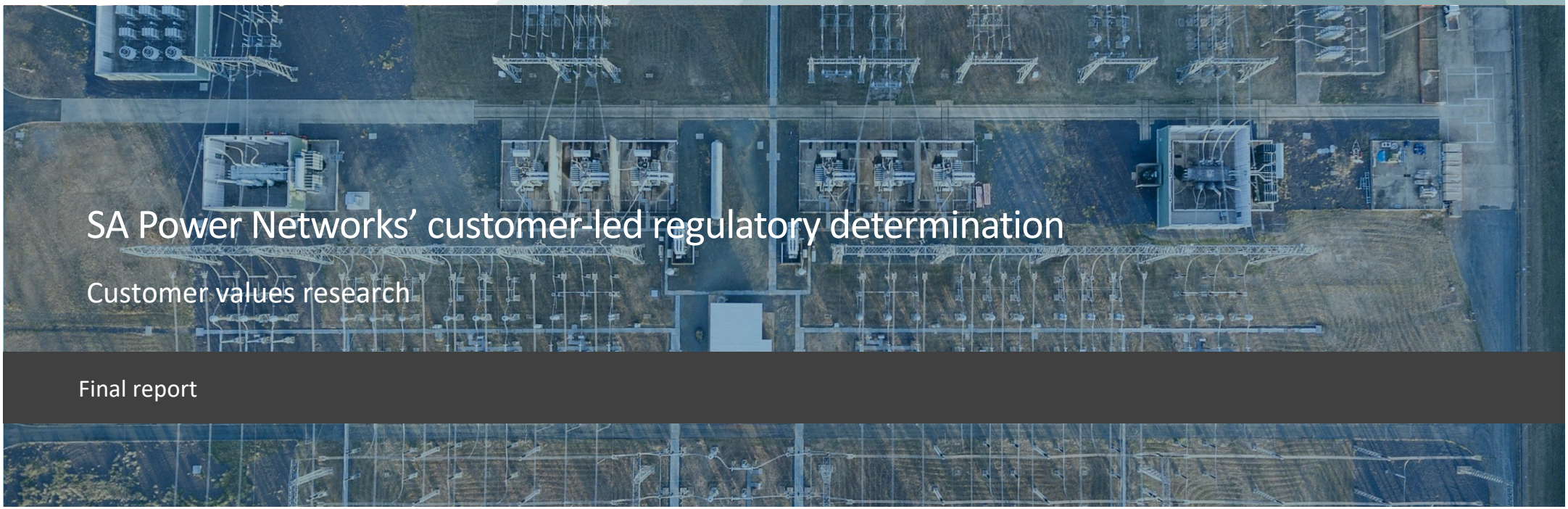
MARSDEN JACOB ASSOCIATES

economics
public policy
markets
strategy



SA Power Networks' customer-led regulatory determination

Customer values research

Final report

Prepared for SA Power Networks
December 2022

Marsden Jacob Associates Pty Ltd
ABN 66 663 324 657
ACN 072 233 204
e. economists@marsdenjacob.com.au

Office locations
Melbourne | Perth | Sydney | Brisbane | Adelaide

Citation: Marsden Jacob Associates 2022. *SA Power Network's customer-led regulatory determination. Customer values research*.

Authors
Jeremy Cheesman 0414 765 739 jcheesman@marsdenjacob.com.au
James Holloway
Arne Risa-Hole

LinkedIn - Marsden Jacob Associates
www.marsdenjacob.com.au

Acknowledgements
Marsden Jacob consulted widely for this report. We would like to acknowledge and thank all the people we engaged with during this project. The report is better for your input. All final recommendations and views in this report are attributable to Marsden Jacob unless otherwise stated.

This report is intended to be published on the AER's website as part of SA Power Networks 2025-30 Regulatory Proposal

MARSDEN JACOB ASSOCIATES

Contents

Tables

Figures

Executive Summary

SA Power Networks is required to undergo a regulatory determination process every five years which determines how much revenue is required provide regulated services to customers. To inform its next determination, SA Power Networks sought to better understand its residential and business customers' preferences for services it provides or could provide. SA Power Networks has conducted a Customer Values Study, which aims to determine how much customers are willing to pay extra in their electricity bill for these services.

SA Power Networks is required to submit an investment proposal to the Australian Energy Regulator (AER) every five years, justifying the prudency and efficiency of the expenditure and revenue that it forecasts to require in order to deliver electricity distribution network service outcomes expected by its customers, and to comply with its regulatory obligations. The AER then uses the information in that proposal, uses to determine the amount of revenue SA Power Networks is allowed to collect from customers through electricity retailers in a five-year period. This process is called regulatory determination.

SA Power Networks commissioned Marsden Jacob Associates to conduct a customer values study to provide inputs to some of the business cases and cost benefit analyses that may be submitted as part of the investment proposal, and to also inform day-to-day business decision making. The customer values study explores how much South Australian households and businesses are willing to pay, through their electricity bills, to enhance some of SA Power Network's current services and for new services SA Power Networks could provide in the future. This work focusses on service areas which do not currently have established or published figures or methods for expressing customer value in monetary terms.

SA Power Networks sought to explore customer values across seven service areas over four service level outcome categories. Table 1 summarises the service areas and service level outcome categories, the current service level (the level of service provided if current spend levels are maintained) and describes the alternative levels of service we evaluated through the online customer values survey. The hyperlinks in Table 1 launch the videos that were used to describe the services and service levels to customers.

Table 1: Research topics, current level of service and service levels considered.

Service Level Outcome	Service area (click on hyperlink to view video containing service description)	Service SA Power Networks currently provide	What SA Power Networks asked about providing
Delivering more reliable and resilience power services	Customers experiencing service interruptions in worst-served areas by 2030.	**90,000 customers a year** (10% of all customers). 12 hours of interruptions a year per customer.	**25,000 to 110,000 customers a year** (3% to 12% of all customers). 9-15 hours of interruptions a year per customer.
	Customers experiencing service interruptions to stop powerlines starting fires by 2030.	**5,000 customers a year** (0.56% of all customers). 6-12 hours of interruptions a year per customer.	**1,000 to 7,000 customers a year** (0.11% to 0.78% of all customers). 6-12 hours of interruptions a year per customer.
	Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030.	**60,000 customers a year** (7% of all customers).	**30,000 to 54,000 customers a year** (3% to 6% of all customers).
Delivering modern flexible services	Energy advisory services we provide by 2030.	**Limited Energy Advisory service.** No online portal. No phone support.	**Personalised Energy Advisory service.** Online portal. Limited to comprehensive phone support.
	Website services we provide by 2030.	**Limited personalised on-demand services.**	**Personalised on-demand services.** Some to comprehensive self-service. No automated-to-automated responses, e.g., receiving immediate connection quotes.

Service Level Outcome	Service area (click on hyperlink to view video containing service description)	Service SA Power Networks currently provide	What SA Power Networks asked about providing
Caring and protecting the environment	Carbon emissions from SA Power Networks' vehicle fleet by 2030.	**8,000 tonnes a year** (Equivalent to emissions from 1,725 cars a year).	**3,600 to 4,800 tonnes a year** (Equivalent to emissions from 775 to 1,035 cars a year).
Enabling solar exports to the network	Number of hours that customers' solar system exports are reduced by 2030.	**No more than 875 hours a year** (30% of daylight hours).	**No more than 60 to 290 hours a year** (2% to 10% of daylight hours).

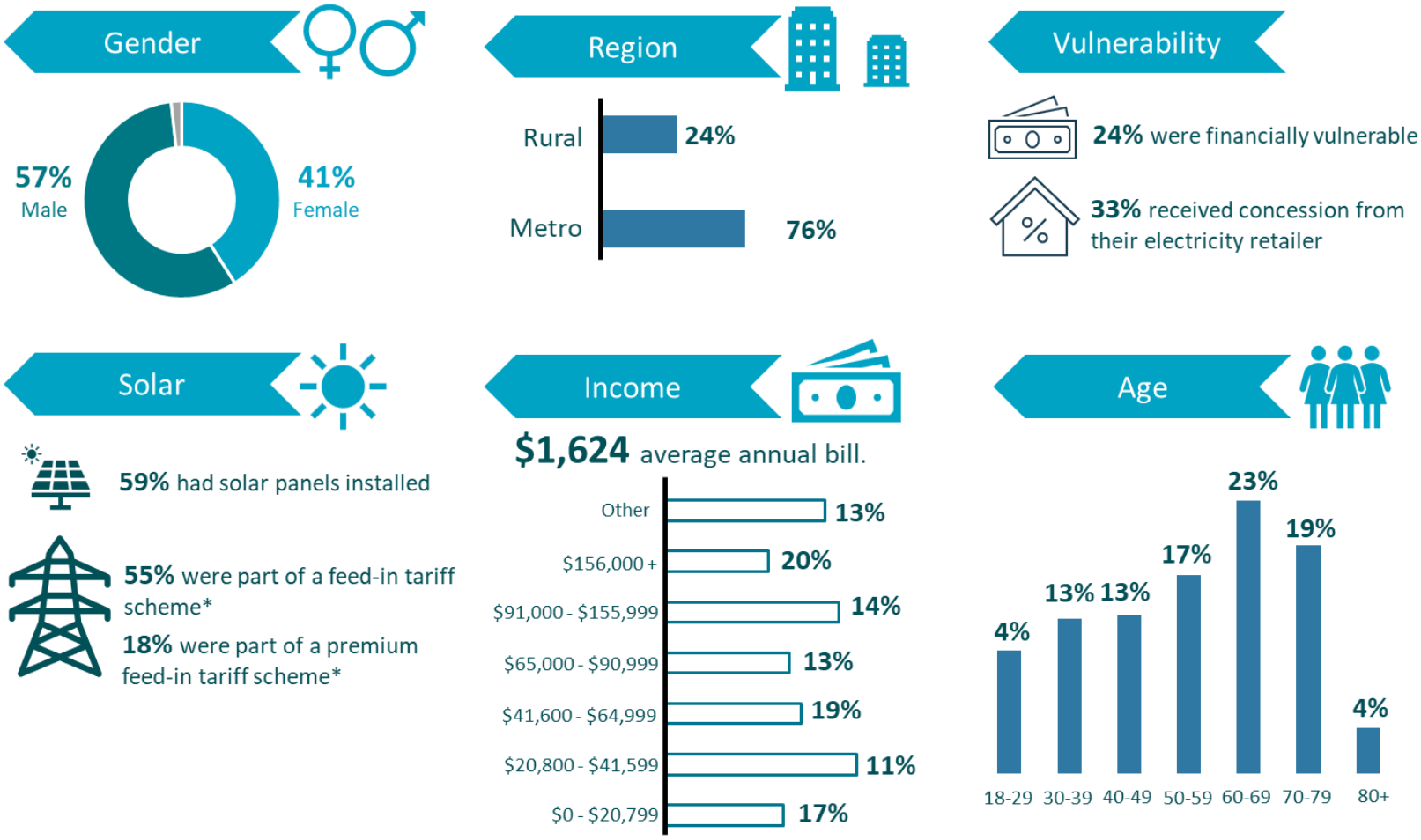
Customer sample

Respondents were recruited through two mechanisms using a split sample approach. A total of 1,390 respondents were recruited through a i) general email invitation, ii) email to registered users of SA Power Networks' Talking Power site, iii) promotional article in Business SA's regular e-newsletter targeting small businesses (Business SA is the peak body representing businesses in SA), iv)email to unsuccessful applicants to SA Power Networks' People's Panel and v) an online panel operated by a third party.

