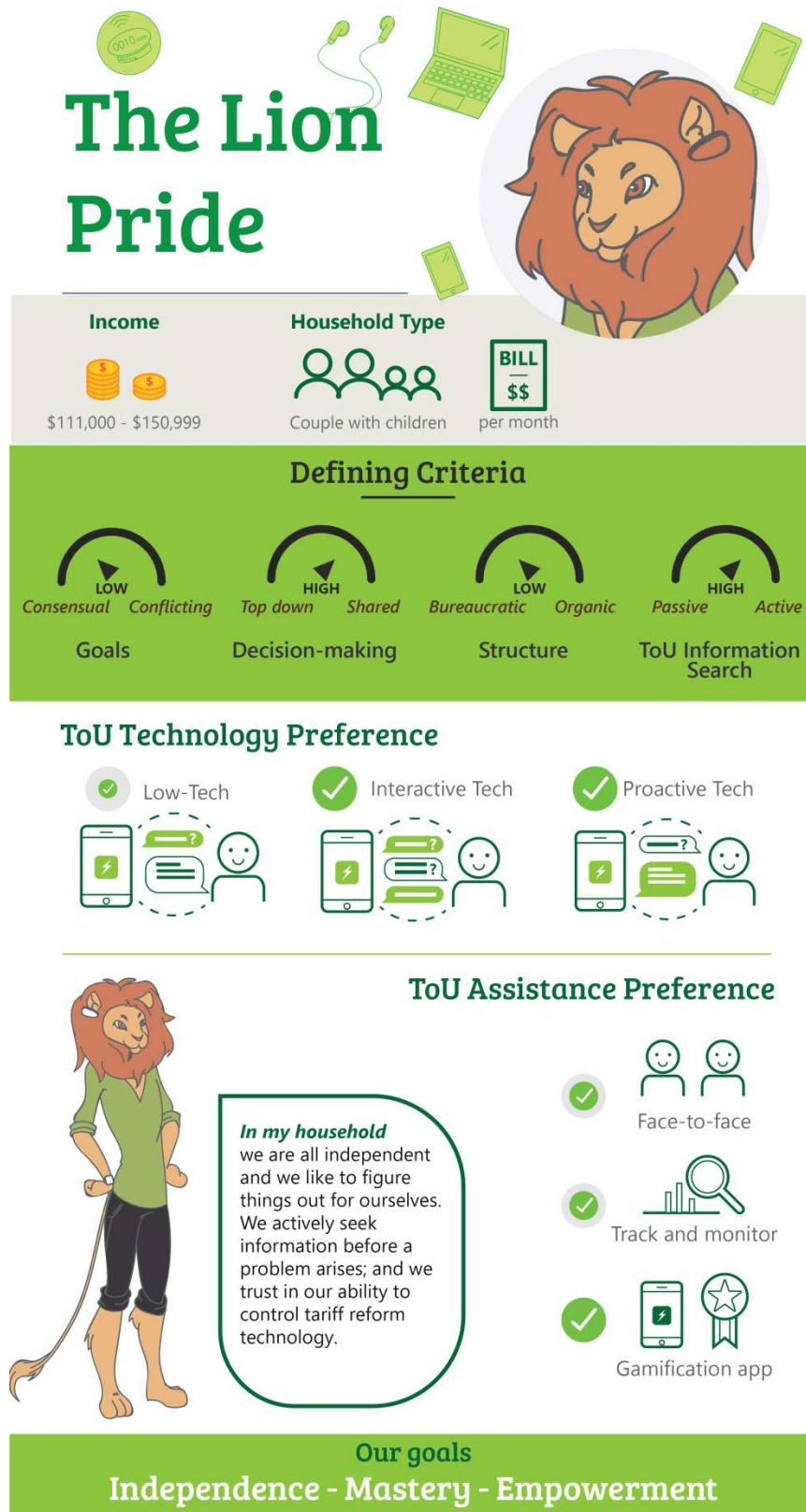
Domestic Cat households tend to agree about their goals most of the time, and many of their decisions are also shared. They tend towards a middle-of-the-road approach to the structure of their lives, with everyone needing freedom but also a consideration for others if independence is their goal. They also only seek out information if necessary – the domestic cats believe that, if important, the information should come to them.

Compared to other segments, the Domestic Cat household tends to like a low-tech approach to managing their response to price signals with some support for interactive and proactive technology. They also tend to favour a more digitised approach to learning about and understanding price signals (track/monitor and gamified content compared to face-to-face).

All in all, the Domestic Cats are a strong household that sticks together because they support each other in pursuing their own goals.

## Segment 6 – Lion Pride

Figure 18: Visual Profile of the Lion Pride Segment



The Lion Pride are mostly couples with children. They have a higher income than most other segments, and higher than the average for Australian households.

Like the Domestic Cats, Lion Pride households tend to agree about their goals most of the time, and many of their decisions are shared. They tend towards a more business-like structure, and actively seek out information – after all, the Lion Pride believes that in order to master their environments they must work cohesively and seek out better ways of doing things.

Compared to other segments, Lion Prides tend to like high tech approaches to managing their response to price signals (interactive and proactive approaches). They have little interest in low-tech options. They also tend to favour a fun and engaging (gamified) approach to learning about new pricing plans and understanding how they could behave to maximise their benefits under those plans.

All in all, the Lion Pride is a segment that is looking for opportunities to thrive, and will take up options that let them do this whilst maintaining their fierce sense of independence and need for mastery.

# Applying the Segmentation Model

## Targeting Strategy

The purpose of developing market segments is to then target the segments that are ready for change. Typically, not all market segments are ready for change at the same time. So, which of the six segments identified in this research should be targeted and how many should be targeted?

### How many segments should be targeted?

The choices available to users of this segmentation model would include:

- all segments (mass/undifferentiated marketing)
- some segments (differentiated targeting strategy) or
- a single segment (a concentrated targeting strategy), as shown in Figure 19.

This research suggests that either differentiated or concentrated targeting strategies would be most appropriate. Both provide the ability to create a unique marketing mix for a specific segment(s), hence capitalising on the diversity of the segments and their value propositions. The choice of strategy also needs to reflect the services and mission of the electricity industry player.

Figure 19: Three Types of Targeting Strategies

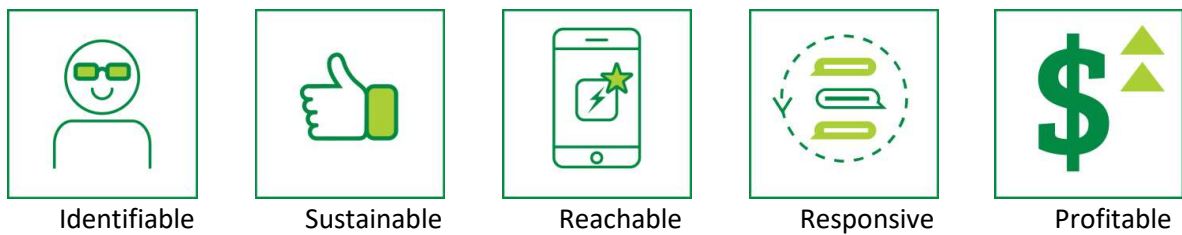


### Which segments should be targeted

This answer will vary based on the role of the organisation in the supply channel. For instance, a distributor will have a different purpose for targeting compared to a retailer or a consumer group.

The researchers suggest that industry participants should seek to understand their relationship with the segments. In general, there are five criteria that assist in determining this. Segments should be: **identifiable, sustainable, reachable, responsive to pricing signals** and **profitable** (see Figure 20; see also Appendix D for an evaluation matrix that can aid in understanding these criteria and scoring your own segments).

Figure 20: Criteria for Evaluating Market Segments

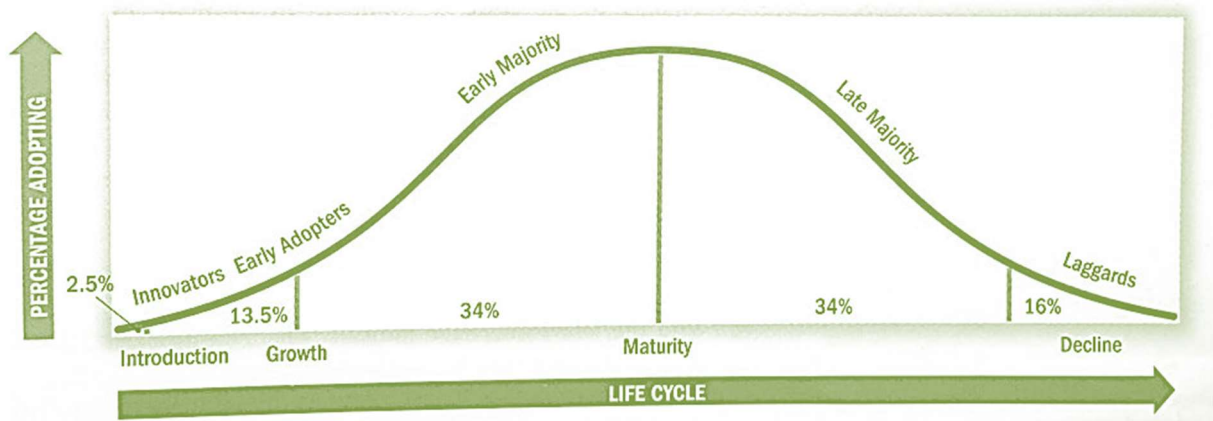


## When to target the segments

In order for marketing strategies to succeed – and where a targeting strategy is used – it is important to target different segments of consumers at different times, beginning with those most likely to engage with the offering (i.e., the most profitable, with the largest return on investment). This is particularly important for efficiency of resource allocation. Those who are more motivated to take up a technology intervention may require fewer resources, hence leaving more available for those in greater need of engagement, such as vulnerable consumers. Given that adopting technology for pricing signals requires adoption of innovations, the diffusion of innovations model (Rogers, 1962) can provide guidance in this regard.

Diffusion of Innovation theory (Rogers, 1962) examines the rate and way consumers adopt an innovation over its life cycle. An innovation is defined as a novel idea, concept or technology. The theory segments consumers into five categories based on their willingness to adopt the new technology. These categories are: innovators, early adopters, early majority, late majority and laggards. Once the late majority begin to adopt the new technology, market share begins to increase at a rapid rate and eventually become saturated (see Figure 21) (Rogers, 1962).

Figure 21: Diffusion of Innovations Theory



Source: Rogers (1962).



The diffusion of innovation is impacted by behavioural and technological factors. For example, new technologies are adopted when individuals express their satisfaction with their peers (e.g. enjoyment of a smart phone), and when new versions of technology force individuals to start the life cycle again (e.g. when a new version of the smart phone is released) (Tran, 2012; Wand & Leuthold, 2011). In the context of energy, the diffusion of innovation theory has been applied to monitor the adoption of energy-efficient devices and electricity pricing options, using a mathematical equation to predict the rate of adoption and estimate the length of the product life cycle (Nair, Gustavsson, & Mahapatra, 2010; Wand & Leuthold, 2011). In any case, for an innovation to be successful, and for new electricity pricing to be successfully taken up, it must satisfy five criteria (see Table 6).