*The sample included 1,250 were households and 140 small businesses. Figure 1 and Note: * Only 1059 household respondents were asked whether they were part of the Feed-In Tariff Scheme and the Premium Feed-In Tariff Scheme.*

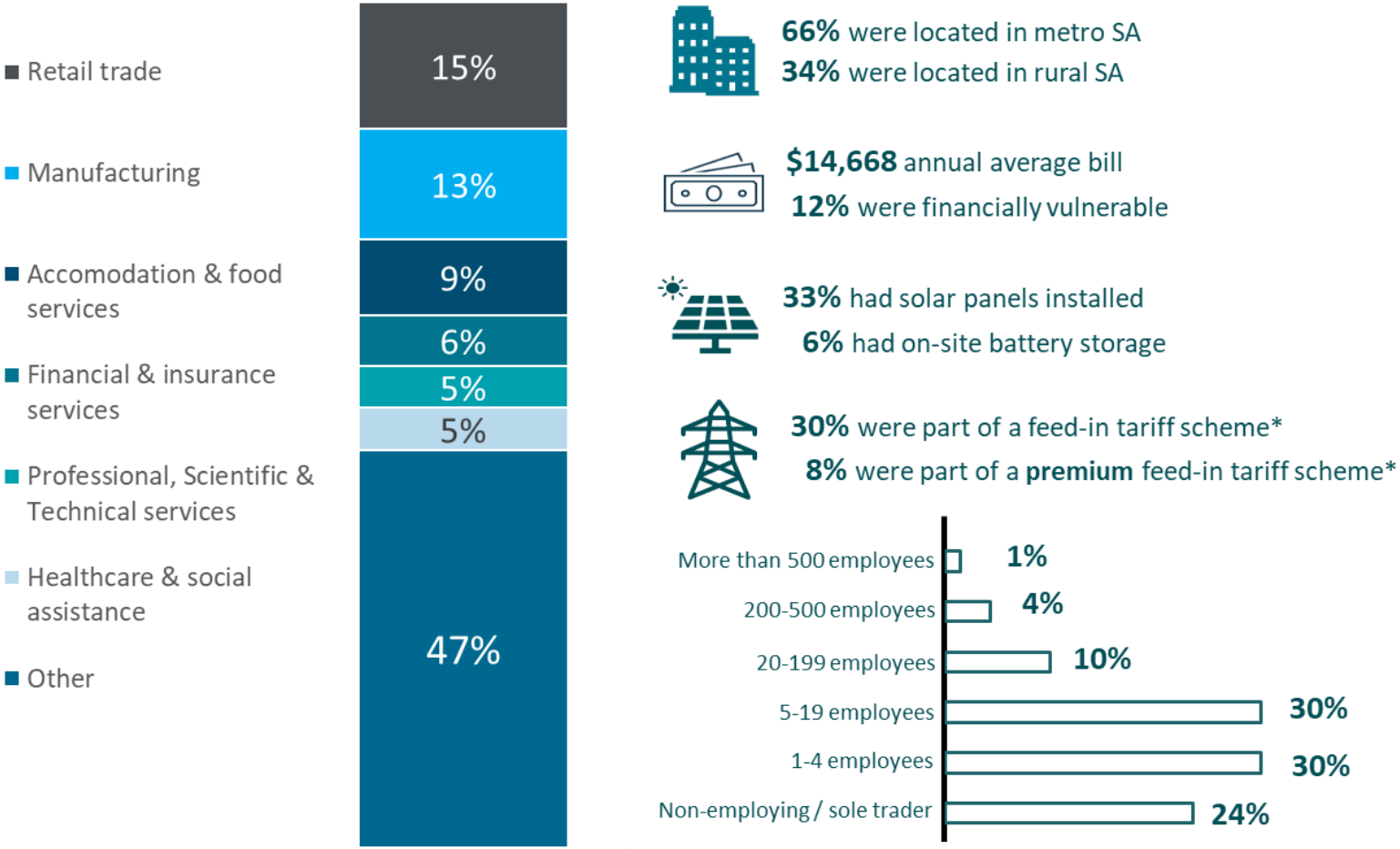
Figure 2 provide a breakdown of the household and small business sample across key characteristics.

Figure 1: Household customer sample summary



*Note: * Only 1059 household respondents were asked whether they were part of the Feed-In Tariff Scheme and the Premium Feed-In Tariff Scheme.*

Figure 2: Small business customer sample summary



Headline findings

Figure 3 provides a summary of customer preferences and willingness to pay across the seven service areas, which are colour coded to indicate the level of evidence supporting the analysis. Figure 4 provides a summary of the willingness to pay values for the highest level of improved service across the seven service areas. The key findings include that:

Households show

Strong support for:

- Reducing the number of interruptions in worst-served areas.
- Reducing the number of interruptions to stop powerlines starting fires.
- Reducing the number of interruptions longer than 24 hours due to extreme weather.
- Energy advisory services.
- Reducing the number of hours that customers' solar system exports are reduced.
- Reducing carbon emissions from SA Power Networks vehicle fleet.
- Website services.

Small businesses show

Strong support for:

- Reducing the number of interruptions in worst-served areas.
- Energy advisory services.
- Reducing the number of hours that customers' solar system exports are reduced.
- Reducing carbon emissions from SA Power Networks vehicle fleet.

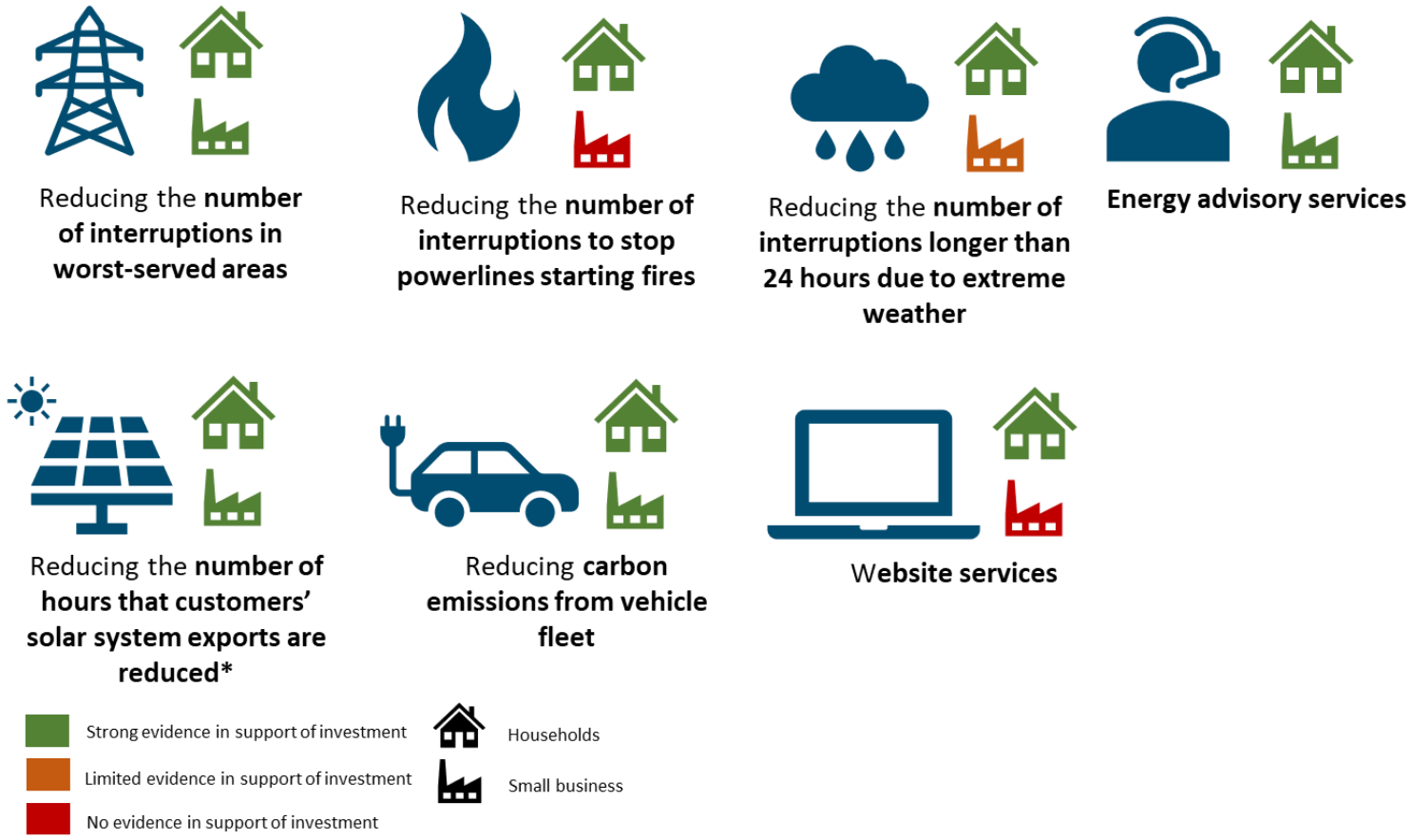
Limited support for:

- Reducing the number of interruptions longer than 24 hours due to extreme weather.

No support for:

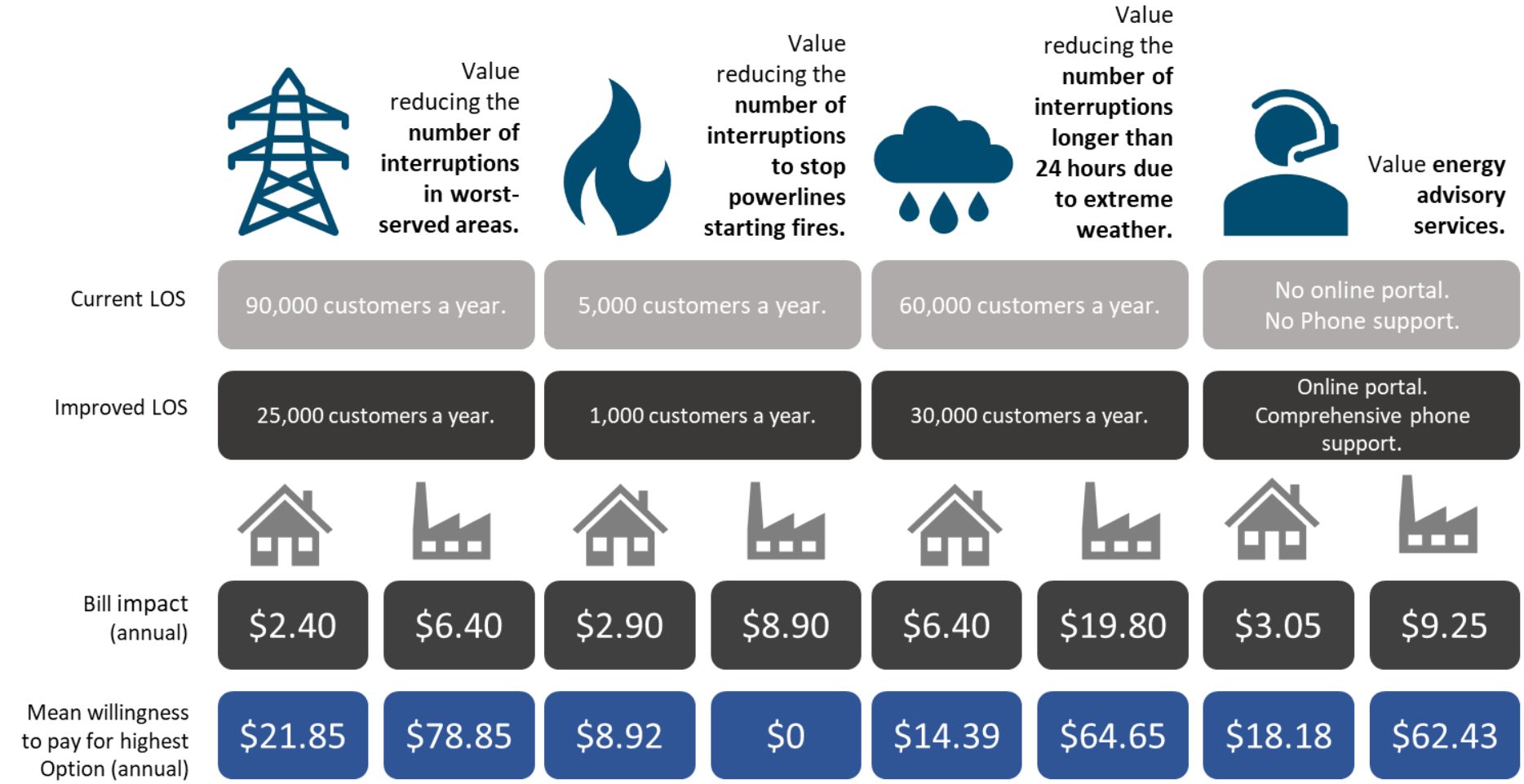
- Reducing the number of interruptions to stop powerlines starting fires
- Website services.

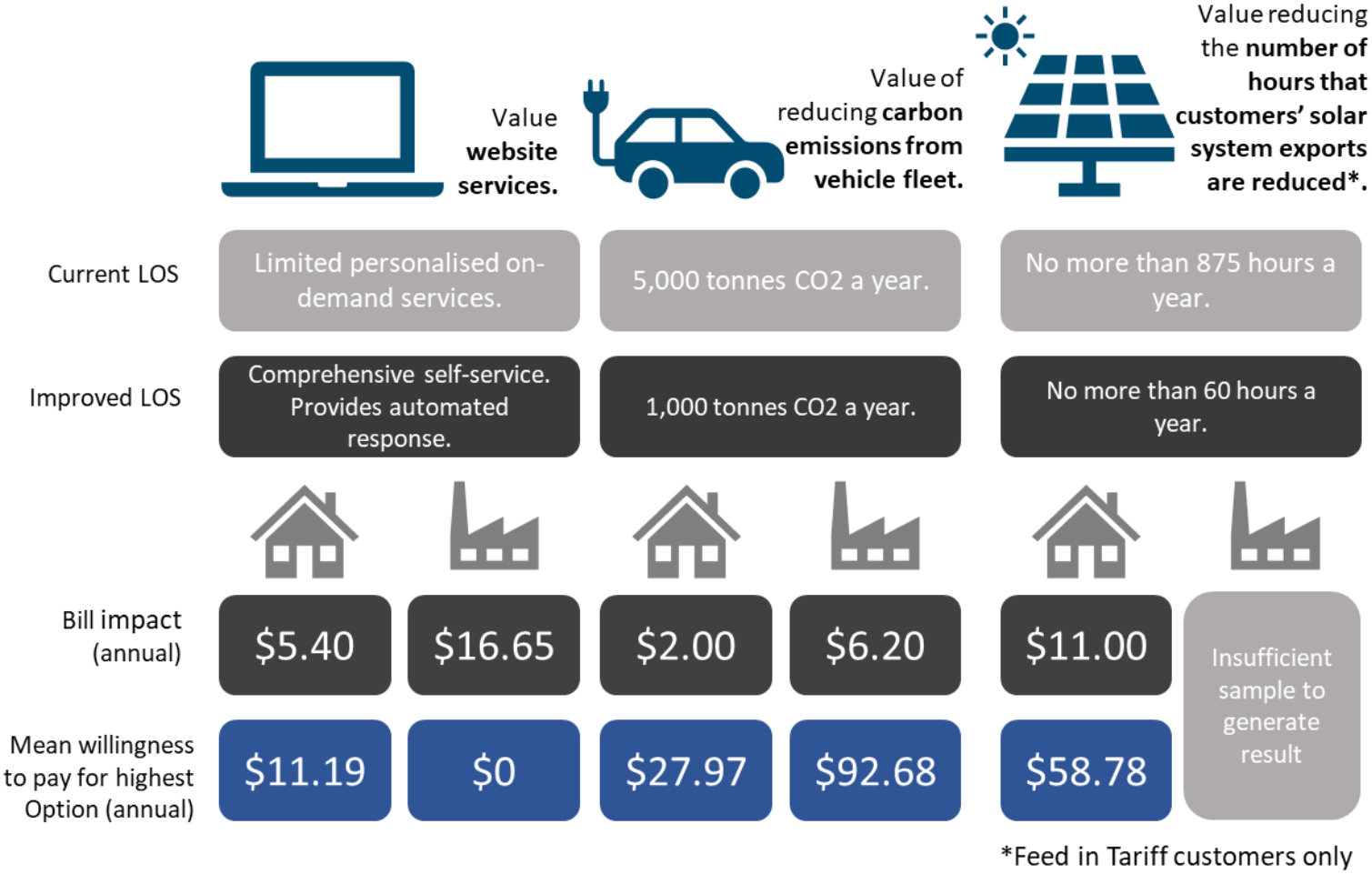
Figure 3: Summary of customer preferences



*Note: * 'Reducing the number of hours that customers' solar system exports are reduced' residential result is based on those with a solar feed-in-tariff only.*

Figure 4: Summary of willingness to pay values for highest level of improved service




Value **website services.**
Value of reducing **carbon emissions from vehicle fleet.**
Value reducing the **number of hours that customers' solar system exports are reduced*.**
Current LOS
Limited personalised on-demand services.
5,000 tonnes CO2 a year.
No more than 875 hours a year.
Improved LOS
Comprehensive self-service. Provides automated response.
1,000 tonnes CO2 a year.
No more than 60 hours a year.
Bill impact (annual)
$5.40
$16.65
$2.00
$6.20
$11.00
Insufficient sample to generate result
Mean willingness to pay for highest Option (annual)
$11.19
$0
$27.97
$92.68
$58.78
*Feed in Tariff customers only

Introduction

To inform its next regulatory determination, SA Power Networks undertook customer consultation, to better understand its residential and business customers' preferences for the services it provides or could provide. To achieve this, SA Power Networks has conducted a Customer Values Study, which aims to determine how much extra customers are willing to pay through their electricity bill for these services.

SA Power Networks is South Australia's sole electricity distributor, supplying electricity to around 928,000 customers over an area of more than 178,000 square kilometres. Its customers range from isolated farms in rural areas to regional and metropolitan residential homes, businesses, industry precincts and city centres.

SA Power Networks is required to submit an investment proposal to the Australian Energy Regulator (AER) every five years to ensure it is delivering services to customers in the most relevant, prudent and efficient way). The investment proposal enables the AER to determine the amount of revenue SA Power Networks can collect from customers (through electricity retailers) over a five-year period. This process is called a regulatory determination.

SA Power Networks' customer consultation approach for its next regulatory determination is set out on its Talking Power site. SA Power Networks' customer engagement approach builds on approaches used in previous regulatory determinations, and seeks to align with AER guidance on customer engagement, which can be found in the AER's Better Resets Handbook. The AER guidance:

- **Requires that SA Power Networks sincerely engage with consumers**. Sincere engagement requires:
  - Genuine commitment from SA Power Networks extending down from the Board and Executives to giving effect to consumer preferences

  - Openness to new ideas and a willingness to change
  - Ongoing engagement with consumers about outcomes that matter to them, which allows consumers to set the agenda
  - Ensuring consumer confidence in the engagement process and alleviating concerns consumers might have
- **Requires SA Power Networks to treat consumers as partners.** SA Power Networks should collaborate with and empower consumers in developing regulatory proposals instead of simply asking them for feedback.
- **Requires SA Power Networks to ensure they provide consumers an avenue to effectively engage and provide informed feedback.**
- **Requires SA Power Networks to transparently set out their engagement plans**. This includes outlining objectives, engagement issues/topics and the level of participation and influence consumers can expect on the regulatory proposal.
- **Requires SA Power Networks to transparently report and consult on the delivery of commitments.** This involves SA Power Networks communicating with consumers on how they are tracking on achieving their outlined objectives.
- **Requires SA Power Networks' consultations with consumers to focus on long-term outcomes**. It should not be confined to outcomes desired for the period covered by the regulatory process.

To satisfy the AER's requirements, SA Power Networks commissioned Marsden Jacob Associates (MJA) to conduct a customer values study exploring South Australians' preferences for investment in a range of service offerings including: delivering more reliable and resilient power services; delivering modern and flexible services; initiatives to care for and protect the environment; and the enablement of solar exports to the network. More specifically, the study involved an online survey to determine how much extra people are willing to pay through their annual electricity bill for upgrades to existing SA Power Networks services and for new services SA Power Networks could provide in the future.

This work is not intended to test the overall affordability of the whole investment programme for SA Power Network's 2025-2030 AER proposal. Nor is it intended to derive quantitative values that will support most of SA Power Network's future investment needs. The intent of this survey is to:

- Further explore the value to customers of topics and preferences raised by customers through qualitative discussions.

- Only target a subset of potential services and aspects of service, particularly where there is potential to consider improvements to existing services or new services, in service areas for which there is not currently available means of quantifying value / perceived value in monetary terms for customers from these services
- Derive results that can serve as inputs to the deliberations of SA Power Network's Peoples' Panel process.
- Provide inputs to business cases and cost benefit analyses that will be submitted to the AER for the 2025-30 regulatory proposal. The way results will be used to assess the potential benefits of particular investment actions will be further determined. In general, these results are intended to serve as an additional reference point on the merit of a particular investment action, rather than being used in isolation to support of such actions.

Alongside this work, SA Power Networks is running a comprehensive consumer engagement programme to:

- Better understand the service outcomes its customers expect over the 2025-30 period and the investment levels they support. Workshops have been used to test different potential service outcomes scenarios, with corresponding differing levels of expenditure and price impact. Workshops were run between May and December 2022 as part of the Broad and Diverse program, attended by over 230 people including six workshops in regional South Australia. A further 44 workshops covering 13 overarching topics were delivered between August and December 2022, as part of the Focussed Conversation program, attended by more than 300 people ; and
- Present service recommendations to a Peoples' Panel that will re-evaluate the recommendations with view to proposing a consolidated set of outcomes, expenditures and expected price impacts that customers consider best balance service and affordability.

1.1 Objectives

The objectives of the customer values research in this report are to improve SA Power Networks' understanding of customer service option preferences aligned with the Regulatory Reset 2025-30 themes identified through customer engagement processes. SA Power Networks' Talking Power site provides information about these themes, and how they were identified through customer engagement.

The objectives and research questions for the customer values online survey research in this report are set out below.

Delivering more reliable and resilient power services

SA Power Networks measures reliability of power services in several ways, including:

- How many customers experience interruptions to power services in worst-served area;
- How many customers experience interruptions to power services to stop powerlines starting fires; and
- How many customers experience service interruptions longer than 24 hours due to extreme weather.

The customer values research aimed to help SA Power Networks better understand whether customers valued improving the reliability of these services. In some cases, SA Power Networks also wanted to understand whether customers would value a reduction in service, if this resulted in lower electricity bills.

Delivering modern flexible services

Technology enables SA Power Networks to provide more opportunities to engage and communicate with households and businesses. This could involve:

- Website/online services that include comprehensive self-service avenues and automated responses.
- Personalised energy advisory services, which includes an online portal and comprehensive phone support.

Customers can currently interact with SA Power Networks by calling its contact centre, submitting forms and requests online, and visiting the SA Power Network's website for information. SA Power Networks recognises that its customers, and their needs and expectations, are diverse. Technology enables the provision of more and diverse options to customers. SA Power Networks wanted to understand customers' preferences for interacting with SA Power Networks, and whether they would be willing to pay for more responsive and flexible contact options.

During recent Focussed Conversation engagement sessions, SA Power Network customers reported that they find the electricity market difficult to navigate and do not know which sources of information and advice to trust. Customers said SA Power Networks could address this by providing an independent energy advisory service. Customers added that this service could be accessed via an online platform or by calling an energy consultant for guidance on:

- Identifying the best retail electricity deal, noting that the AER also provides assistance in this area through its Energy Made Easy (EME) but with current limitations in services available e.g. it doesn't provide comparisons for solar customers.
- Saving money by using renewable energy or changing how and when they use electricity.
- How to minimise their carbon footprint
- The benefits of electric vehicles or an all-electric household

The customer values research aimed to help SA Power Networks to better understand customers' preferences for delivering these modern flexible services, and whether they would be willing to pay for more responsive and flexible options for contact and accessing electricity market information.

Caring for and protecting the environment:

SA Power Networks works within the natural environment, and its operations have the potential to impact the environment positively and negatively. The customer values research aimed to help SA Power Networks to better understand customers' preferences for SA Power Networks reducing carbon emissions from its vehicle fleet.

Enabling solar exports to the network

Customers with solar panels can receive credits from their electricity retailer for exporting excess energy back into the network. The network can become congested in certain locations when a high volume of solar energy is being exported into it. SA Power Networks currently manages this through temporary reductions in export amounts. The increasing customer uptake of solar panels is likely to increase the frequency of congestion, which could force more frequent export reductions. This would undermine SA Power Networks' capacity to increase future solar exports. The customer values research aimed to help SA Power Networks to better understand customers' preferences for initiatives that support solar exports into the network.

1.2 Internal peer review and collaboration

Professor Arne Risa Hole was engaged to support the econometric analysis of the survey data, and calculation of the willingness to pay estimates. Professor Hole is an international expert in econometric analysis of choice data, a Professor of Economics at the Universitat Jaume I, and Associate Editor of the Journal of Choice Modelling. Professor Hole wrote modules for the Stata statistical software package to support analyses of choice modelling data. These Stata modules were applied and adapted to this SA Power Networks evaluation.

Professor John Rose was engaged as an external peer reviewer for this project. Professor Rose is an international expert in experimental design theory, the econometrics of choice models, and the design of choice model surveys. Professor Rose's peer review has been provided separately.

2. Research method

The online SA Power Networks customer values survey was designed to meet good-practice requirements for customer value surveys and AER guidance. Key elements of the SA Power Networks customer survey approach and context are summarised in this chapter. Appendix 1 includes further technical detail about the research method.

The stated preference discrete choice experiment (DCE) approach was used as the basis of the SA Power Networks customer values research. In a DCE, respondents are presented with several choice questions. Figure 1 shows an example of a choice question from the SA Power Networks customer values survey. For each choice question, the respondent chooses their most preferred service package from the alternatives shown. Each alternative in the choice question includes several attributes and attribute levels, including cost (shown as impact on the Total Electricity Bill in Figure 5). Attributes and levels vary across choice questions. One alternative always shows the current level of service, the 'do nothing' option.

When respondents choose their preferred option, they make trade-off choices across the attributes and levels in each option, and the cost of each option. The trade-off choices made in the DCE are combined with information about characteristics of the respondent (such as age, gender), their household (income, renting versus owning, solar versus non solar, dwelling type, bill stress), and other factors that may influence their preferences. This information is then used to perform a statistical estimation of the value that respondents place on changes in levels of each attribute, for example how much customers value reducing the number of customers experiencing service interruptions in worth served areas from 90,000 to 25,000 annually(Figure 5).

DCE is increasingly used to support regulated utility pricing submissions and to evaluate customer service preferences. These include studies completed in Australia relating to regulated water utilities [1-4] and Australian energy utilities [5]. A key advantage of DCE is that it is effectively impossible to 'game' the results from a DCE study.

Figure 5: Example of a choice question

If these are the only packages available, which would you choose?

You can find out more about each service by clicking on the underlined text (left of the table). This will launch a short video containing important information about the service and the changes we're considering.

Please note that the Current package is what you will receive if no additional investments are made by SA Power Networks.

When choosing your preferred package, assume all SA Power Networks services that are not shown will stay the same as currently provided. You can see the current services here.

(1 of 6)

	Current package	Alternative A	Alternative B
Number of hours that customers' solar system exports are reduced by 2030.	No more than 875 hours a year (30% of daylight hours)	No more than 60 hours a year (2% of daylight hours)	No more than 145 hours a year (5% of daylight hours)
Customers experiencing service interruptions to stop powerlines starting fires by 2030.	5,000 customers a year (0.56% of all customers) 6-12 hours of interruptions a year per customer	5,000 customers a year (0.56% of all customers) 6-12 hours of interruptions a year per customer	3,000 customers a year (0.33% of all customers) 6-12 hours of interruptions a year per customer
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030.	60,000 customers a year (7% of all customers)	45,000 customers a year (5% of all customers)	30,000 customers a year (3% of all customers)
Customers experiencing service interruptions in worst-served areas by 2030.	90,000 customers a year (10% of all customers) 12 hours of interruptions a year per customer	90,000 customers a year (10% of all customers) 12 hours of interruptions a year per customer	25,000 customers a year (3% of all customers) 9 hours of interruptions a year per customer
Your Electricity Bill from 1 July 2025:	Your quarterly bill stays the same Your quarterly bill would be $362 Your annual bill would be $1446	Your quarterly bill increases by $20 Your quarterly bill would be $382 Your annual bill would be $1526	Your quarterly bill stays the same Your quarterly bill would be $362 Your annual bill would be $1446
	Select	Select	Select

One reason for this is because if respondents focus in on a small number of attributes or attribute levels, and only base their choices on these rather than trading-off all attributes and levels across all options, then willingness to pay (WTP) estimates for all the attributes and levels in the study that were not focussed on will be zero, or WTP estimates will be nonsensical.