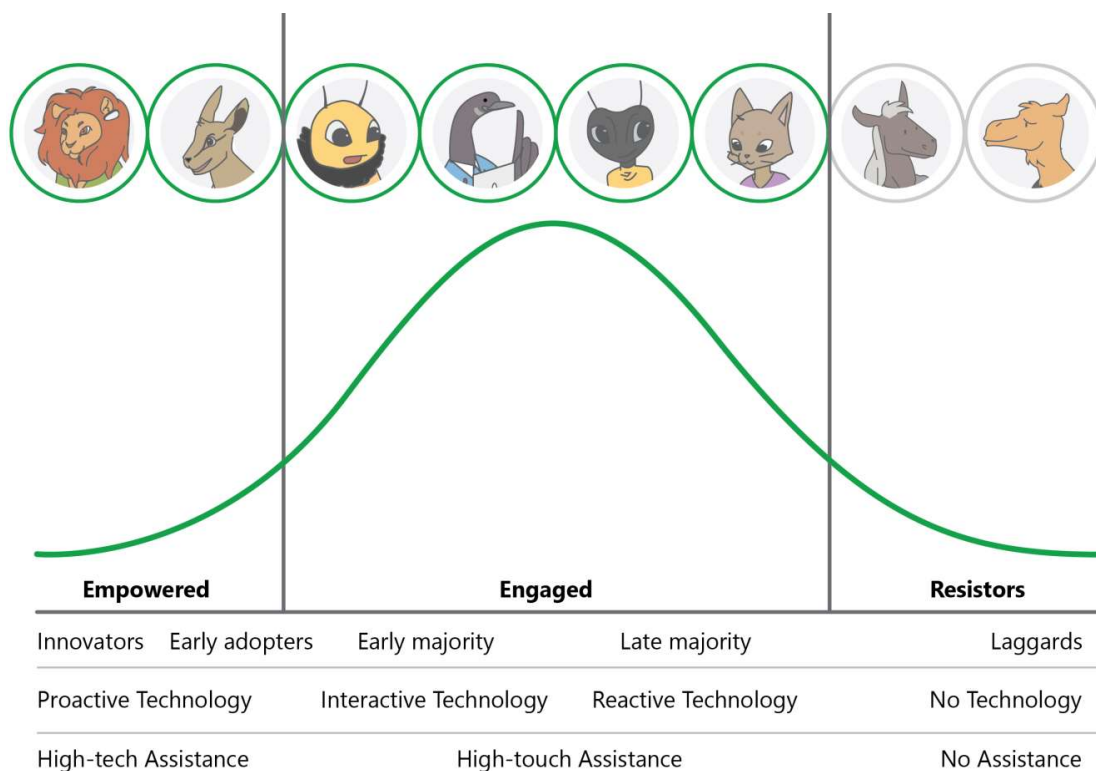
Table 6: Criteria for Successful Innovation Adoption

Criteria	Example
<b>1. Compatibility: The innovation must conform to the user's lifestyle</b>	If the consumer is a shift worker and is unable to use their dryer outside of peak time, the pricing option is unlikely to be adopted.
<b>2. Trialability: Consumers must be able to 'try before they buy' the innovation</b>	If the consumer is forced into a pricing option they may be unlikely to adopt it.
<b>3. Complexity: The innovation must be easily understood</b>	If pricing option information is not delivered in a consumer-centric way the consumer is unlikely to adopt it.
<b>4. Observability: The innovation must be able to be seen</b>	If consumers are made aware of the savings they can make when adopting a pricing option, they are more likely to adopt them.
<b>5. Relative advantage: The innovation must offer advantage over its competitors</b>	If consumers are able to see pricing options as offering cheaper bills than other alternative options they are likely to adopt them.

Source: Solomon et al. (2013).

This project presents an adapted diffusion of innovations model (see Figure 22), which places the segments based on their acceptance of technology for the specific context of understanding, managing and responding to pricing signals. The Lion Pride would likely be the first to engage with a digital solution for pricing signals, followed by the Wallabies. The Bees, Geese, Ants and Cats are all willing to engage to varying levels, with only the resisters or anti-personas requiring either further communication of the benefits or a different strategy to effectively meet their needs.

Figure 22: Diffusion of Innovations Model for Technology that relates to price signals



In stepping through the proposed model, let us consider the first horizontal line: innovators, early adopters, early majority, late majority and laggards. Innovators are those consumers who are keen to have the latest product or service, although they are often first movers and cannot gain insight from watching others use the product or service. For instance, these people purchased MP3 players before iPods hit the market. Next up are the early adopters who adopt a product early, but only after the innovators have already taken up the innovation and paved the way. These consumers want to see a review or two before they commit. In the next two brackets, we have the early majority (for instance, those consumers who purchased iPods when they started to become popular) and the late majority (for instance, those consumers who purchased their iPods once most people they knew owned one). Finally, the laggards are usually the last to adopt a new innovation. The laggards are not necessarily disinterested in innovations, but they must see the benefits for them in an innovation; this group does not innovate for the sake of it.

In part because of the different attitudes to innovation discussed here, the different segments also lean more towards more progressive and future-focused technology (e.g. proactive and interactive technology) or towards familiar paths (e.g. reactive technology, or self-reliance: no technology). Proactive technology manages a consumer’s energy usage on their behalf, while interactive assists with energy usage in partnership with the consumer, and reactive technology provides minimal assistance (e.g. tips and tricks) if the consumer seeks it out.

Further, when it comes to receiving assistance to learn about new electricity pricing options or understand how their behaviours would drive their energy bills, consumer attitudes to innovation

and types of technology also influence whether different segments favour high-tech approaches (e.g. gamification and apps that allow energy tracking), high-touch approaches (e.g. personal or self-directed assistance) or no assistance.

Finally, it should also be noted that the six segments fall into categories of ‘Empowered’, ‘Engaged’ and ‘Resistors’. The first two categories are informed by the *Electricity Network Transformation Roadmap: Interim Program* report (ENA and CSIRO). In our model, these categories refer to those who are empowered to take control of their energy usage and associated technology, those who are happy to engage with their usage and technology, and the resistors for whom the benefits may not yet be clear.

Therefore, if a targeting strategy was selected that was inclusive of all six segments, the diffusion of innovations for technology model offers a timeline for rolling out a staged approach to engaging consumers. Initially technology should be targeted at the empowered segments: Lions and Wallabies. These groups then become the opinion leaders or ‘market mavens’ who generate positive word-of-mouth to influence the next group of consumers: those who are engaged.

The specific market offerings that should be provided for each segment are unique to each player in the industry supply chain, and dependent on their abilities, service offerings and strategic priorities.

Once the target segments have been identified and evaluated, the positioning strategy needs to be developed.

## Positioning strategy and value proposition

Once a market segment(s) has been selected in a target market strategy, a positioning strategy needs to be developed. If there are multiple segments selected, each one requires its own unique value proposition that reflects the positioning strategy. This positioning strategy then drives the marketing mix.

Positioning is a core social marketing strategy for designing the offering in such a way that it reaches and touches the hearts and minds of the target markets (Lee & Kotler, 2016). Social marketing positioning strategies can be focused towards:

- barriers
- benefits
- behaviours
- competition
- repositioning.

*“Saving money was often considered the most attractive benefit for encouraging any changes to electricity usage behaviour.”*




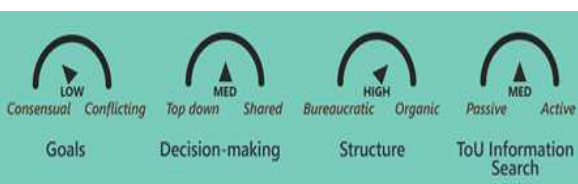

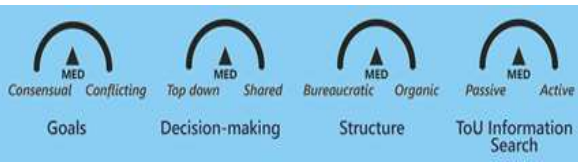

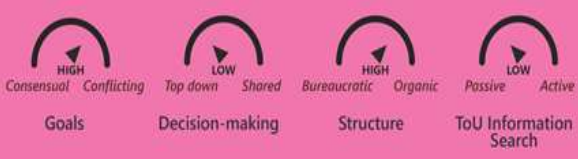

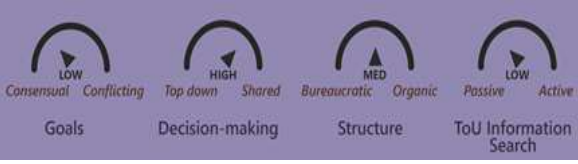


ToU pricing can be a more equitable and fairer method of pricing. However, without consumer buy-in the opportunity may be lost.

One way to engage consumers is to appeal to how this is a solution for one of their problems, through communicating a value proposition specific to each segment (consumer-centric). Hence, positioning needs to address how pricing signals solve a residential electricity consumer problem.

Therefore, the positioning strategy proposed for each segment is benefits-focused positioning, which focuses on highlighting the benefits associated with performing the behaviour. This recommendation emerges from analysis of comments from the qualitative research by a panel of experts across research and industry. This analysis indicated that while saving money was often considered the most attractive benefit for encouraging any changes to electricity usage behaviour (e.g. adopting new electricity pricing options and associated behaviours) there were benefits sought by each persona in keeping with the household goals. The use of positioning supports ECA's vision to "promote the long-term interests of consumers with respect to the price, quality, safety, reliability and security of supply of energy services" (Energy Consumers Australia, 2017).

Within this positioning strategy we have developed specific positioning statements for each segment that convey customised value propositions for engaging digitally with pricing signals. Table 7 shows the goals, description and key criteria for each of the six segments and the corresponding positioning statement. These positioning statements can be used in the implementation phase of the strategy to develop the program brand and slogans.

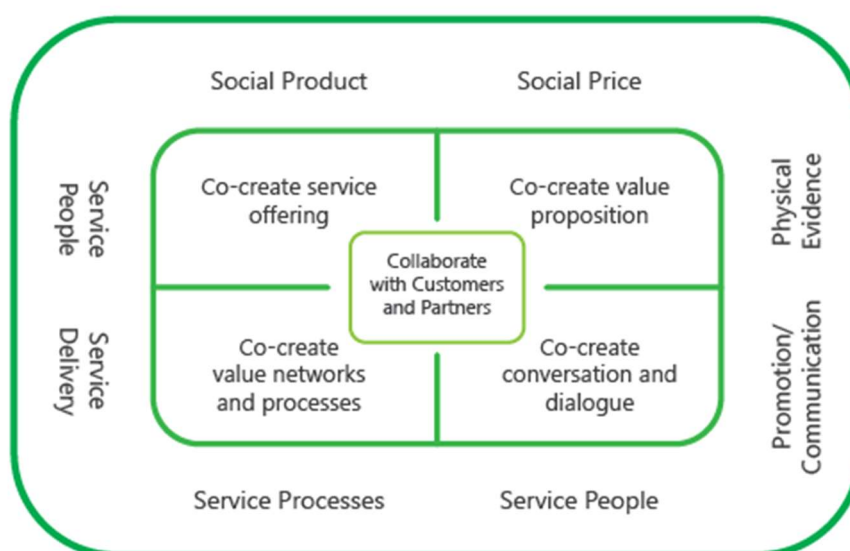
Table 7: A Summary of Segments and the Value Proposition for Each

Description	Defining Criteria	Goals	Barriers	Value Proposition
 <p>In my household, we work together for common goals. We know what we are doing and have rules to guide us. Technology assists us with our way of doing things.</p>		<p><b>Consistency, Efficiency, Stability</b></p>	<p><i>Needless complications, constant change, threats to our established ways.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it keeps us on track with minimal disruption.</b></p>
 <p>In my household, we each have expert roles in finding information to make household decisions. While one person tends to be in charge, we are flexible enough to adapt. We like to use technology we trust and can control.</p>		<p><b>Expertise, Control, Ease</b></p>	<p><i>Roadblocks, failing to acknowledge our expertise, needless change.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it puts the power in our hands.</b></p>
 <p>In my household, we take turns in leading the decision-making. We wait for a problem to occur before making changes because we are busy. Technology assists us to ensure harmony.</p>		<p><b>Convenience, Flexibility, Harmony</b></p>	<p><i>Too much effort, needing to monitor, solutions that don't consider all of us.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it keeps us organised to meet our changing demands.</b></p>
 <p>In my household, we don't have a lot of rules. We share decision-making and everyone gets a say. We like technology to be fun and to support our flexibility.</p>		<p><b>Freedom, Entertainment, Equality</b></p>	<p><i>Needless restrictions, boredom, solutions that favour authority figures.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it gives us the freedom to enjoy life together.</b></p>
 <p>In my household, we are all engaged and we like to figure things out for ourselves. We don't actively seek information unless a problem arises, and we trust in our ability to control technology.</p>		<p><b>Comfort, Mastery, Empowerment</b></p>	<p><i>Too much effort, not enough power (when we want it), single-option solutions.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it serves us. Because we've got better things to do.</b></p>
 <p>In my household, we are all independent and we like to figure things out for ourselves. We actively seek information before a problem arises; and we trust in our ability to control technology.</p>		<p><b>Independence, Mastery, Empowerment</b></p>	<p><i>Roadblocks, not enough power (when we want it), single-option solutions.</i></p>	<p>Technology that manages pricing signals not only saves us money, <b>it makes us the masters of our environment.</b></p>

## Developing the marketing mix strategies

Once the market is segmented and a positioning strategy and unique value proposition decided upon, a market mix should be planned for each segment. The marketing mix is the combination of factors that can be controlled by the industry members to influence consumers to adopt its products. A marketing mix for a service industry such as energy, which requires social change, is termed the social marketing service mix. Such a social marketing mix is presented at Figure 23 (Russell-Bennett, Wood, & Previte, 2013).