Choice tasks can be mentally demanding, especially when customers are not familiar with the services they are choosing between. Evidence suggests that respondents can accurately process only up to about six attributes at once, and less when they are dealing with complex choice tasks [6-9].

Including more than six attributes in a choice set increases the complexity of the task in multiple ways. It increases the likelihood that respondents may make their choices by focussing on one or several dominant attributes, rather than by trading off all attributes. When this happens, it means that customers do not fully consider the value they place on other attributes, and they make non-compensatory decisions [10]. As noted above, this type of non-compensatory decision making can result in biased estimates of customer values for attributes other than the dominant attribute [11].

Regulated utilities and businesses often have more than six attributes that they would like to understand customer values for. In this case, conventional DCE becomes problematic because of its ability to only handle up to around six attributes.

Several approaches have been used address the issue of dealing with many attributes. Common approaches are to (1) reduce the number of attributes to a 'feasible set' by some means or (2) to split the attributes into multiple sections within a survey, or across surveys. For example, some Australian studies have grouped attributes into groups such as power interruptions, customer service, environmental and sustainability services and run separate DCE for each grouping in the same survey by asking customers to value these things sequentially [3] or (3) to use a partial profile surveying approach.

Splitting choice studies into multiple sections within a survey or across multiple surveys potentially results in survey outcomes that have embedding and budget constraint biases [9]. In practice what this means is that because survey respondents only see some of the attributes when attributes are split into multiple surveys, or multiple sections within surveys, they end up stating that they are willing to pay (WTP) more for the smaller number of goods that they see in the survey they are presented with than they would be if they saw all of the services that they may ultimately have to pay for. It also means that the study is not being framed in a way to make customers fully aware of the alternatives to the proposal they are currently being asked to state their

preferences for. The result is that customer values are biased and inaccurate, potentially materially so. Reasons for this bias are summarised in [9].

Similarly, customers may have budget constraints about how much they are willing to pay for goods and services provided by utilities. Because they do not know the prices they will be asked to pay before going through the sequential DCE in the survey, there is a risk that budgets will be exhausted before the customer has finished the DCE sequence. For example, customers may be willing to pay a lot to protect areas for the benefit of endangered plants and animals (Figure 1). If DCE questions about caring for the environment come later in the survey, respondents may have already allocated their budget available to other things in DCE activities earlier in the sequence. As a result, customer values for the environment may be systematically undervalued.

2.1 Partial Profile Discrete Choice Experiments

Sequential DCE studies can be problematic and can yield biases for the reasons set out above. Partial Profile Discrete Choice Experiments (PPCE) are another approach that has been developed to allow customers to express their value for many attributes in DCE [11-13].

The PPCE approach can help customers to develop a full understanding up front by providing them with full information about all the attributes that they are going to be asked to value, including the 'do nothing' option and alternatives to the proposal they are being asked to pay for. Customers then choose among profiles that differ on only a small number of attributes, typically three or five, regardless of the total number of attributes in the experiment. Attributes can appear in choice sets or not, according to an experimental design. Survey respondents are told that the profiles are alike in all other ways than the attributes shown.

Because only a small subset of attributes appears in each question, PPCEs can accommodate very large numbers of attributes without taxing respondents as much as full profile DCE. Current evidence suggests PPCE outperforms traditional DCE when dealing with six or more attributes in a choice task [11, 13]. PPCE does this in part by lowering response error so that it produces greater total efficiency than full profile designs. Interested readers can refer to [11] for more information.

2.2 Customer value research topics

PPCE was used in this study because SA Power Networks wanted to understand customer values across seven service areas falling into four categories of service level outcome. Figure 6 summarises the service areas and service level outcome groupings. It also shows the current service level (the level of service provided if current spend levels are maintained) , and the alternative levels of service evaluated in the online research. Clicking on the hyperlinks shown in Table 2 will launch the videos that were used to describe the services and service levels to customers.

Table 2: Research topics, current level of service and service levels considered.

Service Level Outcome	Service (click on hyperlink to view video containing service description)	Service SA Power Networks currently provide	What SA Power Networks asked about providing
Delivering more reliable and resilience power services	Customers experiencing service interruptions in worst-served areas by 2030.	**90,000 customers a year** (10% of all customers). 12 hours of interruptions a year per customer.	**25,000 to 110,000 customers a year** (3% to 12% of all customers). 9-15 hours of interruptions a year per customer.
	Customers experiencing service interruptions to stop powerlines starting fires by 2030.	**5,000 customers a year** (0.56% of all customers). 6-12 hours of interruptions a year per customer.	**1,000 to 7,000 customers a year** (0.11% to 0.78% of all customers). 6-12 hours of interruptions a year per customer.
	Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030.	**60,000 customers a year** (7% of all customers).	**30,000 to 54,000 customers a year** (3% to 6% of all customers).
Delivering modern flexible services	Energy advisory services we provide by 2030.	**Limited Energy Advisory service.**	**Personalised Energy Advisory service.**

Service Level Outcome	Service (click on hyperlink to view video containing service description)	Service SA Power Networks currently provide	What SA Power Networks asked about providing
		No online portal. No phone support.	Online portal. Limited to comprehensive phone support.
	Website services we provide by 2030.	**Limited personalised on-demand services.**	**Personalised on-demand services.** Some to comprehensive self-service. No automated-to-automated responses, e.g., receiving immediate connection quotes.
Caring and protecting the environment	Carbon emissions from SA Power Networks' vehicle fleet by 2030.	**8,000 tonnes a year** (Equivalent to emissions from 1,725 cars a year).	**3,600 to 4,800 tonnes a year** (Equivalent to emissions from 775 to 1,035 cars a year).
Enabling solar exports to the network	Number of hours that customers' solar system exports are reduced by 2030.	**No more than 875 hours a year** (30% of daylight hours).	**No more than 60 to 290 hours a year** (2% to 10% of daylight hours).

2.3 Online survey design and implementation

An online survey was developed to elicit preferences for the four research topics identified above. All topics were covered in the same survey to avoid risk of biases from asking about customer values across separate surveys. A test version of the survey is available **here**. Note that as a test version not all the survey functionality works as it did in the live survey. The survey:

- **Welcomed participants to the survey**, and told them what the survey was about.
- **Screened respondents to ensure they were a residential or business bill payer** located in South Australia, and who had not completed the survey before.

- **Obtained background information about the respondents,** including an estimate of how much they pay for electricity (Figure 6 and Figure 7). Customer responses to the question on how much they pay was used with the bill impact of each choice option to estimate the respondent's future total electricity bill shown in each choice question they completed (see bottom of Figure 5).
- **Provided a background video discussing why** SA Power Networks was undertaking the survey
- **Introduced respondents to the services SA Power Networks wanted them to value**. All services were accompanied by videos describing the service outcome.
- **Described the choice task that customers** were going to complete, provided an instructional video, and checked that the customer understood the task. The description and video included telling customers that:
  - In all questions, the first column shows the services SA Power Networks currently provides, which is the 'do nothing' option.
  - For each package, SA Power Networks estimated an increase in the customer's current quarterly bill to reflect possible increases in the costs of providing essential power services to the customer from 1 July 2025. As a result, in the choice questions customers would see how much they will start paying from 1 July 2025, in 2025 dollars.
  - For services not shown, respondents were to assume that these services would stay at the level that SA Power Networks currently provides and that the customer's bill does not change for these services.
  - Some of the packages look strange. Customers were made aware that this was because there are a range of ways SA Power Networks can deliver the packages and their outcomes. SA Power Networks wanted customers to choose the package they preferred the most from the ones shown.
  - A reminder that the respondent has a limited budget and that there be other things they would prefer to spend their money on other than the proposed SA Power Network services.
- **Presented six choice** tasks. In each choice task the respondent chose their preferred option from the three options presented
- **Asked debriefing questions** to get more understanding around how and why the customer made the choices they did. These included questions:
  - Asking customers about how easy they found answering the choice questions, whether they understood the information

provided, and whether they thought what they said in the survey would impact SA Power Networks' decisions

  - For customers who chose the status quo 'do nothing' option for all six choice tasks, their reasons for doing this.

- **Asked debriefing questions about the household or business** to get more understanding around the respondent including experiences of financially vulnerability, utility bill stress, and types and frequency of interactions with SA Power Networks.

Appendix 2 includes technical details about the online survey design, including how the number of alternatives per question were selected, number of questions per respondent, the experimental design approach used, how and why inflation was applied to the bill and then tested in the econometric model, and the approaches employed to improve and evaluate the survey's robustness and validity. Readers interested in the technical aspects of this research are encouraged to read Appendix 2 for further information.

Figure 6: Screenshot showing question asking residential respondents to enter an estimate of their quarterly electricity bill.

Q6. Please give a rough estimate of how much your electricity bill is every three months.

If you are unsure how much you pay, you can use the examples in the table below as a guide:

Customer Type	Average 3 month bill, household without solar panels	Average 3 month bill, household with solar
1 person household	$320	$220
2-3 person household	$460	$310
4+ person household	$590	$400

The amount I pay on my electricity bill every 3 months is about: [ ]

Figure 7: Screenshot showing question asking commercial respondents to enter an estimate of their quarterly electricity bill.

Q6. Please give a rough estimate of how much your electricity bill is every three months.

If you are unsure how much you pay, you can use the examples in the table below as a guide:

Usage (kWh per year)	Average 3 month bill, business without solar panels	Average 3 month bill, business with solar panels
10,000	$1,090	$570
40,000	$4,190	$2,220
100,000	$10,390	$5,220
160,000	$16,592	$8,324

The amount I pay on my electricity bill every 3 months is about: [ ]

3. Customer sample

The customer sample included 1,250 residential and 140 small businesses. These customers were surveyed online about their preferences and values during October and November 2022.

Respondents were recruited through two mechanisms using a split sample approach. A total of 1,390 respondents were recruited through general email invitation (605 respondents), through SA Power Networks' Talking Power site (86 respondents) site, an email invitation targeting small businesses (117) and unsuccessful applicants to SA Power Networks' People's Panel (7). A further 533 respondents were recruited via a Pureprofile online panel.

Survey respondents participating via the SA Power Networks invitation were eligible to enter a draw for 1 of 20 chances to win a $200 EFTPOS voucher. Pureprofile respondents were not eligible to enter the draw but were compensated for their time through Pureprofile's reward system, which offers cash, e-gift cards and movie tickets.

The multiple-split sample approach helped to test whether respondents' willingness to pay differed systematically based on the recruitment approach. Previous studies [14, 15] have shown that respondents drawn from panel survey sources can have systematic differences compared to randomly sampled respondents. Similarly, respondents who chose to respond to a survey invitation via email, or print or social media, can result in survey self-selection bias.

Although comparing preferences across separate survey recruitment methods does not directly address the above risks, it does provide a check of convergent validity by demonstrating whether respondents who are similar, other than by their recruitment method, have similar preferences. Convergent validity testing is a recommended approach for assessing the validity of stated preference surveys [16]. We consider that this approach is superior to surveying from a survey panel or via customer email invitations alone.

Potential respondents were screened out of the survey if:

- They were not responsible for paying household or business bills

- They were not customers of electricity retailers serving the South Australian population
- They or someone from their household or business had completed the survey previously, and
- If they were attempting to complete the survey on a small screen device such as a smartphone. Our pilot of the survey found that the survey could not be completed effectively on small screens due to the amount of content presented on some pages. Respondents who were initially using a smartphone had the option of switching to a laptop or tabletop computer to complete the survey.

The respondents comprised 1,250 residential and 140 small business customers. Residential respondents' characteristics are shown in Table 2, and small business respondent characteristics in Table 3.

Across most respondent characteristics, large numbers of respondents were received across the residential surveys. Larger response numbers generate greater confidence that the results are representative of the population, assuming random sampling.

According to the 2021 Census, the usual resident population of South Australia was 1,781,500 people, living in around 808,000 dwellings. Based on this resident population, the residential sample population of 1,250 achieved a better than +/-2 percent margin of error at a 95 percent confidence level. Response categories where there were more than 170 responses achieves a better than +/- 8 percent margin of error at a 95 percent confidence level. Categories with more than 260 responses achieve a better than +/- 6 percent margin of error at a 95 percent confidence level, and categories with more than 385 responses achieves a better than +/- 5 percent margin of error at a 95 percent confidence level.

The statistical validity of the results from the small business sample should be viewed with caution given the small sample size. There was 149,000 businesses in South Australia across a diverse range of business types. Based on this commercial business population, the commercial sample population of 140 achieved a +/- 8 percent margin of error at a 95 percent confidence level. The small sample means response categories cannot be generated within the commercial sample as the margin of error becomes greater than +/- 10 percent.