Figure 23: Creating Value – The Four Services Strategies for Social Marketing



Adapted from: Russell-Bennett, Wood, & Previte, 2013

The mix of strategies includes:

- **Social product:** The core and peripheral services associated with the behaviour sought (e.g. voluntary adoption of new electricity pricing options and any associated information services and price signal methods or similar).
- **Social price:** Consideration of the true cost to consumers (e.g. monetary cost, convenience, comfort, routines and rituals, utility, etc.).
- **Physical evidence:** The tangible elements of the service that the consumer interacts with (e.g. brochures, apps, atmospherics, websites, metering, user interfaces, etc.).
- **Promotion/Communication:** How we communicate with consumers, and the messages we send (e.g. interactive assistant via app, website, TV campaigns, etc.).
- **Service people:** The people the consumer will interact with and how these people are recruited, trained, and managed (e.g. representatives of retailers, networks, the advocates, and the government).
- **Service processes:** The steps that the consumer must follow to interact with us and our product – all processes need to be efficient, cost-effective, and valuable to consumers (e.g. processes supported by technology, SMS, phone calls, etc.).

- **Service delivery:** Where consumers will access the product and how it will be delivered (e.g. online, email, in-person, etc.).

Social marketing suggests that these marketing mix elements should inform four key pieces of work focused on co-creation. Co-creation involves collaborating with consumers as partners throughout the entire process, rather than considering consumers as end-users alone. The four key pieces of work are:

1. **Co-creating the service offering:** Working with consumers to create the service that consumers want, by involving the consumer in the design process.
2. **Co-creating the value proposition:** Creating value in partnership with consumers by finding what value means for them.
3. **Co-creating the conversation and dialogue:** Deciding on how conversations will be conducted by finding consumers' preferred channels, messages and communication protocols.
4. **Co-creating value networks and processes:** Involving consumers in the design of all processes and even the value chain/network.

## Profiling the resistors

As with all interventions, there also emerged 'resistors' in every persona segment.

There were those who wanted no engagement with technology that might help them respond to future price signals and no assistance with learning about electricity pricing or how their behaviours could impact their electricity bills (particularly using technology for these purposes). Some refused price signal management technology, some refused digitally-enabled education and assistance with new pricing options and 48% of this group refused both forms of technology. Details of these two resistor groups are shown in Table 8.

Resistors would represent a lower priority for engagement early in the process as they are less open to new electricity pricing choices and to accepting technology engagement or assistance in this arena.

Table 8: Profiling the Resistors

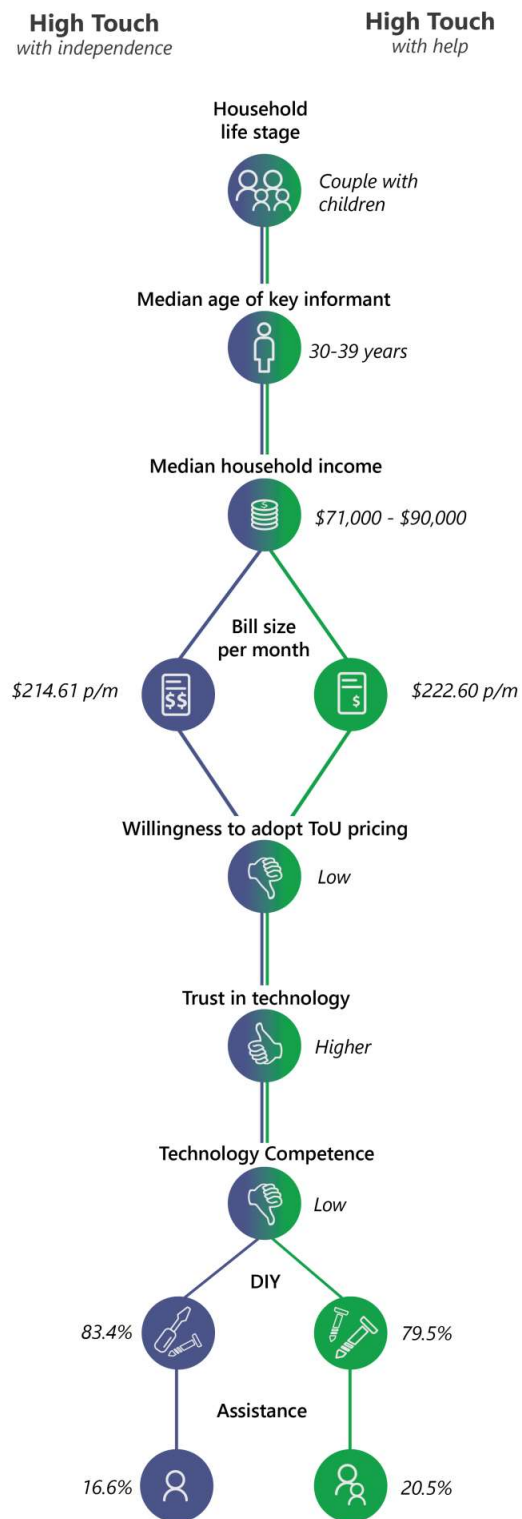
	Did not like any technology response options	Did not like any technology assistance options	Whole sample
<b>n</b>	161	241	1345
<b>Cluster frequency</b>			
Ant %	8.7%	10.4%	16.0%
Bee %	13.7%	17.4%	18.9%
Geese %	<b>28.0%</b>	<b>24.9%</b>	17.5%
Wallabies %	<b>22.4%</b>	<b>22.0%</b>	17.4%
Cat %	16.8%	14.5%	13.3%
Lion %	10.6%	10.8%	16.9%
<b>Mode household life stage</b>	Couple w/ Children	Couple w/ Children	Couple w/ Children
<b>Median age of key informant</b>	30-39	30-39	30-39
<b>Median household Income</b>	\$51,000-\$70,000	\$71,000-\$90,000	\$91,000-\$110,999
<b>Bill size per month</b>			
Average	\$222.60 (\$221.8)	\$214.61 (\$215.9)	\$209.76 (\$219.55)
(SD)	\$150	\$133.5	\$133.5
Median			
<b>Willingness to adopt cost reflective pricing [1 to 7]</b>	3.62 (low)	3.84 (low)	4.84
<b>Trust in technology [1 to 5]</b>	2.43 (higher)	2.51 (higher)	2.25
<b>Technology capability [1 to 5]</b>	3.71 (lower)	3.68 (lower)	3.93
<b>DIY vs assistance</b>			
DIY	79.5%	83.4%	79.9%
Assistance	20.5%	16.6%	20.1%
<b>Did not like technology options</b>	N/A	48.1%	12.0%

These two groups of resistors differ from the sample as a whole in that they have higher trust in technology yet a lower technology capability, and a lack of willingness to adopt ToU pricing. Thus, the households in the first group (rejection of technology options) could be considered as having a preference for high-touch (as compared with high-tech). The households in the second group (rejection of any technology assistance options) exhibited a slightly increased preference for behaviours that involved “do-it-yourself” than the total sample so could be considered as desiring independence.

Figure 24 provides a visual summary of the similarities and differences between the two groups, and shows that the two primary areas that these resistor groups diverge is in terms of bill amount and propensity towards DIY attitudes. It also shows that their willingness to adopt ToU pricing is lower than the sample overall, and that while their technology trust is slightly higher than the sample, their technology capabilities are lower.

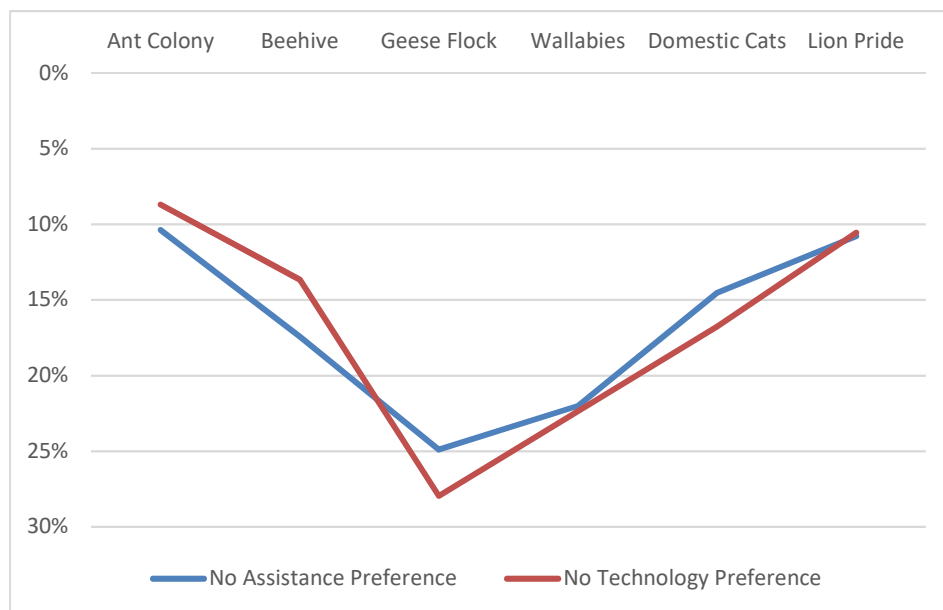


Figure 24: Comparing the Two Resistor Types



Interestingly, as represented in Table 8 and in Figure 25, these two groups of resisters are more common amongst the ‘middle-ground’ segments of the Geese Flock and the Wallabies than the segments at the extremes. These findings may perhaps indicate that these segments are in a state of flux or transition compared to those segments at the end-points. As a result, the key informant answering the survey in the household may have been simply unable to respond accurately on behalf of the entire household. This is an insight that requires further understanding, especially given that one of these segments – the Geese – consistently shows as a vulnerable group in terms of income, age and socio-economic status.

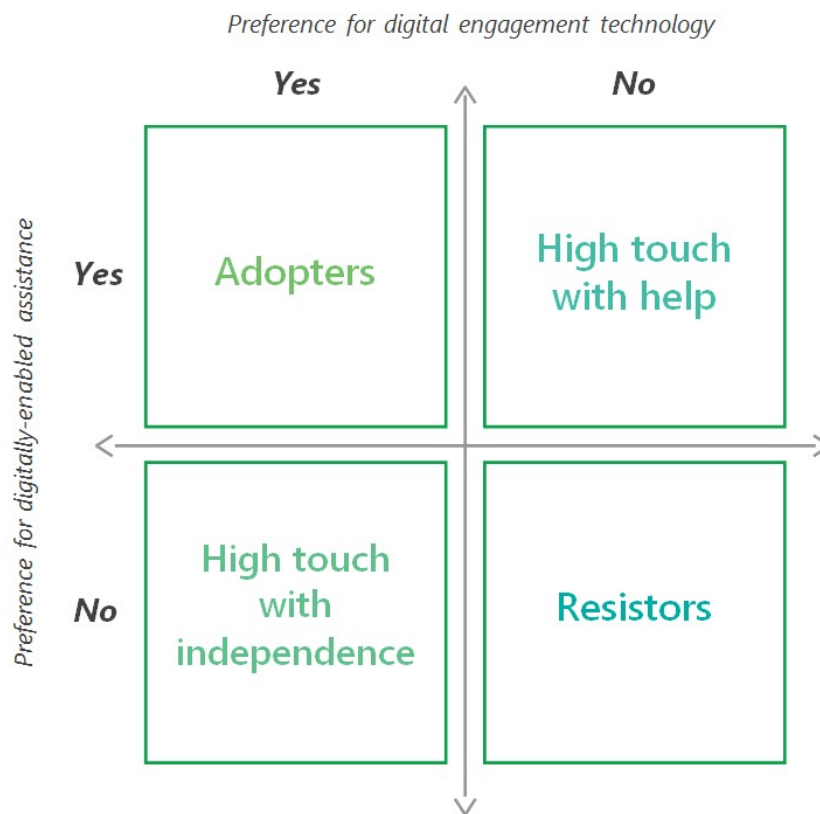
Figure 25: Profiling the Dip in Technology Preference



### Strategies for the resisters

As outlined in Stages 3 and 4, there are certain households that are simply not open to digital engagement solutions for pricing signals. In Stage 3 these consumers were qualitatively represented as the Brumbies and the Camel anti-personas, while in Stage 4 the quantitative research allowed deeper profiling, and three types of resisters were uncovered: high-touch with independence, high-touch with help and resisters (wanting neither technology nor help) (see Figure 26). However, the question remains: what is the best way to deal with these groups?