3.1 Residential

The residential sample of 1,250 respondents included, among other characteristics:

- More than 150 respondents by (per) age group other than 18-29 years, which had 131 respondents.
- 584 respondents were homeowners, another 413 have a mortgage, and 239 are renting.
- 233 respondents were born overseas, and 103 speak a language other than English at home.
- 31 respondents own electric vehicles, and 310 are considering buying one or more in the next 3 years.
- 734 respondents have solar panels installed, and 121 have a battery installed at their home.
- Of the 1,059 respondents who were asked whether they had a feed in tariff: 634 respondents have solar panels installed, 579 of those respondents have received a Solar Feed-In tariff, including 186 respondents who are part of the SA Government's Premium Feed-In tariff scheme[1].
- 299 respondents living outside of the Greater Adelaide area.
- 523 respondents said they had always (104) or sometimes (419) struggled to find the money to pay utility bills in the past year.
- 224 respondents are just able to meet basic expenses, and 54 do not have enough money to meet basic expenses.

The profile of the survey respondents differed from the South Australian population across a range of characteristics, shown in Table 2. To ensure the results were representative of the South Australia population, consideration was given to applying post-estimation sampling weights to the survey estimation results. Post-estimation sampling weights yield a more consistent estimation of population average partial effects than a weighting based on population shares does (see [17] for more information).

[1] Of the 1,250 residential sample, only 1059 were asked whether or not they had a feed-in-tariff of any kind. Within this sample 60% have solar and 91% of this cohort receive some type of feed-in-tariff. That is, only 9% of the residential customer sample have solar and are not part of a feed-in-tariff scheme.. The 191 respondents who did not answer the question were either part of the soft launch (the soft-launch did not include the question of feed-in-tariffs) or dropped out before being asked the question in the final launch.

In this study, sample weights were applied to three respondent characteristics where respondents had significantly different preferences and were under- or over-weight: gender, age, and self-reported financial stress: self-reported financial stress means the respondent identified to either just meeting basic expenses or not having enough to meet basic expenses (refer to Table 2). SA Power Networks advised that around 33% of their total customer base fell into these two categories. Results were reweighted for these three groups to make them representative of the total South Australian population.

Residential customer respondents had a wide range of engagement experiences with SA Power Networks (Figure 8 and Figure 9).

Table 3: Residential survey respondent demographics and comparison to South Australian population

	Total respondents	Residential survey sample	South Australia
Responses		1,250	
Gender			
Male	721	57%	49%
Female	516	41%	51%
Prefer not to say	19	2%	
Age			
Between 18 and 29 years	131	10%	19%
Between 30 and 39 years	165	13%	16%
Between 40 and 49 years	169	13%	15%
Between 50 and 59 years	211	17%	16%
Between 60 and 69 years	291	23%	15%
Between 70 and over	292	23%	18%
Workforce status			
Working full time	437	35%	39%
Working part time	171	14%	24%
Stay at home parent or carer	50	4%	
Student	23	2%	6%

	Total respondents	Residential survey sample	South Australia
Retiree, non-pensioner	349	28%	28%
Retiree, pensioner (disability, veteran, other) on a fixed income	167	13%	
Looking for work and other	54	4%	3%
Dwelling type			
Separate house	1,072	86%	83%
Semi-detached, row or terrace house, townhouse, etc.	99	8%	9%
Flat, unit or apartment	75	6%	3%
Other	5	0%	0.1%
Household structure			
Owned outright	584	42%	32%
Mortgage	413	30%	35%
Renting	239	17%	29%
Other	154	11%	4%
Aboriginal or Torres Strait Islander	37	3%	2%
Born overseas	233	19%	17%
Language other than English spoken at home	103	8%	16%
Household income			
Less than $41,600 a year	321	26%	25%
$41,600 to $78,000 a year	272	22%	23%
$78,000 to $104,000 a year	158	13%	11%
$104,000 to $156,000 a year	149	12%	17%
More than $156,000 a year	138	11%	16%
Prefer not to say	212	17%	7%
Q27. In the past year have you struggled to find the money to pay utility bills?			
Always	104	8%	

	Total respondents	Residential survey sample	South Australia
Sometimes	419	34%	
Never	625	50%	
Prefer not to answer	102	8%	
Q26. How do you describe your financial situation?			
Operating comfortably	380	30%	
Meeting basic expenses with a little left over	494	40%	
Just meeting basic expenses	224	18%	
Don't have enough to meet basic expenses	54	4%	
Prefer not to say	95	8%	
Location			
Greater Adelaide Resident	951	76%	78%
Resident outside Greater Adelaide	299	24%	22%
Receiving concession from their electricity retailer	407	33%	
Used an assistance program provided by an electricity retailer in the past year	142	11%	
Households with solar panels	734	59%	
Households with batteries installed	121	10%	
Households part of the Feed-In Tariff Scheme	579	55%	
Households part of the Premium Feed-In Tariff Scheme	186	18%*	
Estimated quarterly power bill			
Average		$1624	
Standard deviation		$1096	

*Note: * Only 1059 household respondents were asked whether they were part of the Feed-In Tariff Scheme and the Premium Feed-In Tariff Scheme and therefore percentage is based on this cohort instead.*

Figure 8: Residential customers “In the last 12 months, have you interacted with SA Power Networks in the following ways?”

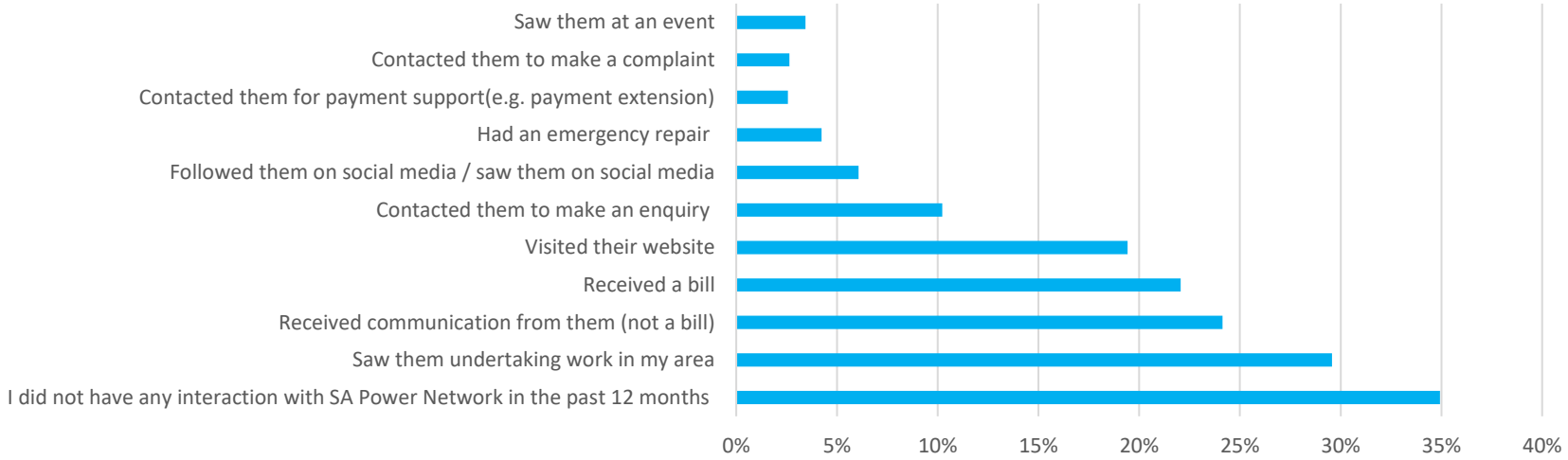
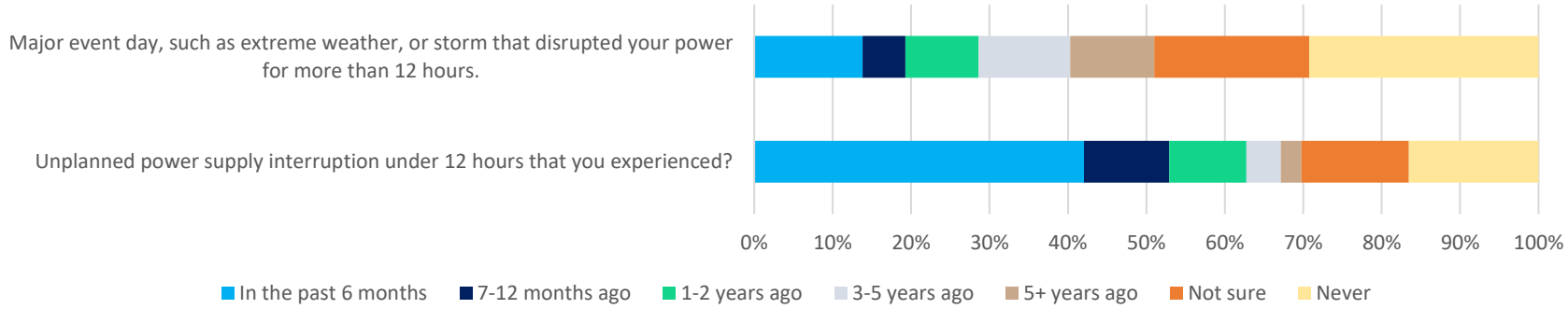


Figure 9: Residential customers “When was the most recent?”



3.2 Small business

The small business sample of 140 respondents included, among other characteristics:

- 130 responses by people who identified as the business owner / proprietor.
- 60 responses by people who said the business was owned outright.
- 103 responses from businesses earning less than $9.9 million in turnover a year, 11 responses from businesses earning more than $9.9 million in turnover a year, and 25 responses from businesses that declined to state their revenue.
- 39 responses from businesses with backup power supply on site.
- 46 responses from businesses that have solar panels installed, and 8 responses from businesses that have on-site battery storage.
- 14 responses from businesses that own electric vehicles, and 29 responses from business that are considering buying one or more electric vehicles in the next 3 years.
- 39 responses from businesses that receive a Solar Feed-In Tariff and 11 responses from businesses that are part of the SA Government's Premium Solar Feed-In Tariff scheme.
- Responses from businesses that always (5), sometimes (51) and never (69) struggled to find the money to pay utility bills in the past year.
- 66% of business were from the Greater Adelaide area and 34% were from rural South Australia.

Business respondents were recruited using the same approaches as for residential customers, including email invitations targeted to households (18 responses), email invitations targeted to small businesses (104), Talking Power (3) and our Pureprofile panel provider (15). The low business response rates to this SA Power Networks survey, despite using multiple recruitment channels, are consistent with the experiences of other regulated utilities that have sought to engage business customers in surveys about preferences and values [3, 4].

Low response rates from businesses, combined with the evidence that business owners were more likely to complete the survey, could indicate that business respondents generally find it more challenging to identify the appropriate person in the organisation to complete the survey, or by a perceived lack of agency by business respondents to answer the survey on the business' behalf.

The profile of business survey respondents differed from the total South Australian population across a range of characteristics, shown in Table 3. Post-estimation sampling weights were not applied to the business survey estimation results because of the small sample size. The customer preferences and value results in this report should be interpreted keeping this in mind, and also that the results may not be representative of all South Australian small businesses.

Business customer respondents also had a wide range of engagement experiences with SA Power Networks (Figure 10 and Figure 11).

Table 4: Business survey respondent demographics and comparison to South Australian population

	Total respondents	Business survey sample	South Australia
Responses		140	
Position			
Owner / proprietor	103	74%	
Senior management	23	16%	
Another employee	14	10%	
Business type			
Accommodation and Food Services	13	9%	4%
Administrative and Support Services	2	1%	4%
Arts and Recreation Services	2	1%	1%
Construction	5	4%	16%
Education and Training	0	0%	1%
Electricity, Gas, Water and Waste Services	6	4%	1%
Financial and Insurance Services	9	6%	4%
Health Care and Social Assistance	7	5%	7%

	Total respondents	Business survey sample	South Australia
Information Media and Telecommunications	1	1%	1%
Manufacturing	18	13%	4%
Mining	4	3%	0.3%
Professional, Scientific and Technical Services	7	5%	11%
Public Administration and Safety	0	0%	0.2%
Rental, Hiring and Real Estate Services	5	4%	13%
Retail Trade	21	15%	6%
Transport, Postal and Warehousing	1	1%	7%
Wholesale Trade	3	2%	4%
Employees			
Non-employing / sole trader	33	24%	64%
1-4 employees	42	30%	24%
5-19 employees	42	30%	9%
20-199 employees	14	10%	2%
200 or more employees	8	5%	0.1%
Business structure			
Owned outright	60	43%	
Owned with a mortgage	16	12%	
Renting	61	44%	
Other	2	1%	
Business income			
$0 or nil turnover	1	1%	
$1 to $999 per week/$1 to $51,999 per year	5	4%	
$1,000 to $4,999 per week/$52,000 to $259,948 per year	35	25%	
$5,000 to $38,462 per week/$259,948 to $1.99 million per year	46	33%	

	Total respondents	Business survey sample	South Australia
$2 million to $9.9 million per year	16	12%	
$10 million to $49.9 million per year	8	6%	
$50 million to $199 million per year	1	1%	
$200 million to $500 million per year	1	1%	
More than $500 million per year	1	1%	
Prefer not to answer	25	18%	
Q37. In the past year have you struggled to find the money to pay utility bills?			
Always	5	4%	
Sometimes	51	37%	
Never	69	50%	
Prefer not to say	11	8%	
I don't know	3	2%	
Location			
Greater Adelaide Business	140	100%	
Resident outside Greater Business	0	0%	
On an assistance program provided by an electricity retailer in the past year	15	11%	
Households with solar panels	46	33%	
Households with batteries installed	8	6%	
Households part of the Feed-In Tariff Scheme	39	30%*	
Households part of the Premium Feed-In Tariff Scheme	11	8%*	
Estimated quarterly retail electricity bill			
Average		$14,548	
Standard deviation		$41,864	

*Note: * Of the 140 small businesses surveyed 136 were asked whether they were part of the Feed-In Tariff Scheme and the Premium Feed-In Tariff Scheme therefore percentage is based on this cohort instead.*

Figure 10: Business customers: “In the last 12 months, have you interacted with SA Power Networks in the following ways?”

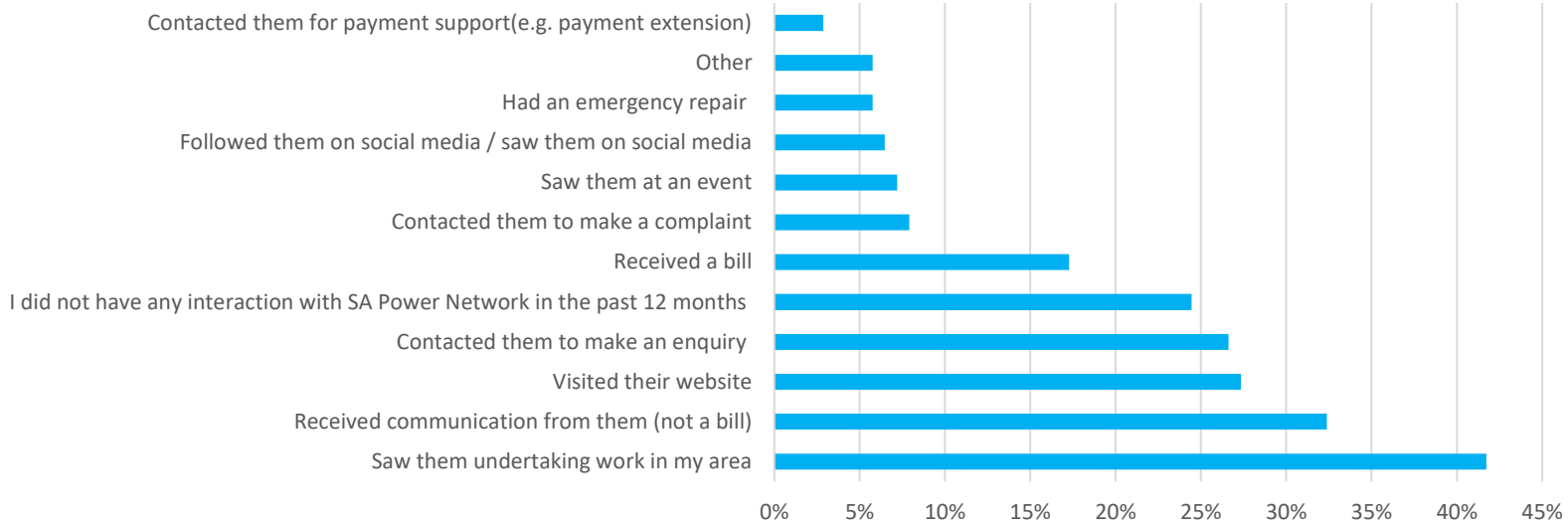
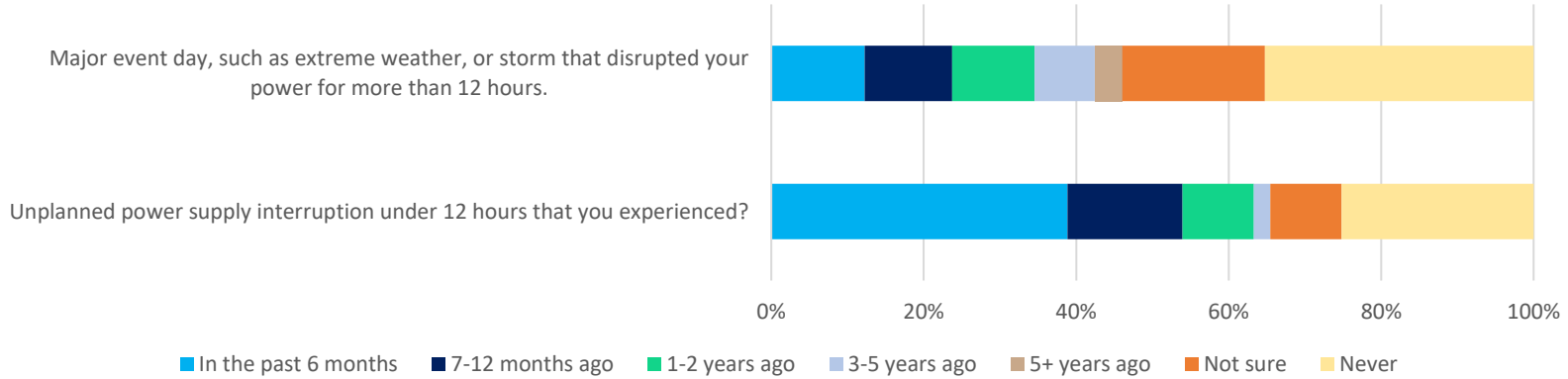


Figure 11: Business customers: “When was the most recent?”



3.3 Respondents discontinuing within the survey and serial non-respondents

Respondents discontinuing within the survey

In addition to the survey respondents discussed above, around 29% of respondents commenced the survey and then discontinued / dropped out while completing the survey. These respondents may have dropped out for many reasons, including but not limited to the length of the survey.

In estimating customer preferences and values, we have assumed that customers who discontinued the survey were not willing to pay for the services they were being asked about. This means all customer value / willingness to pay estimates in Chapter 4 are shown assuming 29% of the South Australian population are not willing to pay for the proposed services.

Given some respondents who discontinued the survey may have positive willingness to pay, this approach yields willingness to pay estimates that more likely understate than overstate true SA Power Networks customers' willingness to pay. The customer preferences and value results in this report should be interpreted also keeping this in mind.

Table 9 and Table 10 in Appendix 2 shows the customer value / willingness to pay estimates excluding the 29% zero WTP assumption.

Serial non-respondents

A total of 112 respondents (8% of all respondents) chose the 'do nothing' current level of service (Figure 5) involving no changes to their electricity bill in all the choice tasks they completed. These types of respondents are called serial non-participants. Table 4 shows serial non-participants appear to have been mainly motivated by concerns around their electricity bills increasing.

We have included all serial non-participants and their zero WTP when estimating customer values and willingness to pay. An alternative approach is to exclude these respondents when estimating willingness to pay. However, the approach of excluding serial non-respondents may result in customer values and willingness to pay being overstated, given these customers may have an underlying non-negative willingness to pay that is lower than the sample average WTP [4].

Table 5: Serial non-participants “Why did you select the current package in every choice question?”

	Residential		Business	
	Number	Percent total respondents	Number	Percent total respondents
Total	102	8%	10	7%
I don’t want my bill to increase	62	61%	6	60%
I didn’t have enough information to be confident in choosing the other options	8	8%	1	10%
The outcomes in the other options would not benefit me	10	10%	0	0%
There are other things I would prefer to spend my money on	3	3%	0	0%
I disagree with the idea of paying for the services	2	2%	0	0%
I am concerned SA Power Networks might put up prices without making service improvements	6	6%	2	20%
I am concerned SA Power Networks might let service get worse without reducing prices	2	2%	0	0
Other	9	9%	1	10%

4. Results

SA Power Networks customer willingness to pay results are summarised in this chapter

Appendix 3 contains the customer value / willingness to pay numbers shown in this chapter, together with technical information about how the estimates were derived. As discussed in the last chapter, the estimates shown in this chapter include all respondents who stated zero willingness to pay for the services options. WTP estimates in this chapter are also adjusted for the 29% of respondents who discontinued the survey, with the assumption made that these respondents have zero WTP.

As discussed in section 2.3 and in Appendix 1, all customer WTP estimates in this chapter are based on customers annual retail electricity bills that were inflated to reflect possible increases in the costs of providing essential electricity network services to the customer from 1 July 2025. The inflation rate varied randomly across respondents by between 8% and 22%. Varying the inflation rate across respondents allowed us to test whether respondents WTP differed due to different price inflation impacts.

We have grouped presentation of results in this chapter into the research topics shown in Table 2. For each service SA Power Networks proposed to customers, we show customers' willingness to pay in summary Figures. In each Figure we also compare willingness to pay to the estimated bill impact. This approach allows readers to understand whether customer willingness and ability to pay for the proposed services are greater than, less than, or approximately the same as the likely bill impact.

Overall, the SA Power Networks customer value results (Table 9 and Table 10 in Appendix 3) show that:

- **SA Power Networks customers made considered choices when they answered the survey**. This is shown in part by the statistical significance of the parameters estimated, the fact that what customers, and different types of customers, told us they value are consistent with prior expectations, and what we heard from the debriefing questions we asked. One thing the results show is that SA Power Networks customers were generally more willing to pay for services, and had more consistent preferences, where the service outcome being proposed by SA Power Networks was clear, and the change in service being proposed compared to the status quo was large.
- **Overall, SA Power Networks customers answering the survey were sensitive to the impact that new services would have on their**

electricity bill. This result is consistent with expectations. It demonstrates that respondents are sensitive to utility bill impacts and take these bill impacts into account when making choices.

- **Customers who self-reported as being more financially stressed (classified as those who responded that they were "just meeting basic expenses" or "were not meeting basic expenses" to the question "how would you describe your financial situation?", see Table 3 and Table 4) were more sensitive to increases in their electricity bills than other respondents.** This result is consistent with intuition.
- **Some SA Power Networks customer group responses exhibited more or less of a preference towards the status quo / do-nothing, on average**. Males and business respondents were more likely to choose the status quo option that involved no additional investment than other respondents. Conversely, respondents who self-described as being financially stressed (**classified as those who responded that they were "just meeting basic expenses" or "were not meeting basic expenses" to the question "how would you describe your financial situation?", see Table 3 and Table 4**) were more likely to choose options that did not involve additional investments and higher bills.
- **What SA Power Networks customers said they value, and the level of consensus on values, varies across the services included in the SA Power Networks survey.** This is shown by the statistical significance of the standard deviations for the random parameters shown in the bottom half of Table 8 and Table 9 in Appendix 3, and in the Figures shown in this chapter. Simply stated, the survey results show that SA Power Networks customers have similar values and preferences for some proposed services, and less similarly held values and preferences for other proposed services.
- **Customer preferences and WTP does not change with underlying bill inflation of between 8% and 22%.** As discussed in Appendix 2 section A2.5, our statistical evaluation of the survey result show that neither inflation of the underlying bill nor the inflation rate itself impacted on customer WTP, or the structure of customers' preferences. This is an important result because it means that, all other factors held constant, SA Power Networks may assume that the customer values and WTP estimates in this section of the report are robust and will not change if underlying retail electricity bills increase by anywhere between 8% and 22% in the next regulatory period. We discuss results of these tests further in Appendix 2.

In the following section we present results separately for the SA Power Networks customer base overall, respondents who receive Feed-In tariffs and those who are part of the SA Government Premium Feed-In Tariff Scheme.

4.1 How to interpret the results in this Chapter

Customer willingness to pay results for the proposed services are shown as Figures in the rest of this Chapter. In each Figure we show:

- **WTP mean** this is how much South Australians are willing to pay on average per year for each proposed service level. For example, Figure 12 shows that, on average, South Australian household is willing to pay $15.27 to shift from the current service level of 90,000 customers experiencing service interruptions in worst-served areas per year averaging 12 hours per interruption to 56,000 customers experiencing service interruptions in worst-served areas per year average 9 hours per interruption by 2030.
- **The WTP upper and lower confidence intervals (CI)** show the range of values between which we are 95% certain contains the true mean willingness to pay of the SA Power Networks customer base. The confidence interval reflects the precision of the estimate of mean willingness to pay. For example, in Figure 12**,** we can be 95% certain that South Australian households willingness to pay through their electricity bills to reduce the amount of customers experiencing service interruptions in worst-served areas from 90,000 to 56,000 per year with an average interruption decreasing from 12 to 9 hours to be between $9.39 (lower CI) and $21.15 (upper CI) a year. All other factors held constant, narrower confidence intervals generally indicate more consensus between survey respondents around willingness to pay.
- **The bill impact** is SA Power Networks' estimate of the annual bill impact to customers of providing the service. The current level of service is already factored into current bill and therefore has no bill impact. No WTP is calculated at this point because it is the reference point for which customers are comparing their WTP for more or less of the service provided by the options.

  Comparing customer willingness to pay and the bill impact in each Figure shows whether customers value the service proposed more than it will cost them – i.e., if they are willing to pay more for the service than the bill impact.
- **Where the bill impact is below the WTP lower confidence interval, this is good evidence that customer willingness to pay is well above the bill impact and customers would be better off if the proposal was implemented**. For example, in Figure 12, the bill impact for 56,000 customer interruptions a year ($1.50) is below the lower confidence interval of $9.39 and the average willingness to pay of $15.27 a year.
- **Where the bill impact is within the WTP upper and lower confidence intervals, the evidence is limited in stating whether or not**

customers are willing to pay for the investment. This is because customer willingness to pay is about the same as the bill impact. For example, Figure 12, the bill impact of improving service levels for customers who experience service interruptions for longer than 24 hours due to extreme weather events to 30,000 customers a year is $19.80, which is within the upper and lower confidence intervals of what customers are willing to pay.