Figure 26: Four Reactions to Technology and Assistance



The first strategy is to ignore these groups when developing a digital engagement campaign, given that they have little interest in the digital engagement and assistance options offered. However, given that Stage 4 found vulnerable consumers present across all groups, failing to engage with these groups could mean that they are at risk of being left behind. It should also be noted that their lack of interest is in *the options offered* – so there may be scope to engage these groups by exploring their needs and values, and ensuring these are represented in any offerings.

A second strategy would be to work on ways to increase their trust in technology so that they will be more willing to engage with it. For instance, by offering a personalised approach with a humanised face: in much the same way as Microsoft offered the Paper Clip office assistant to ease people into using computers. Finally, a strategy to increase the acceptability of assistance could be implemented. In Australian culture help-seeking behaviour is uncommon, meaning that we either need to frame the technology solutions as DIY rather than assistance, or that seeking assistance with electricity pricing needs to become more acceptable. Given that the sample overwhelmingly favoured a DIY attitude (something that was even more pronounced in the ‘High-touch with independence’ group), the former option is likely to be most realistic.

In order to engage with the resistors, a strategy should promote technology as something they have control over, and which helps them to live their lives the way they wish to. Trials of different messages and approaches are recommended.

## Marketing recommendations for consumer programs

Households have had their say on how they might take advantage of pricing signals in the digital age. This section draws meanings from the key findings of this report to inform actionable insights and evidence-based recommendations to assist households in taking advantage of new styles of pricing plans. While communication is important, consideration must also be given to the appropriate design of products/services, supply chains, and pricing strategies.

### Finding the meaning and application in the insights

This section focuses on drawing specific meaning from the key findings in order to guide potential marketing applications. A consumer-centric approach is recommended, and this means that consumers must remain involved throughout the process as co-creators, not as end-users. Table 9 provides a summary of potential applications.

*Table 9: Drawing Meaning from the Key Insights – Potential Applications*

Key Finding	Potential Application
<b>The language of energy is not consumer-centric (no national lexicon)</b>	Language for any consumer-facing messages or campaigns needs to be in consumers' language, and should be pre-tested.
<b>Lack of national approach confuses and deters</b>	A coordinated national approach is recommended in order to avoid current consumer confusion – particularly for those who move between states.
<b>Lack of trust and credibility in the energy market</b>	Trust and credibility will need to be built over time, and this applies to all players in the industry, given that when prices rise, consumers tend to blame everyone in the industry without discrimination. There is potential value in engaging an objective third party to be the consumer-facing representative of the industry while trust is being repaired.
<b>The need for a credible source of communication</b>	As proposed above, an objective third party may be utilised as the main source of communication between the industry and consumers. This representative would need to be perceived as fair, knowledgeable and as having consumers' best interests at heart.
<b>Consumers have a general household-decision style</b>	This means that it is even more important to understand the different households, as how they make decisions varies between households but not necessarily within households. If a household spends a lot of time researching their internet provider, it is likely they will do the same for electricity pricing options.
<b>Households operate as a buying centre</b>	Just like a buying centre, it pays to understand the gatekeeper as well as the deciders and end-users. The approach used in this research focuses on the whole household, or buying centre, for this reason.
<b>Disconnect between consumer decision and outcome</b>	Technology represents one way to connect the decision and outcome for consumers. With real-time data, consumers will connect their decision to turn on the dryer with the sudden spike in their app (and hence, their forthcoming bill). Increasing the visibility of this connection will ensure consumers are more confident about their electricity management decisions.
<b>Consumers vs market as beneficiaries of electricity pricing changes</b>	The benefits to consumers should not only be clear, but should also relate to particular segments of households. As illustrated in Stage 4, what is seen as a benefit for one segment may be meaningless to another (e.g. the Wallabies)

Key Finding	Potential Application
	are not interested in efficiency like the Ants, instead they should be sold on the entertainment aspects).
<b>Consumers desire on-demand and real-time data</b>	This project has focused on digital solutions, given findings from Stage 2 indicated that consumers are not only open to digital engagement, but tend to expect it in their current world of on-demand services. This was supported in Stages 3 and 4, with the vast majority of consumers favouring some kind of technology that would provide them with real-time data and on-demand engagement.
<b>Not all consumers want to set-and-forget (yet)</b>	The majority of consumers did not want to give up their control via a set-and-forget approach, so it may be best to offer a bundle, or to allow consumers to set preferences before leaving an electricity app to manage itself.
<b>Consumers are ready for technology to empower them to manage electricity pricing changes</b>	Consumers are used to digitally engaging with other services, and are ready to do so with technology as well.
<b>Not all households are the same</b>	This research uncovered six segments for pricing signal technology engagement, showing that not all households are the same. To be successful, strategies must be tailored to a specific segment.
<b>Consumer adoption of technology is governed by key themes</b>	The five key themes that govern consumer adoption of technology are: use (the technology must offer consumer value), ease of use (it must not require a lot of effort), on-demand (immediate and useful information must be provided), fun (ensure it is engaging), and points (rewards and recognition programs are valued by some consumers). These key themes guide the introduction of innovative technology, and highlight the importance of value creation for consumers.
<b>Vulnerable consumers are not a separate market segment</b>	Vulnerable consumers cannot be provided with a one-size-fits-all (vulnerable) consumer approach, as they are spread across the segments. Therefore, vulnerable consumers need to be considered as a part of interventions planned for all segments.

## Which approach to social change?

There are three approaches to social change: education, law/policy and social marketing.

Social marketing is all about behaviour change to achieve social good rather than profit goals. Specifically, social marketing aims to change people's behaviour for the better, in ways that are healthier, cheaper, more efficient or which bring some other benefit.

Social marketing is used when awareness is already high, and when behaviour should be voluntary rather than mandated. Unlike education and law, social marketing focuses on helping consumers make the necessary changes, rather than simply providing education or enforcement (see Figure 27). Consumers who *want* to enact the behaviour change will succeed. Social marketing is a market and consumer-centric approach by necessity; without understanding the nature of markets and individual consumers we cannot expect to accurately design interventions and communicate in an engaging way.

This approach is also gaining traction in the electricity market specifically, with calls for increased consumer trust-building being made in the recent *Electricity Network Transformation Roadmap: Key Concepts* report (Energy Networks Australia & CSIRO, 2016). This report envisions a transition to a

consumer-centric electricity network in the future, where consumers will be connected and empowered. Likewise, an evaluation of energy projects recommend that specific target markets be decided upon prior to commencing any program (Gynther, Mikkonen, & Smits, 2012), again highlighting the need for programs – and indeed the industry as a whole – to be more consumer-centric.

Figure 27: Three Approaches to Social Change



Adapted from: Rothschild (2000).

Often, it is a combination of education, law/policy and social marketing that proves effective (see the MPower Case Study of Success), while using only one approach is often not enough. For instance, using policy alone may create resistance and resentment from consumers. Using education alone may provide awareness but no incentive to change, and utilising social marketing alone means that the underlying structure of policy and education is not available to support consumers to voluntarily make changes.

**MPower and Beating Tobacco:  
A Case Study of Success**

The World Health Organisation (WHO) introduced six measures to help different countries tackle their tobacco consumption issues through a demand reduction approach. These measures provided a multi-faceted and practical approach to reducing tobacco usage, without enforcing a direct ban on consumers using tobacco. The program provides tools to inform policy and education campaigns, as well as utilising elements of social marketing to make change easier for consumers. The six measures are:

- Monitoring tobacco use and prevention policies**
- Protecting people from tobacco smoke**
- Offering help to quit tobacco use**
- Warning about the dangers of tobacco**
- Enforcing bans on tobacco advertising, promotion and sponsorship**
- Raising tobacco taxes**

**Outcomes:**

- 7.4 million premature deaths averted
- 30 countries adopted best practice for warning labels
- changes to the recommended tax levels for tobacco
- protecting 1 billion people from second-hand smoke.

Source: MPower in Action (WHO, 2013)

## A combined approach to electricity pricing changes

A local example that highlights the opportunity for using all three social change measures in the future is the case of the smart meter and flexible pricing rollout in Victoria.

According to the 2015 report by the Victorian Auditor General,

*By the end of 2015, Victoria's electricity consumers will have paid an estimated \$2.239 billion for metering services, including the rollout and connection of smart meters. The net position of the program has changed significantly since its inception, and there is now expected to be a substantially increased net cost to consumers over the life of the program.*

*In contrast, while a few benefits have accrued to consumers, benefits realisation is behind schedule and most benefits are yet to be realised. Current estimates suggest that approximately 80 per cent of the expected benefits could be achieved. However, there are significant uncertainties and risks associated with achieving these benefits, which are not within the control of the state.<sup>3</sup>*

Despite these criticisms, this roll-out has nevertheless provided critical infrastructure that is an opportunity for Victoria to be at the centre of policy, education and social marketing to ensure long-lasting benefits to consumers. This opportunity could be improved if social marketing techniques are used to ensure consumers are made aware of the benefits and how easy these benefits are to achieve (the process must be in place before any education occurs). This would ensure that the benefits of the deployment could be fully realised.

## Eco-systems approach: A useful change in perspective

A useful approach to ensuring the success of retail electricity pricing changes in the digital age is an eco-system perspective (French, Russell-Bennett, & Mulcahy, 2017)

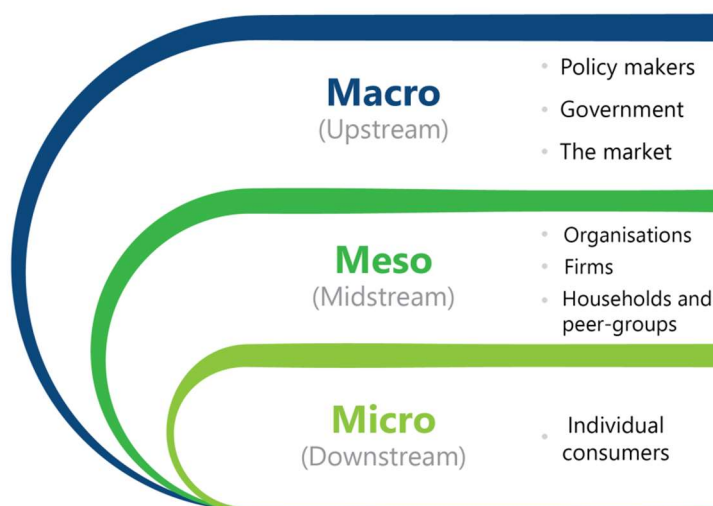
The eco-systems perspective provides insight into complex service systems, such as the supply of domestic energy, and the interactions required between multiple entities at different levels of the economy (Brychkov & Domegan, 2017; May & Previte, 2016). These complex service systems can be viewed as eco-systems, which are self-contained business environments whereby multiple stakeholders interact with the mutual goal of creating value for all (Vargo & Akaka, 2012; Beirão, Patrício, & Fisk, 2017). The eco-system perspective views value co-creation as going beyond the retailer and consumer relationship (Beirão et al., 2017), and instead emphasises the contribution of all electricity participants in the marketplace, including policymakers, suppliers, retailers, partners and consumers, and how they all can work collectively to create greater levels of value for all (Vargo, Maglio, & Akaka, 2008).

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<sup>3</sup> Realising the Benefits of Smart meters, 2015, Victorian Auditor General's Report available at <http://www.audit.vic.gov.au/publications/20150916-Smart-Meters/20150916-Smart-Meters.pdf>

The eco-system perspective views the economy or markets as having three distinct levels (see Figure 28): the macro (upstream), meso (midstream) and micro (downstream) levels. At the same time as being aware of how the different levels interact, the timing of any program should also be considered to ensure the greatest chance of engagement for internal and external consumers.

Figure 28: Eco-Systems Perspective for Electricity Pricing



Adapted from: French et al. (2017)

### Micro level (downstream)

The micro level (also referred to as downstream) focuses on interactions and engagement with consumers (Russell-Bennett et al., 2013; Zainuddin, Dent, & Tam, 2017). At this level, consumers and organisations can interact and engage in resource integration with each other to deliver mutually beneficial value creation. For example, consumers may contribute new ideas or ways in which new pricing models are delivered in order for value to be mutually created for themselves and the provider (or organisation). Many of the strategies presented in this report are micro-level by virtue of their consumer centricity. For instance, using technology to aid consumers in managing their energy usage resulting in reduced bills.

### Meso (midstream)

The second level of the eco-system is the meso level (or midstream), which includes organisation actors, such as for-profit organisations, non-profits, social marketing organisations and community groups, that can connect directly or indirectly to serve one another and co-create value (Beirão et al., 2017). At this level, organisations can seek guidance from the macro level (policymakers and government and market regulators), as well as input from consumers to ensure they provide electricity and power services which benefit the consumer as well as their organisation. This report highlights the opportunity for electricity market stakeholders to work together on a cohesive and holistic national approach at the meso level, guided by governmental and other macro actors. Each stakeholder deploys their strength aware of the role each other has. For example, a retailer may deploy a digital education campaign for new electricity pricing to Ants and Lions, simultaneously sponsoring advocacy groups to deliver workshops and forums to address the Camels and Brumbies.



While the same messages may be used and the same outcomes achieved, a different language, medium, and messaging mode are required to ensure success.

### **Macro (upstream)**

The final level of the eco-system is macro, which includes actors such as policymakers, governments and the market (Beirão et al., 2017). This level of the eco-system is often referred to as 'upstream' (Hoek & Jones, 2011; Gordon, 2013). At this level policymakers, government and the market can interact and engage with the meso and micro levels of the eco-system to provide guidance and direction to ensure value is created for consumers, energy networks and energy retailers. It is work at this level that supports and guides strategies at the meso and micro levels, such as market cooperation and consumer engagement strategies.

## Implications for policymakers and energy industry stakeholders

In the information age, conventional education and awareness approaches need to evolve to better meet the needs of the digitally engaged consumer. Important aspects of consumer behaviour have been underestimated or oversimplified to date in the debate about changes to electricity pricing. Issues such as consumer apathy, aversion to complexity, growing consumer suspicion, confusion and a preference for simplicity and certainty need to be addressed when considering how to transition consumers to facilitate widespread retail electricity pricing changes.

The digital age offers new ways for energy stakeholders to reach, engage and assist consumers to manage their electricity usage. However, this will require both the industry and policymakers to become more focused on understanding the needs of today's energy consumer. The specific insights discussed in this section raise key issues that need to be resolved in order to facilitate engagement and provide a foundation for successful, long-term implementation of retail electricity pricing changes.

### Improving consumer trust and credibility of information

Acquiring consumer trust and confidence is a critical step in convincing consumers to 'opt-in' to new retail electricity pricing choices and even more so when asking consumers to change their ingrained energy use behaviours. Thus, 'trust' needs to be contextualised from a consumer's perspective, not a regulatory perspective.

For example, in building this trust in the target group we need to understand that residential electricity consumers have little knowledge of the energy industry. What knowledge they do have may be imperfect and open to misinformation and influence from media and other providers of information who are not necessarily qualified. This means some of the fundamental assumptions around the role of the electricity industry in implementing retail electricity pricing changes need to be reconsidered by policymakers, industry and stakeholders more broadly.

Consumers may not trust the electricity industry or government to provide information about electricity pricing changes because they are suspicious of motives surrounding these changes. Therefore, information, education and engagement tools that come from this source could also be treated with the same suspicion and may not be accepted as trustworthy and acted upon. Stimulus generalisation theory suggests negative experiences can feed into issues around mistrust, therefore contaminating the messaging and consumer sentiment, causing further barriers to uptake and adoption.

In the absence of trusted sources of information consumers are more likely to source information from the media and popular opinions, such as consumer advocates and peers, causing further misinformation and confusion. This is not unique to the energy industry, with numerous examples of less contentious and well-intentioned reform measures being derailed in recent times under the pressures of the 24-hour news cycle.

Building a social licence in the community prior to the actual broad-scale implementation of changes in electricity pricing needs to be a national priority for policymakers. A body of high-quality, simple and consistent messaging, including standardised language from a trusted source, needs to be the corner stone of this approach, laying the foundations of making the community aware of the change. This research report spells out who (the Lion segment) are more open to utilising technology and more likely to see the value. Thus, initial campaigns should be targeted at these consumers.

A poorly executed awareness and education campaign in the introduction of pricing signals will make it even harder for policymakers and the industry to convince consumers to take up a change that is not trusted. There is a link between understanding and engaging with price signals, and energy behaviours. If consumers do not understand how pricing signals can specifically benefit them (not in general terms) they will not adjust their behaviours accurately and may end up with a larger bill. There may be the view that mandatory adoption of pricing signals could occur if the 'opt-in' process does not work. In this instance, consumer mistrust and sentiment will mean energy behaviours are very unlikely to be adopted and may in fact lead to higher bills as routines and rituals that fail to align with price signals.

## The need for a credible source of communication

In the preceding section, it was noted that consumers and consumer advocates alike are suspicious of motives surrounding any change to electricity pricing and policy. Part of this issue stems from a lack of effective, consumer-centric communication.

The concept of a national information and awareness campaign, for example, with simple and consistent key messages is common sense in theory. That is, one umbrella campaign with an overall key message directing people to where to find more information and assistance through their local electricity stakeholders. However, the execution of such a campaign is complex and requires the right skills and considerable resources to deliver an effective outcome.

Today's consumers want to engage on their own terms, at a time and place that is convenient to them. Technology can play a number of roles in the deployment of electricity pricing changes – it can build trust, assist in facilitating or triggering behaviours or the service itself, and it can also facilitate communication. It should not, however, be seen as a silver bullet solution. Coordination of good communications to and on behalf of residential electricity consumers from a trusted source is critical to the success of pricing signals.

## A collaborative industry approach is required

Consumers do not understand how the electricity industry works in their jurisdiction. To some degree they do not want or need to know the complexities. The research has identified that they do not specifically see the cost of electricity as solely the retailer's responsibility or fault. Rather, all electricity market stakeholders are tarred with the same brush of blame, including government.

From a political perspective, consumer unrest can clearly turn into voter unrest, which has the potential to cause a change of government and further changes to energy policy. A collaborative

approach to supporting consumers through the transition may be the lowest-risk approach. This would see the whole industry supply chain works together to build trust, create positive associations and ensure the level of perceived benefits are present for consumers consistently and in a way that is meaningful to them – not the industry.

## Consumers need to know what's in it for them

Any engagement strategy developed by the industry needs to build positive sentiment within the community and this includes investing time and resources into communicating value to consumers. 'Electricity is a low-involvement product, with consumers not typically engaged with the details of cost structures. Initiatives to drive substantial changes in the way consumers think about and use electricity will require a sustained effort around customer communication and education' (Deloitte Access Economics 2014).

Communication from the industry needs to centre on the consumer and how electricity pricing change is solving one of their problems, not the industry's problems. This may be achieved through the positive associations that consumers themselves have identified: the potential for lower bills/increased value for money and the chance for increased control and greater visibility. The segmentation model provided has identified consumers (the Lions) who can be targeted as early adopters who would be more likely to view the reform positively.

## Consumer energy decisions and outcomes need to be better connected

Removing complexity and making the costs associated with daily energy decisions visible, timely and clear is critical for building confidence and acceptance of pricing signals.

Smart metering is a necessity for bringing about behaviour change. Smart meter capabilities will support the industry in providing real-time signals that consumers need to guide their behaviour. Providing consumers their energy meter usage will help them to connect their individual energy decisions (e.g. turning on the air conditioning to increase comfort) to the cost of doing so (e.g. electricity usage charges) at the point in time that a decision is made. Reinforcing behaviour provides instant gratification and can be further enhanced by complimenting the touch points with digital education programs. In the quantitative research, 57% of consumers chose the high-tech digital engagement options (interactive and proactive), as opposed to the low-tech reactive option (30%) or no option at all (13%). The results for digitally enabled assistance were even stronger, with 73% favouring the high-tech options (track and monitor, and gamification).

The purpose of this technology approach is to provide support and to help consumers feel that they have 'someone in their corner'; that someone is working *for* them, versus something unfair (electricity pricing changes) that is happening *to* them. This type of technology can be viewed as costly and difficult to deploy for specific geographical areas. However, when developed and delivered on a national level, you achieve both economies of scale and scope. There is strong consumer demand for this type of intervention and funding options should be considered, such as

diverting from redundant programs or cost avoidance programs re-invested into pools for collaboration by the electricity industry.

## Vulnerable consumers are not a separate market segment

Vulnerable consumers are of particular interest to energy market stakeholders.

Typically, vulnerable consumers are perceived by the market as a separate, distinct segment. However, this project found that vulnerable consumers are not a separate segment but embedded across all segments.

- Low-income households were more prevalent in the Ant (27.9%), Geese (27.5%) and Wallaby (26.5%) segments, rather than in the Lion (21.5%), Bee (19.9%) and Domestic Cat (17.5%) segments.
- Older households were more prevalent in the Wallaby (22.79%), Bee (19.9%) and Ant (21.78%) segments, rather than in the Lion (10%), Domestic Cat (14.1%) and Geese (11.8%) segments (note that the recruitment criteria excluded consumers over the age of 55).
- Low socio-economic status households (low SEIFA code) were more prevalent in the Geese (23.2%) segment than in the other five segments.

This means that a single program for vulnerable consumers is unlikely to work. Vulnerable consumers are diverse not just by virtue of their type of vulnerability; they are households with their own needs, attitudes and behaviours that go beyond the notion of vulnerability. Consider, for example, the difference between a Geese flock household who falls into the low-income vulnerability group, as opposed to a Domestic Cat household that has a low income. These segments are inherently different and must be treated as such.

The ability to analyse and overlay a consumer group with a persona will allow policy makers to assess the strategies applied by advocacy groups, networks and retailers to support this part of Australian society. It also allows the advocacy groups, networks and retailers to critically analyse the impact and return on investment of current programs and initiatives to support their target consumers. It is a new and disruptive view of consumers and potentially will allow a redesign of programs with the benefit of broader sustained change.

This concept should challenge the status quo for engaging vulnerable households but provides an opportunity to research further. More detail on the profiling of vulnerable consumers is provided in Appendix E.

## Conclusion

This research has provided some key insights into today's electricity consumer. It has created comprehensive profiles for six key segments within this population where the introduction of retail electricity pricing changes could succeed, including characteristics, goals, motivators and preferences. Just as importantly, the report also identified and created two segments where it is likely that attempts to engage on new electricity pricing plans would be unsuccessful.

These insights can assist the energy industry and policymakers to understand the changing needs of today's energy consumers to support the implementation of electricity pricing changes. The intent is to:

- support industry to make the shift to a genuine conversation with consumers;
- establish a social licence to support the introduction of changes to electricity pricing; and
- increase the pace of acceptance and adoption of new energy behaviours within the community to ensure the full benefits are realised.

Taking into consideration past experience, other initiatives and also the findings of this research, it is clear that in order for any change to succeed, cooperation amongst stakeholders is of primary importance. Marketing theory explains that when you have a traditional channel with each channel member only focused on the channel, the value for the end user is less than if all co-operated together. This must of course be balanced against the regulations in the electricity market, where an objective entity would be ideally placed to facilitate such a cooperative approach.

An important mindset shift is required, in that all new pricing strategies should be seen as to the consumers' advantage, rather perceived as for the industry's benefit. This mindset will help to ensure open communication and information sharing, leading to more informed and engaged consumers, and more efficient use of resources. Open market competition among retailers will remain; the consumer advantage focus is simply about building trust with consumers, avoiding confusion and ensuring new electricity pricing choices are based on a win/ win proposition. Efficient use of limited resources is beneficial for the entire electricity industry, as well as for society, and creates opportunities for innovation. The eco-systems approach discussed previously in this report is one suggested way to approach this.

To engage consumers successfully, a coordinated national education campaign with a clear call-to-action is recommended. At present, fragmented, inconsistent or negative messages are confusing and disillusioning consumers; a single, coherent message is needed to ensure that the information is accurate, useful and not allowing media to be the main voice of the energy industry. This approach, particularly when the message comes from a credible source, will help to build trust and engagement, and ensure a more positive energy experience for consumers. Key principles for success are included in Table 10. Though not an exhaustive list, these are principles that should be considered in the design of digital engagement programs for pending electricity pricing changes.