- **Where the bill impact is higher than the WTP confidence interval value there is good evidence that customers are not willing to pay for the proposed level of investment.**

4.2 Delivering more reliable and resilient power services

4.2.1 Customers experiencing service interruptions in worst-served areas by 2030

Customers experiencing service interruptions in worst-served areas by 2030 description video.

Household

Estimates (Figure 12) show that South Australian households, on average, are willing to pay to decrease the number of customers experiencing service interruptions in worst-served areas each year. They are willing to pay reduce the number of customers experiencing service interruptions in worst-served areas from 90,000 customers to 25,000 customers each year.

Additionally, if SA Power Networks were to degrade the service from 90,000 to 110,000 customers experiencing interruptions in worst-served areas, households would be willing to take a $9.68 reduction in their annual electricity bill, on average.

Across all improved levels of service, the household mean, and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian households support these service proposals, on average.

Small business

Estimates (Figure 13) show that South Australian small businesses, on average, are willing to pay to decrease the number of customers experiencing service interruptions in worst-served areas each year. They are willing to pay reduce the number of customers experiencing service interruptions in worst-served areas from 90,000 customers to 25,000 customers each year.

Interestingly, small businesses are indifferent between an improved service level of 56,000 customers experiencing interruptions per year in worst-served areas and 25,000 customers experiencing interruptions per year in worst-served areas.

Small businesses are unwilling to pay for SA Power Networks to degrade the service from 90,000 to 110,000 customers experiencing interruptions in worst-served.

Across the improved levels of service, the small business mean, and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian small business support these service proposals.

4.2.2 Customers experiencing service interruptions to stop powerlines starting fires by 2030.

Customers experiencing service interruptions to stop powerlines starting fires by 2030 description video.

Household

Estimates (Figure 14) show that South Australian households, on average, are willing to pay to decrease the number of customers experiencing service interruptions to stop powerlines starting fires from 5,000 to 1,000. However, households are not willing to pay to move from 5,000 to 3,000 customers per year experiencing 6-12 hours of service interruptions to stop powerlines starting fires.

Additionally, if SA Power Networks were to degrade the service from 5,000 to 7,000 customers a year experiencing 6-12 hours of service interruptions to stop powerlines starting fires, households would be willing to take a $8.83 reduction in their annual electricity bill.

At the highest level of improved service, the household mean and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian households support this service proposal, on average.

Small business

Estimates (Figure 15) show that South Australian small businesses, on average, were not willing to pay to decrease the number of customers experiencing service interruptions to stop powerlines starting fires. This unwillingness to pay may be attributable to the small sample of small businesses surveyed.

4.2.3 Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030

Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030 description video.

Household

South Australian households were asked if they were willing to pay extra in their electricity bill to reduce the number of customers who may experience service interruptions per year longer than 24 hours due to extreme weather.

Estimates (Figure 16) show that South Australian households, on average, are not willing to pay to move from 60,000 to 54,000 customers experiencing service interruptions longer than 24 hours due to extreme weather, a decrease of only 10% of customers.

However, on average, they are willing to pay to move from the current level of service (current LOS) to the improved levels of service of 45,000 and 30,000 customers experiencing service interruptions longer than 24 hours due to extreme weather. These levels of service have significantly larger reductions in customers experiencing interruptions of 25% and 50% respectively. At these improved levels of service, the household mean and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian households support these service proposals, on average.

Small business

Estimates (Figure 17) show that South Australian small businesses, on average, are not willing to pay to move from the current level of service (60,000 customers) to either 54,000 or 45,000 customers experiencing service interruptions longer than 24 hours due to extreme weather.

However, on average, they are willing to pay to move from the current level of service (current LOS) to the improved level of service of 30,000 customers experiencing service interruptions longer than 24 hours due to extreme weather. At this improved level of

service, the small business mean willingness to pay estimate is greater than the bill impact but the lower bound confidence interval is lower than the bill impact, giving limited evidence to suggest South Australian small businesses support this service proposal, on average.

Figure 12: Customers experiencing service interruptions in worst-served areas by 2030, average willingness to pay per year $, household sample.

Figure 13: Customers experiencing service interruptions in worst-served areas by 2030, average willingness to pay per year $, small business sample.

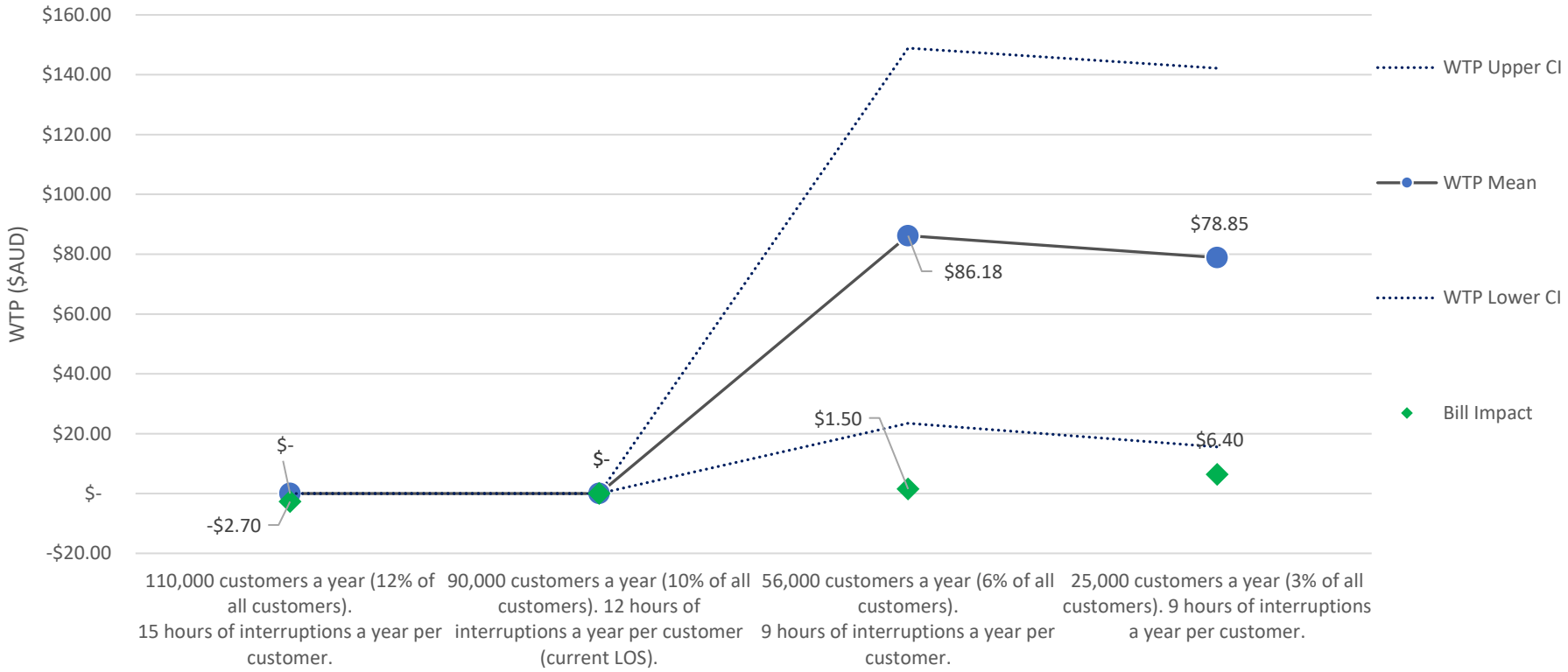


Figure 14: Customers experiencing service interruptions to stop powerlines starting fires by 2030, average willingness to pay per year $, household sample.

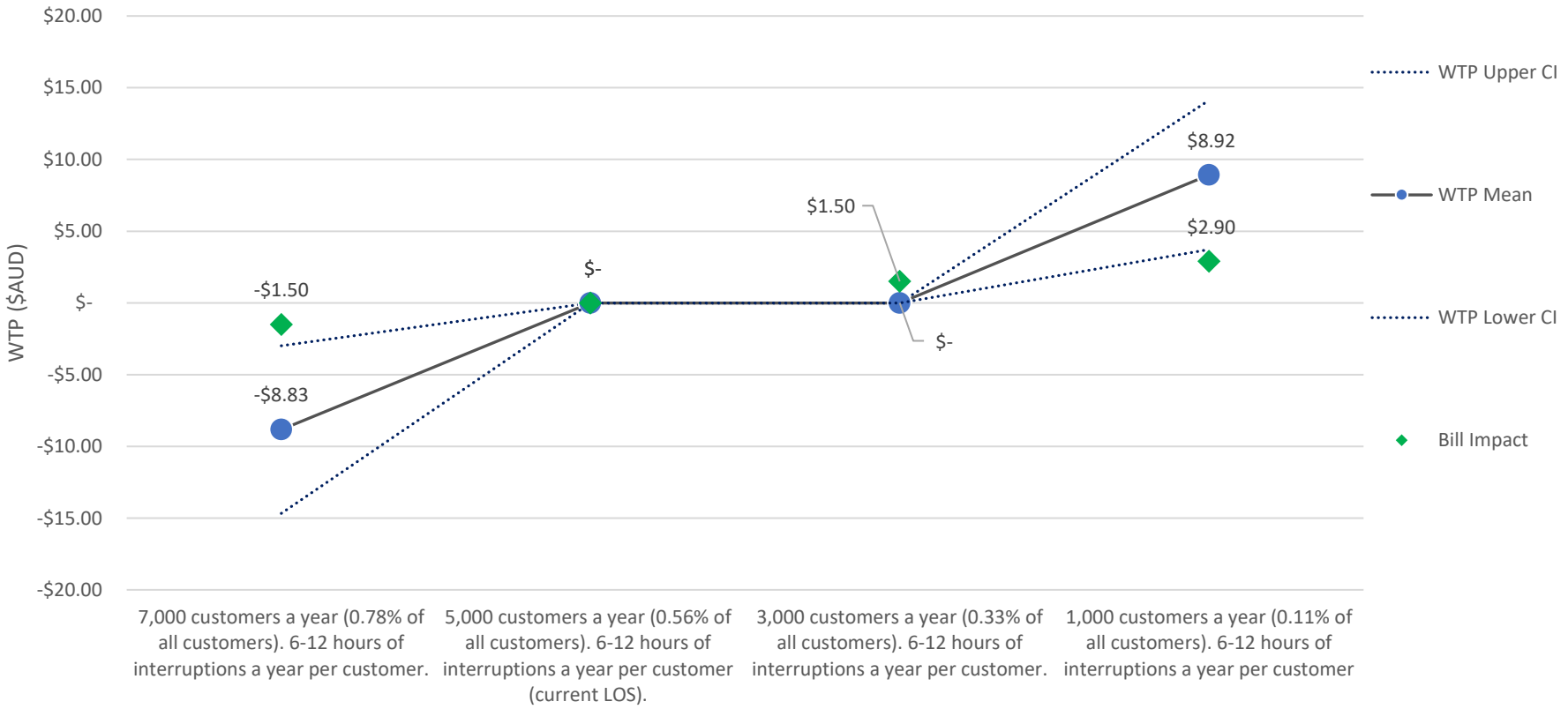


Figure 15: Customers experiencing service interruptions to stop powerlines starting fires by 2030, average willingness to pay per year $, small business sample.

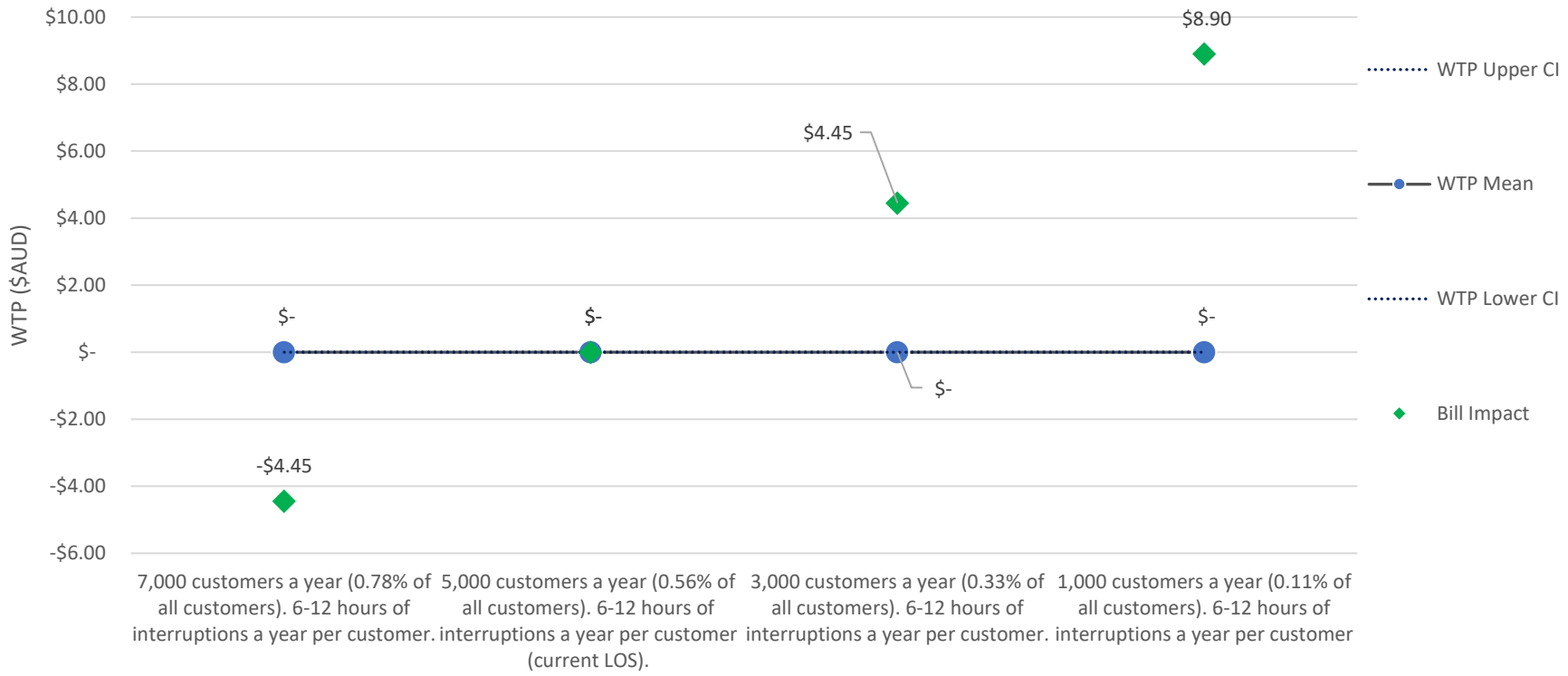


Figure 16: Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030, average willingness to pay per year $, household sample.