Table 10: Principles of Success

Principles for Success	Reasoning
<b>The message must be consistent and coordinated</b>	Consumers may lose interest in engaging at all if all they receive conflicting messages from different stakeholders.
<b>Messages must be in consumer language, not industry language</b>	As illustrated in the Stage 3 Report with the findings from the video and script, engaging consumers in their language is a successful strategy for ensuring the message is perceived as relevant and interesting.
<b>Use their distribution channels, not yours</b>	The average consumer is probably not spending time checking your website for updates, and may not even be reading their bill. Consider which channels suit consumers best, and invest in these channels to engage consumers. Also remember to prioritise consumer privacy regardless of the channel.
<b>The message should come from a trusted, credible source</b>	Consumers lack trust in anyone they see as having a ‘vested interest’ in their electricity bill. Hence, an external message source is more likely to be listened to and trusted. This is especially important for an industry where trust is typically low.
<b>Keep the message ‘high level’</b>	Avoid giving too many details. Realistically speaking, there will always be differences in how each stakeholder operates (cf. the difference in peak/off-peak times across states), so avoid giving specific details.
<b>Give them some next steps, but don’t ask for a lot of effort</b>	As a low-involvement product, consumers are unlikely to be willing to expend a lot of energy on making changes to their electricity usage. Keep next steps clear, easy and engaging – remember, a list of energy-saving tips is unlikely to be read or acted upon. After all, electricity is just one more product in a consumer’s already busy life.
<b>Keep the message positive</b>	Engage consumers with a message that is forward-looking, focused on benefits and a positive future for all. This will tap into the Australian values of optimism, striving for a better future and egalitarianism.
<b>Ease them into it (but don’t force them)</b>	Just like when analogue television signals converted to digital, so too does the instigation of electricity pricing changes reflect a major change for consumers and their lifestyles. Strategies for behaviour change must therefore be offered well in advance in the lead-up to any changes, and focus on making the transition easy and voluntary for consumers.
<b>Think about the type of product they want to buy</b>	Consumers are now seeking value from everything they part with their hard-earned money for. Up until now, utilities like electricity have been less visible, but if smart meters gain wide-spread adoption electricity will be far more visible. We therefore need to consider what type of value we can offer to consumers.
<b>Service sells</b>	Following on from the above point, the increased visibility of the energy market also means the need to differentiate meaningfully. One way to achieve this may be through unique solutions that offer value to consumers.
<b>Pricing should still relate to value</b>	The proposed electricity pricing changes will make pricing fairer, but there still needs to be underlying value for consumers (on top of having access to electricity). If monetary price cannot change, what other elements of cost can? For instance, could we increase convenience or consumer experience?

This project has shown that technology has the potential to bring a little excitement to an otherwise dry task for consumers: managing their electricity prices and taking advantage of pricing signals in the digital age. Technology offers us an unprecedented opportunity to communicate, engage and assist each other through the introduction of electricity pricing changes. Technology alone is not a solution; the answer lies in giving it a consumer-centric in purpose and making it adaptable to consumer needs.

## The path forward for research

Future research should extend the current research to address additional questions related to new retail electricity pricing. Specifically, we have five future questions and agendas which should be pursued.

### 1. Test digital marketing services and communications for each market segment

Research can be undertaken to develop and test digital marketing services and communications that will appeal to each market segment. For example, testing and designing smartphone applications which are specifically designed to assist households to work with cost pricing signals could be researched in order to create a best practice-designed app. Another strategy which could be tested is the use of price signals, and at which point different market segments are incentivised and encouraged to adopt the new pricing models. This could include different pricing plans and bundling of different electricity services.

### 2. Understand how pricing signals can assist vulnerable consumers and vulnerable households

This research incidentally captured consumers who can be classified as vulnerable based upon their income, socio-economic status and age. Future research should seek to provide greater insights into vulnerable consumers and their usage of household energy and how electricity pricing may assist. Vulnerable consumers classified according to different characteristics could be investigated including income, age, ethnicity and culture and correlated to the personas within this report. There is also an opportunity to investigate the effects of bill frequency on energy attitudes, behaviours and the ability to pay amongst vulnerable households.

### 3. Understand adoption and sustained use of ToU pricing

This research also focused solely on the initial adoption of ToU pricing, rather than the continued use of ToU pricing. Future research should seek to investigate not only the factors which encourage each market segment to adopt ToU pricing signals, but how ToU pricing is used over time (sustained change), in different seasons, and as households change and evolve through the family life cycle (e.g. from a couple, to a family of three, to a family of four; Tuckman Group dynamics).

### 4. Investigate impacts upon actual household electricity usage

Another interesting area for future research would be to examine the impact cost reflective pricing has upon actual electricity use. An experimental design where different households are exposed to different forms and levels of cost reflective pricing plans will assist in understanding how to best implement these new pricing plans. This could be achieved by collecting energy metering and bill amount data at multiple time points.



## 5. Investigate ways to create and strengthen connections

The energy market has a unique opportunity to use electricity pricing changes to examine communication channels and how their operations are networked, and to make changes for the better. It is worthwhile investigating how these channels may become stronger, and how connections can be formed and strengthened between not only internal stakeholders but external stakeholders as well. The consumer is taking a more active role in all types of markets. This new consumer-centric approach holds broad appeal to all stakeholders in the energy market because, as the end-user, the consumer has a direct effect on the entire electricity network.

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# Appendices

## Appendix A: Explaining electricity pricing

Based on the findings of the qualitative interviews, it was identified that consumers lacked knowledge and understanding of electricity pricing. A short video was developed to assist consumers in answering questions in the survey about peak and off-peak pricing for electricity. It also proved to be an excellent test-run for engaging consumers around a new pricing model using their own language and one of their preferred channels.

Respondents' were given the choice of receiving an explanation of electricity pricing via a short video (58% opted for this option) or a written script (42% opted for this option). While results indicate that the video was more useful and interesting than the script (see Figure 29 and Figure 30), it is worth noting that both the video and script were interesting and useful, indicating that both forms of communications and approach were capable of engaging consumers.

Figure 29: Video and Script Comparison of Information Usefulness

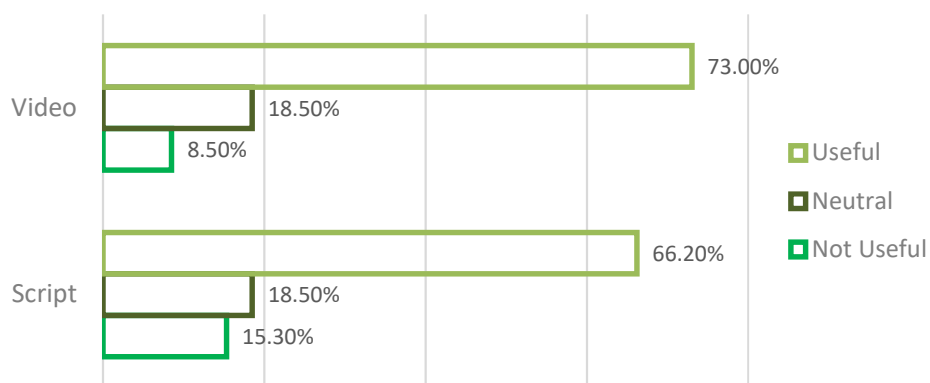
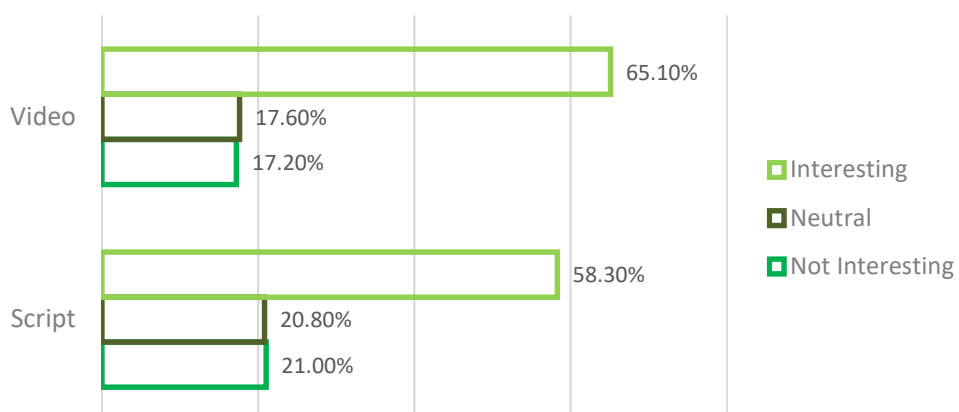


Figure 30: Video and Script Comparison of Information Interest



## Appendix B Using technology to respond to price signals

In order to add further richness to this finding, we analysed the comments made in the surveys when it came to choices for *technology that helps them understand (feedback technology)* and *technology that helps them respond (response technology)*.

To analyse the open-ended comments from the survey relating to feedback technology and response technology preferences, an exploratory approach was taken to identify the most popular themes. The analysis was conducted using the software program Leximancer, which allows for the qualitative data to be manually coded and connected using algorithms. This is done by grouping similar words and phrases and coding them to allow key topics and frequent words to be identified; that is, the word bubbles are created and sized in accordance with the frequency with which a word is mentioned. Words mentioned more frequently have larger bubbles, and those mentioned less frequently have smaller bubbles. The word maps also show the connections between different themes, with lines connecting sections of one bubble to another where there is a connected theme. These themes are important as they provide boundaries and constraints (narrow and deep) to engage consumers with the value proposition of electricity pricing using a digital means.

### Response technology preference

Participants discussed four key themes when asked to explain their preference choice (see Figure 31). The circles in the image represent the naturally occurring themes and the key words within each theme. The size of the circles indicates the frequency of mentions, with the largest circle indicating the most mentions. The themes in order of frequency were:

1. **Use** (red circle)
2. **Easiest** (yellow circle)
3. **Easy** (green circle)
4. **Information** (blue circle)



## Theme 4 – Information

The fourth theme identified in the analysis was information. Participants in this theme discussed how they preferred technology options which provided new knowledge or information needed by their household to implement changes. The following are examples or responses from participants discussing information:

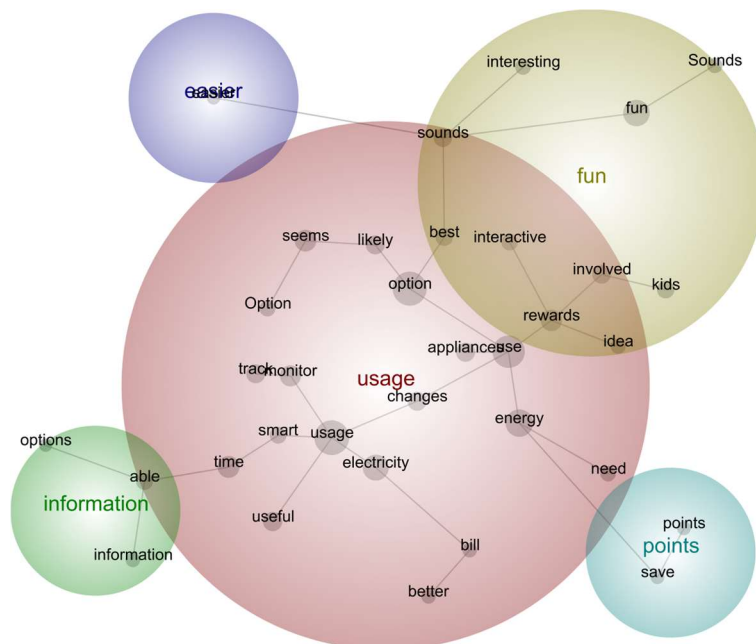
- “It’d be good to have someone educated in the topic to get information and advice from.”
- “I like the idea of immediate information when I want it.”
- “Apps are great to help keep you organised and give you the information you need.”
- “Provided me with information whereas option 1 was obvious so no benefit and option 3 was too hands on from the provider.”

## Feedback technology preference

Participants discussed four key themes when asked to explain their preference choice (see Figure 32). The circles in the image represent the naturally occurring themes and the key words within each theme. The size of the circles indicates the frequency of mentions, with the largest circle indicating the most mentions. The themes in order of frequency are:

1. **Usage** (red circle)
2. **Fun** (yellow circle)
3. **Information** (green circle)
4. **Points** (blue circle)
5. **Easier** (purple circle)

Figure 32: Leximancer Results for Assistance Preference



## Theme 1 – Usage

The most mentioned reason for selecting an option was ‘usage’. This appeared to be the most common theme for participants who had chosen Option 2 as their preferred option for getting



feedback on their behaviours. When mentioning usage, participants also mentioned the associated words of 'monitoring', 'tracking', 'changing', 'appliances' and 'bill'. The following are examples of comments from participants relating to usage:

- *"I choose option two as it allows me to monitor and check my electricity usage at my own leisure."*
- *"Option 1 is too formal whereas option 2 means I can check my usage on my own time and make my own decisions. Option 3 seems very childish."*
- *"I believe this option will be quite useful in monitoring my electricity usage."*

### **Theme 2 – Fun**

The second key theme discussed was 'fun'. This theme was associated with words such as 'involved', 'kids', 'interactive' and 'interesting'. This theme was predominantly associated with participants who indicated a preference for Option 3. The following are example responses regarding to fun:

- *"Minimal human interaction, benefits and fun."*
- *"Not sure if 2 and 3 are exclusive – I'd like both – kids would be more engaged with 3, adults with 2."*
- *"I think the kids would like this."*
- *"I like the idea of having some fun/rewards with the changes. I also think this would be a great way to get the kids involved and teach them some important lessons on energy use of different appliances in our home."*

### **Theme 3 – Information**

The third theme was 'information'. In this theme, the word 'option' was most commonly associated with information. Participants in this theme discussed that having clear information provided with no additional human interaction was preferable. Participants also mentioned privacy concerns relating to providing their energy metering data. The following are examples of responses relating to information:

- *"This is the most appealing of the options (option 1). No additional devices to monitor usage aside from the smart meter but get a little extra information."*
- *"Provides information without the hacking concerns."*
- *"Good to have to-the-minute easily accessible information about usage."*

### **Theme 4 – Points**

The fourth theme was 'points', which was predominantly made of participants who preferred Option 3. In this theme participants often discussed how earning points was a key motivator for their behaviours in other contexts, and this may also translate to pricing signals. The following are examples of responses from participants relating to points:

- *"Love earning points or vouchers!"*
- *"Reward points are great."*
- *"Change is needed, so having some interaction with the process, as well as a reward built in to it's a great option."*

## Theme 5 – Easier

The fifth theme identified in the analysis was ‘easier’. Participants discussed that their preferred option was based upon the perception of it being easier than other options offered, or of making their lives easier. The following are examples for the easier theme:

- “Easier than expected.”
- “This would make it easier for my partner to comply and help explain to our child the rules of the house.”
- “I want my life to be easier and to save money.”

These themes can be used by regulators and industry participants to overlay both current programs and planned future offerings and programs. This would reveal the level of likely alignment with the consumer’s current perception of how technology could help them understand how behaviours affect electricity bills, and how it could help them respond to price signals in a timely and convenient manner.

The themes can be used as both a gateway for deploying programs or as part of any consumer transformation programs. Caution must be taken to ensure the final segmentation model presented in this report is also used as these themes formed part of the evidence journey to build the segmentation model and therefore the themes are not an end in themselves.

## Phenomena influencing technology choice

During the course of this research, two phenomena emerged which appeared to influence consumer preferences for technology. These were named the ‘Goldilocks effect’ and the ‘Little Mermaid effect’.

Figure 33: The Goldilocks Effect

The Goldilocks effect describes the tendency of consumers to choose the middle option – a technology solution that offers just the right amount of engagement for them. Not too little, not too much, but just right. Please see also Figure 33.

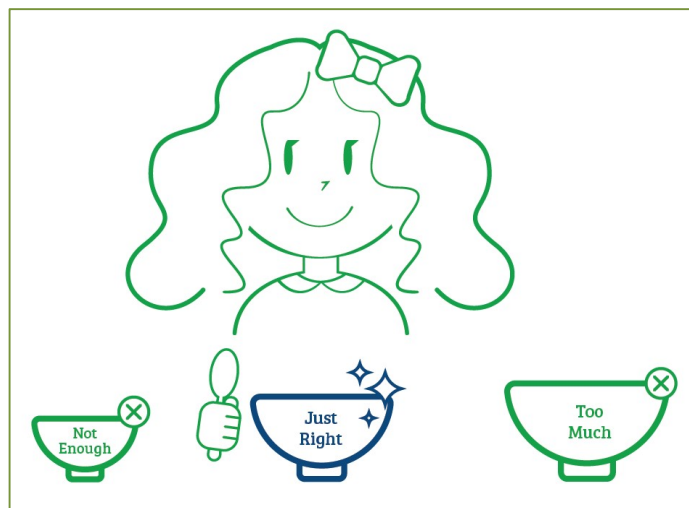
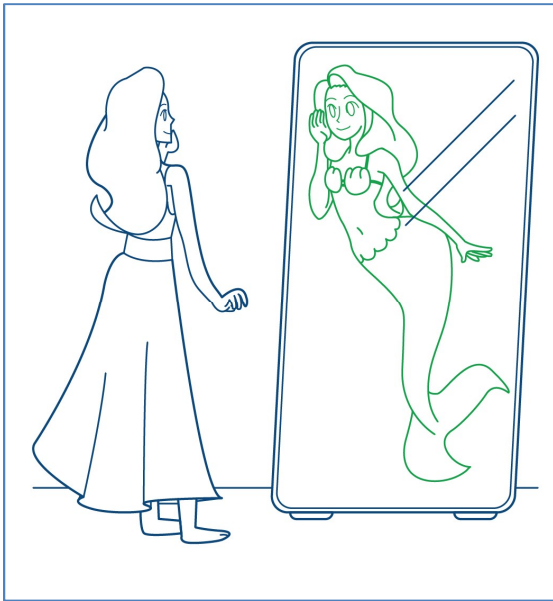


Figure 34: The Little Mermaid Effect



The Little Mermaid effect describes the tendency of consumers to want to 'bundle' their preferences for feedback, or to select an option that they believe provides the 'best of both worlds'. Often, this is reflected in a choice of technology assistance that provides fun as well as function. Please see also Figure 34.

This is important when presenting choices to consumers. Leading consumers to an industry-preferred model by deploying the Goldilocks Effect can be risky. Conversely the Little Mermaid Effect may hinder the consumer from articulating their hidden and secret needs. Using social marketing questioning techniques like those used in this research will limit these effects when designing technology engagement strategies.

## Appendix C: Detailed Overview of Clusters/Segments

Cluster	Ant Colony (n=179)	Beehive (n=236)	Geese Flock (n=254)	Wallabies (n=215)	Dom. Cats (n=234)	Lion Pride (n=227)
<b>Cluster Variables</b>						
<b>Consensual v Conflict (Importance=1.00) [Scale: 1-7]</b>	M = 2.24	M = 2.10	M = 3.72	M = 5.11	M = 1.95	M = 1.73
<b>Top Down v Shared (Importance=0.71) [Scale: 1-7]</b>	M = 1.96	M = 3.49	M = 4.66	M = 2.90	M = 5.46	M = 5.87
<b>Bureaucratic v Organic (Importance=0.63) [Scale: 1-7]</b>	M = 2.91	M = 5.66	M = 3.77	M = 5.17	M = 3.92	M = 2.63
<b>Passive v Active (Importance=0.56) [Scale: 1-7]</b>	M = 3.80	M = 4.54	M = 4.60	M = 2.90	M = 1.88	M = 5.52
<b>Demographic Characteristics</b>						
<b>Household Life stage</b>						
At home with my parents/guardian	9.5%	12.7%	14.2%	9.3%	4.7%	8.4%
At home with my sole parent/guardian	1.7%	0.8%	1.6%	1.4%	1.7%	1.3%
Couple with children	26.8%	<b>Mo = 28.8%</b>	<b>Mo = 39%</b>	<b>Mo = 26.5%</b>	<b>Mo = 43.6%</b>	<b>Mo = 40.1%</b>
One parent family	11.7%	10.6%	8.3%	15.3%	2.1%	5.3%
Group or shared household	6.7%	8.1%	11%	14.4%	11.1%	7.9%
One-person household	<b>Mo = 30.7%</b>	13.6%	9.1%	15.3%	4.3%	5.7%
Couple without children	11.2%	24.6%	14.2%	13.0%	29.9%	29.1%
Other	1.7%	0.8%	2.8%	4.7%	2.6%	2.2%
<b>Household Size</b>						
1	<b>Mo = 31.3%</b>	15.3%	9.1%	17.2%	5.1%	6.6%
2	19%	<b>Mo = 32.6%</b>	<b>Mo = 26%</b>	<b>Mo = 27.0%</b>	<b>Mo = 35.5%</b>	<b>Mo = 37.4%</b>
3	21.2%	19.9%	22.4%	21.9%	28.2%	23.8%
4	12.3%	18.6%	26%	20.9%	22.2%	22.9%
5	10.6%	8.5%	9.8%	7.9%	3.8%	5.3%
6	4.5%	3.4%	5.9%	3.7%	3.8%	3.5%
7 was not measured on the scale	0%	0%	0%	0%	0%	0%
8	1.1%	1.3%	0.4%	0.9%	0.4%	0.4%
9	0%	0%	0.4%	0%	0.4%	0%
Over 10	0%	0.4%	0%	0.5%	0.4%	0%
<b>Income</b>						
Less than \$11,000	0.6%	2.5%	2.8%	3.3%	2.6%	1.3%
\$11,000-\$30,999	14.5%	7.6%	9.8%	10.2%	6.8%	6.2%
\$30,100-\$50,999	12.8%	9.7%	15%	13.0%	8.1%	14.1%
\$51,000-\$70,999	13.4%	14.8%	<b>Mo = 13.4%</b>	<b>Mo = 14.9%</b>	15.4%	11.9%
\$71,000-\$90,000	14.5%	15.7%	12.6%	7.0%	10.3%	11.5%
\$91,000-\$110,999	10.1%	<b>Mo = 16.5%</b>	11.4%	12.1%	14.1%	16.7%
\$111,000-\$150,999	<b>Mo = 16.2%</b>	11.4%	13%	11.6%	<b>Mo = 18.8%</b>	<b>Mo = 17.2%</b>
\$151,000 and above	12.3%	14.4%	7.9%	<b>Mo = 14.9%</b>	15.8%	14.5%
Not sure	1.7%	2.1%	3.1%	4.7%	2.6%	4%
Prefer not to answer	3.9%	5.1%	11%	8.4%	5.6%	2.6%
<b>Bill Size</b>						
Bill Size (average per month)	\$186.30	\$221.88	\$231.29	\$228.10	\$184.28	\$200.50
<b>Preferred Scenario Options</b>						
<b>Technology Preference</b>						
Option One (Low Tech)	33.5%	30.9%	28.3%	28.4%	33.3%	28.6%
Option Two (Interactive Tech)	<b>Mo = 37.4%</b>	<b>Mo = 39.4%</b>	<b>Mo = 36.2%</b>	<b>Mo = 30.7%</b>	<b>Mo = 35.9%</b>	<b>Mo = 38.8%</b>
Option Three (Proactive Tech)	21.2%	20.3%	17.7%	24.2%	19.2%	25.1%
I don't like any of these options	7.8%	9.3%	17.7%	16.7%	11.5%	7.5%
<b>Assistance Preference</b>						
Option One (Help making changes)	10.1%	6.8%	16.1%	7.4%	7.3%	11%
Option Two (Monitor and track)	30.7%	33.5%	<b>Mo = 30.7%</b>	30.2%	35.9%	33.9%
Option Three (Gamification)	<b>Mo = 45.3%</b>	<b>Mo = 41.9%</b>	29.5%	<b>Mo = 37.7%</b>	<b>Mo = 41.9%</b>	<b>Mo = 43.6%</b>
I don't like any of these options	14%	17.8%	23.6%	24.7%	15%	11.5%

Note. Values represent median/mode value. M = Mean, Mo = Mode.

## Appendix D: Evaluating market segments

		Segment #						
Criterion	Details	1	2	3	4	5	6	7
<b>1. Substantial</b>	Size of the segment – is it too large or too small?							
<b>2. Reachable</b>	Can you access the market segment to communicate and sell to them?							
<b>3. Identifiable</b>	Are you able to clearly identify people in this segment?							
<b>4. Responsive</b>	Will the people in this segment respond favourably to your product?							
<b>5. Profitable</b>	Can you price the product for this segment in a way that will be profitable for you?							
<b>Total segment score</b>								

### Key

1 = Not very attractive for our organisation

2 = Moderately attractive for our organisation

3 = Very attractive for our organisation

### Identifiable

First, this research has **identified** six distinct Australian household market segments. In particular, this research has demonstrated the key similarities and differences of Australian households, and how they should be distinctly treated due to the process by which they make decisions. In doing so, this enables improved tailoring and positioning of marketing strategies for different Australian households.

### Substantial market segment sizes

Second, this research has identified Australian household market segments that are **substantial** in size to ensure that resources are allocated efficiently to encourage pricing signals adoption. This benefit was ensured throughout the analysis process, whereby market segments or market segmentation models which did not uncover substantial market segment sizes were excluded.

## **Reachable by digital channels**

Third, this research has focused on Australian household segments that are **reachable** by digital methods. This is an important consideration as this segmentation model specifically identifies only market segments which will be receptive and contactable by digital marketing means. As the Australian population becomes increasingly digitally connected, this segmentation model will become increasingly useful to guide the development of digital marketing strategies to contact Australian households.

## **Responsive to pricing signals**

Fourth, this research has identified Australian households that are **responsive** or non-responsive to new electricity pricing plans. The findings of this research demonstrate that not all Australian households will initially react positively to the introduction of these types of pricing plans. Therefore, in the initial introduction, this segmentation model identifies Australian households that are likely to be responsive to and interested in trialling new electricity pricing. It is suggested that the segments identified in the market segmentation model are those which should be prioritised and targeted (according to their needs and timing) to ensure correct resource allocation in encouraging the adoption of these electricity pricing plans.

## **Profitable**

Finally, selected market segments should also be profitable. This does not mean profitable in the traditional sense of producing the most profit for a company, but rather that the segment(s) selected should be most ready to change and therefore have the lowest relative cost to acquire and manage. For instance, a segment that is ready to trial pricing signals and accompanying technology is more 'profitable' than a segment that requires interventions – potentially in person (high cost) – to convince them to even consider trialling.

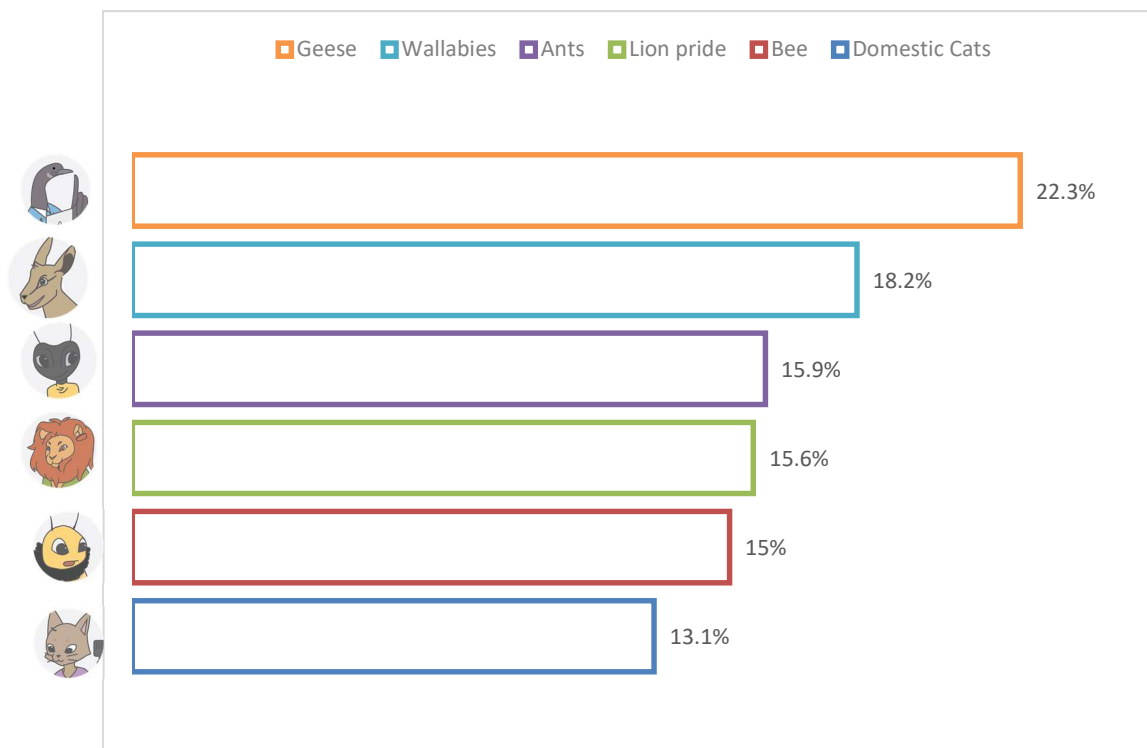
## Appendix E: Profiling vulnerable consumers

The data revealed interesting insights into different groups of vulnerable consumers. In this section three types of vulnerable consumers are discussed: low-income households, older consumers and those in the lower Socio-economic Index for Areas (SEIFA) codes.

### Low-income consumers

Within the survey data set it could be determined whether vulnerable households existed within the sample. In particular, we were able to determine, based upon income status (household income) if low-income households responded to the survey (Consumer Affairs Victoria, 2004). We determined vulnerable low-income households to be those who earn under \$50,000 per household. This threshold was adopted as it has been used previously by energy research (see Swinton et al., 2016) and falls into the bottom two quintiles of household income as determined by the Australian Bureau of Statistics (ABS). Please see Figure 35.

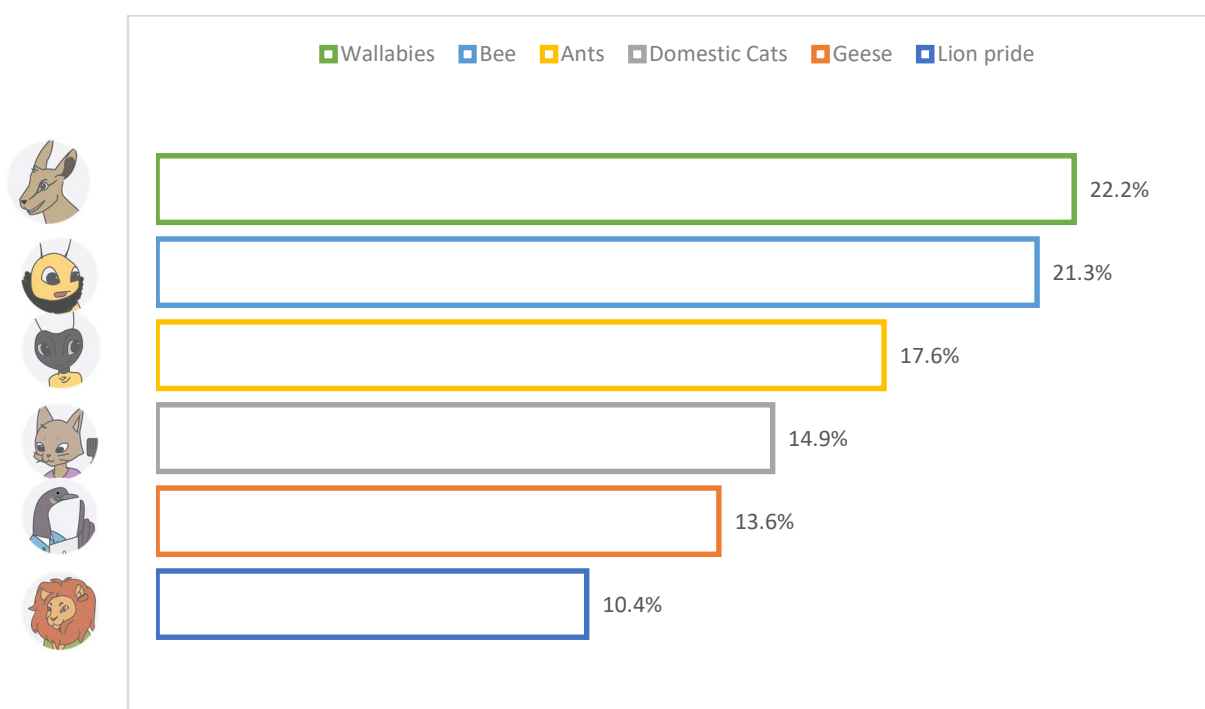
Figure 35: Proportion of Low-income Households within Segments



## Older consumers

Following the low-income group is an examination of another vulnerable group, consumers over the age of 50. The maximum age for inclusion in the online survey was 55 (minimum retirement age) therefore these older consumers do not include retirees and the elderly. Other reports (e.g. the Green Heart Wisdom project) examine more senior consumers specifically. The 50–55-year-old consumers covered in our project are nearing retirement and are therefore vulnerable by their move away from income and digital engagement opportunities. Indeed, the relationship between age and technology adoption is a complex one. It is noted that despite the increase in technological innovations and associated benefits, adoption rates are low amongst older adults (Lee & Coughlin, 2014), indicating that they may potentially lose out on the benefits of new technologies and risk being left behind once they leave the workforce. As can be seen in Figure 36, Wallabies and Bees have the greatest proportion of older consumers in this sample.

Figure 36: Proportion of Older Households within Segments

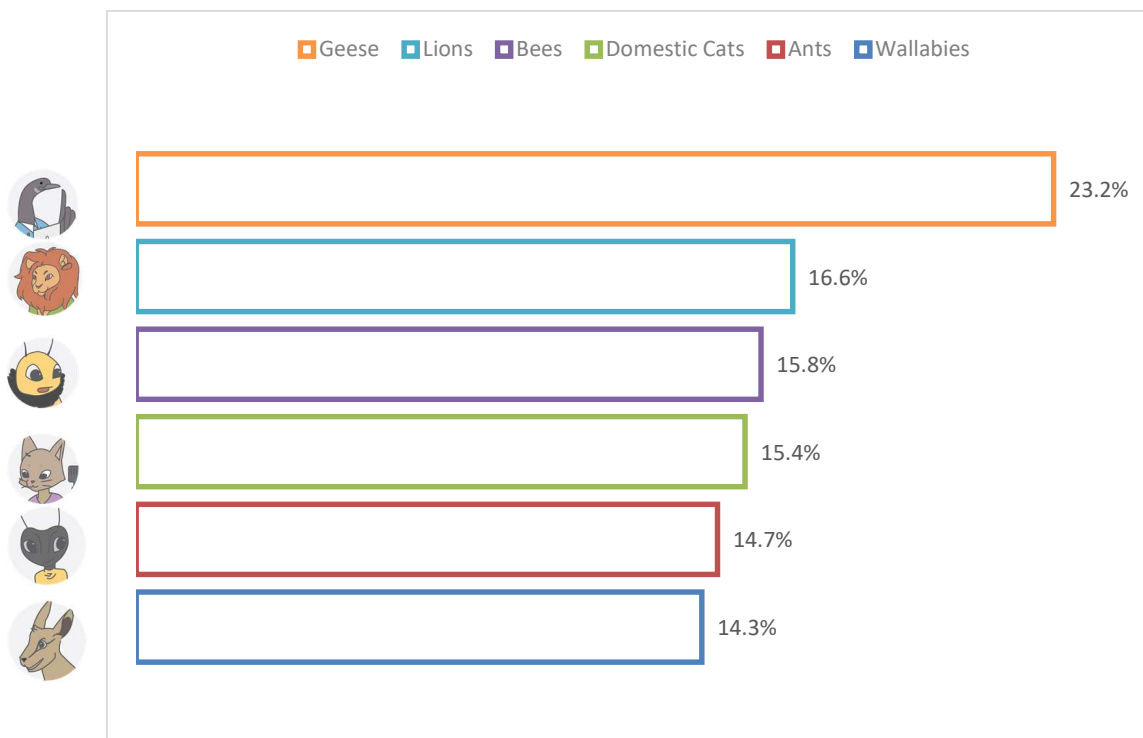




## Low socio-economic consumers

Finally, we present an examination of those consumers coming from a low socio-economic area. Socio-economic status can be broadly defined as “people’s access to material and social resources, and their ability to participate in society” (Pink, 2013, p. 3). The ABS rank areas in Australia according to relative socio-economic advantage and disadvantage using a methodology it calls SEIFA. These indexes are based on information from the five-yearly Census, and are assigned to areas, not to individuals; thus indicating the collective socio-economic characteristics of the people living in an area (Pink, 2013). Whilst four indexes exist, the index chosen for this research was the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD). IRSAD rank areas on a continuum from most disadvantaged to most advantaged using a selection of variables such as income level, internet connection status, education, labour status, disability, rental and mortgage amounts, car ownership, household types, and spare or overcrowded bedrooms. Each suburb and postcode is assigned an index score and a decile rank. As the survey data collected in this research asked for postcodes, they were used to assign decile IRSAD scores to allow comparison. As can be seen in Figure 37, almost a quarter of the Flock of Geese segment live in low SEIFA areas.

Figure 37: Proportion of Low SEIFA Code Households within Segment



A summary of the three types of vulnerability is provided in Figure 38. This figure illustrates that the Geese Flock and Wallabies have two of the highest vulnerability profiles, followed by the Beehive (purely owing to a significant percentage of older Australians in this group) and the remaining segments are similar. Examining these profiles allows an insight into whether a group is vulnerable by virtue of their income levels, lower socio-economic area and age, or a combination of these. For example, in the Wallabies' SEIFA index income and age combine to indicate that this group may currently have a low-income, but are potentially investing in a higher SEIFA area, hence are perhaps an upwardly mobile group going through a transitional phase.

Figure 38: Vulnerability Profiles of Each Segment