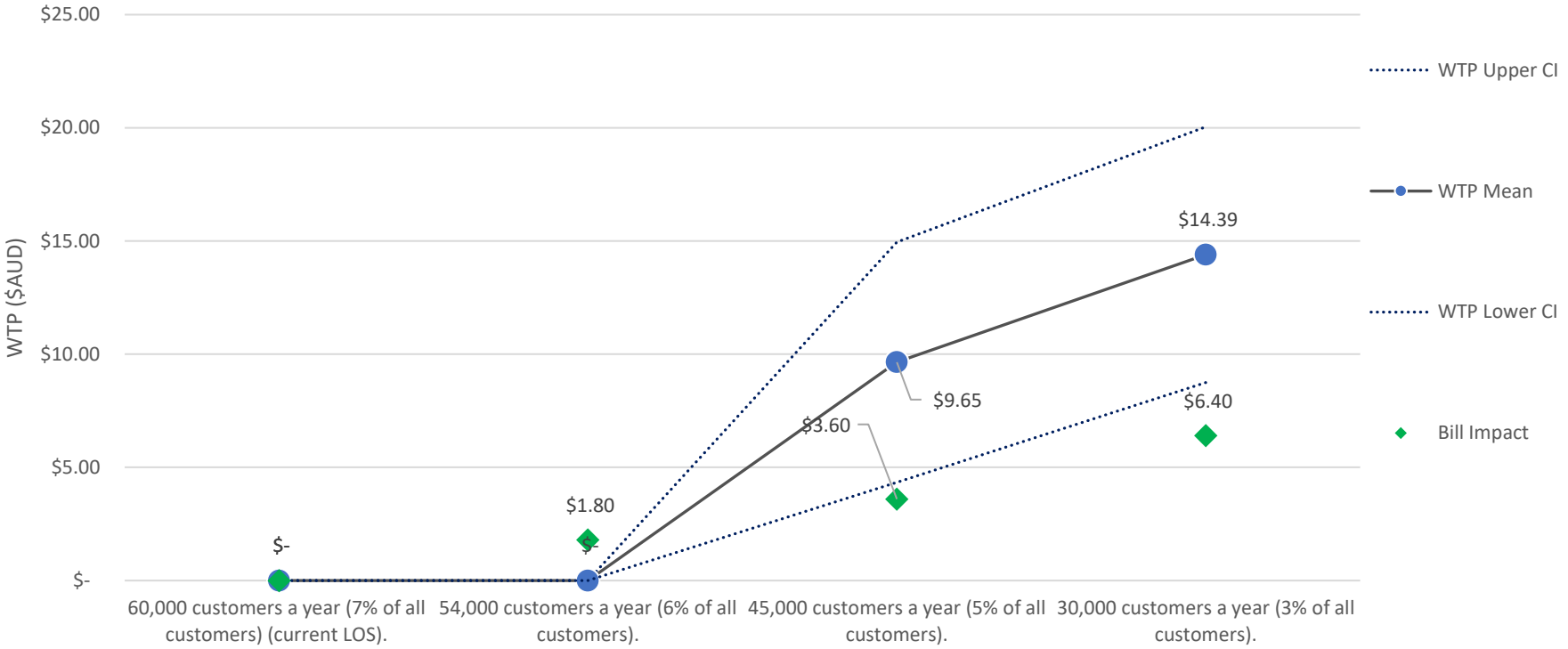


Figure 17: Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030, average willingness to pay per year $, small business sample.

4.3 Delivering modern flexible services

4.3.1 Energy advisory services we provide by 2030

Energy advisory services we provide by 2030 description video.

Household

Estimates (Figure 18) show that South Australian households, on average, are willing to pay to upgrade the energy advisory service provided by SA Power Networks. Estimates also show that households are statistically indifferent between both improved levels of service.

At both improved levels of service, the household mean and lower bound confidence interval willingness to pay estimates are greater than the bill impact, giving strong evidence to suggest South Australian households support these service proposals, on average.

Small business

Estimates (Figure 19) show that South Australian small businesses, on average, are not willing to pay to move from the current level of service to an improved level of service that includes a Personalised Energy Advisory service with an online portal and limited phone support.

However, on average, they are willing to pay to move from the current level of service to the improved level of service that includes a Personalised Energy Advisory service with an online portal and comprehensive phone support. At this improved level of service, the small business mean, and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving evidence to suggest South Australian small businesses support this service proposal, on average.

4.3.2 Website services we provide by 2030

Website services we provide by 2030 description video.

Household

Estimates (Figure 20) show that South Australian households, on average, are willing to pay to upgrade the website services provided by SA Power Networks. Estimates also show that households are statistically indifferent between both improved levels of service.

At both the improved levels of service, the household mean and lower bound confidence interval willingness to pay estimate are greater than the bill impacts, giving strong evidence to suggest South Australian households support these service proposals, on average.

Small business

Estimates (Figure 21) show that South Australian small businesses, on average, were not willing to pay to upgrade the website services provided by SA Power Networks.

Figure 18: Energy advisory services we provide by 2030, average willingness to pay per year $, household sample.

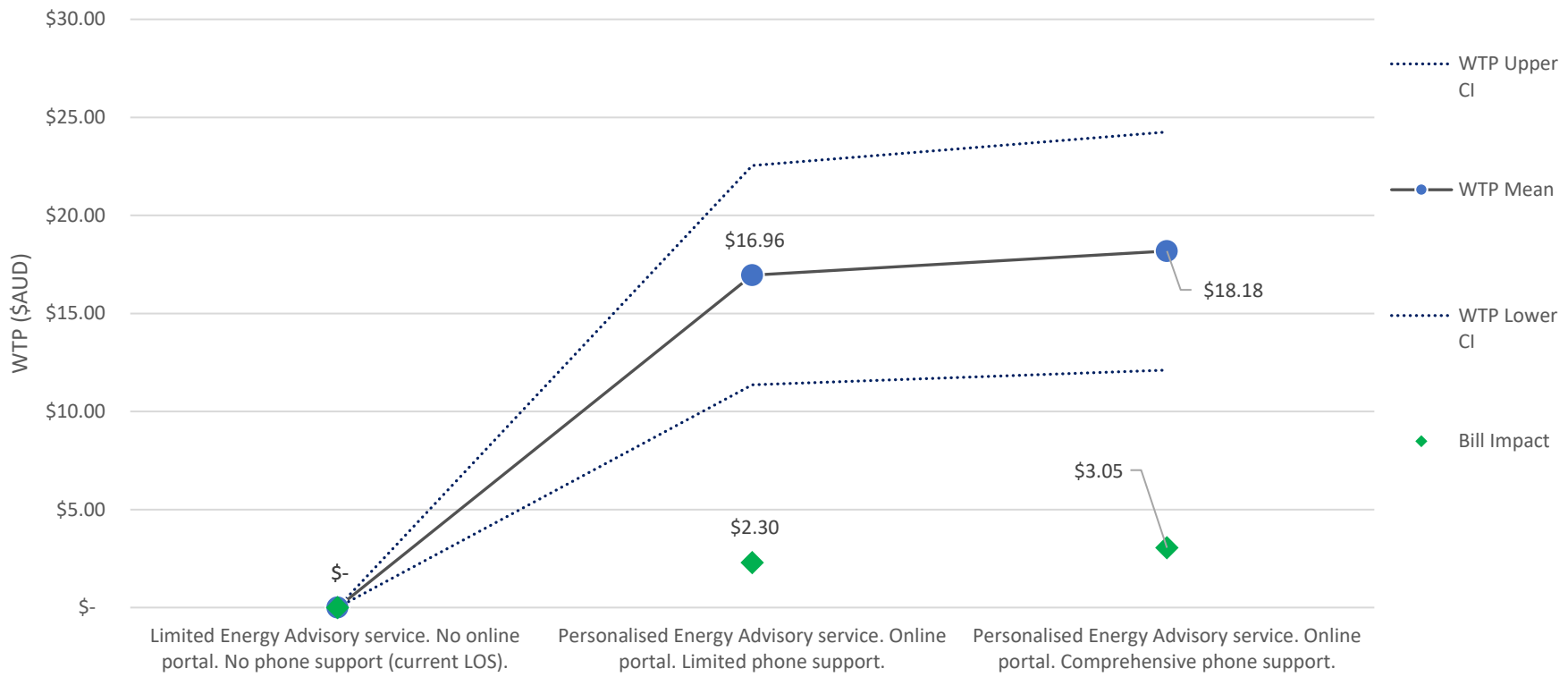


Figure 19: Energy advisory services we provide by 2030, average willingness to pay per year $, small business sample.

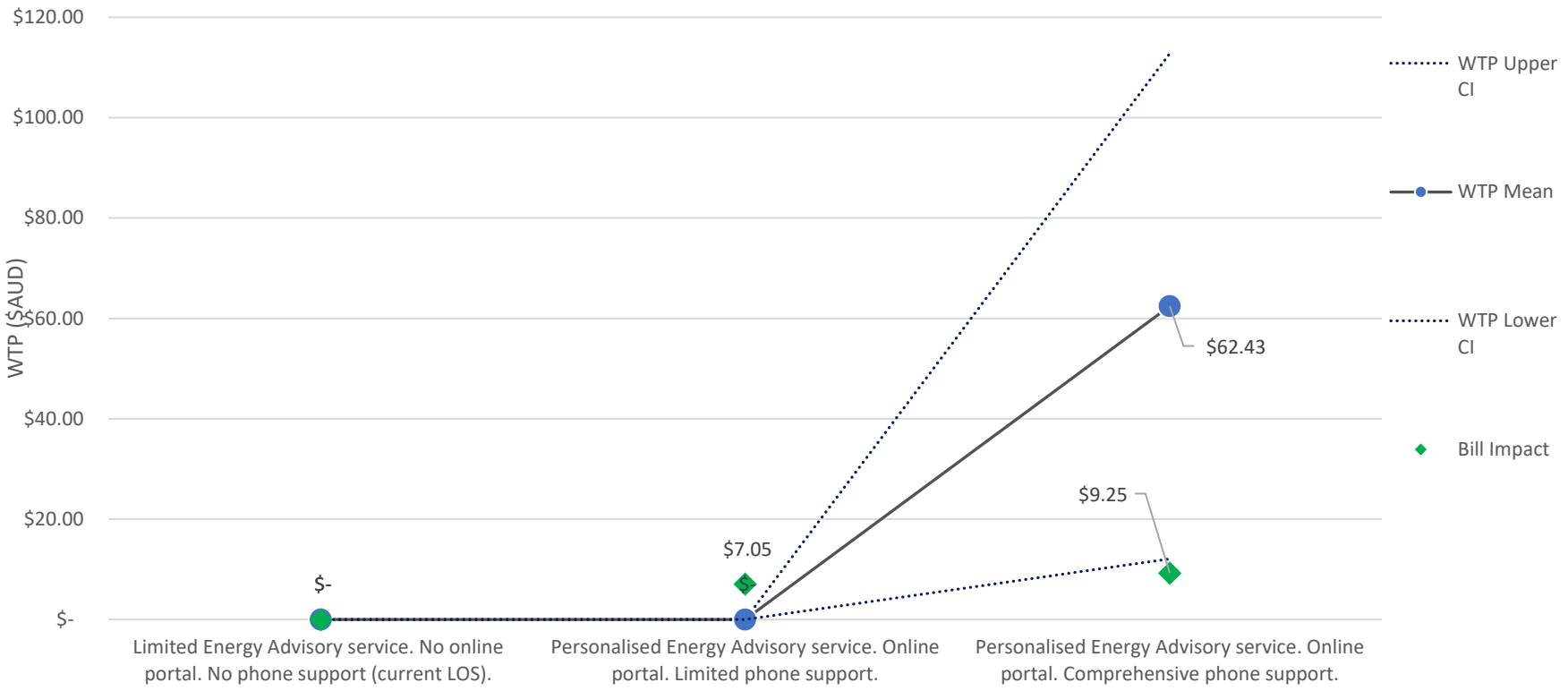


Figure 20: Website services we provide by 2030, average willingness to pay per year $, household sample.

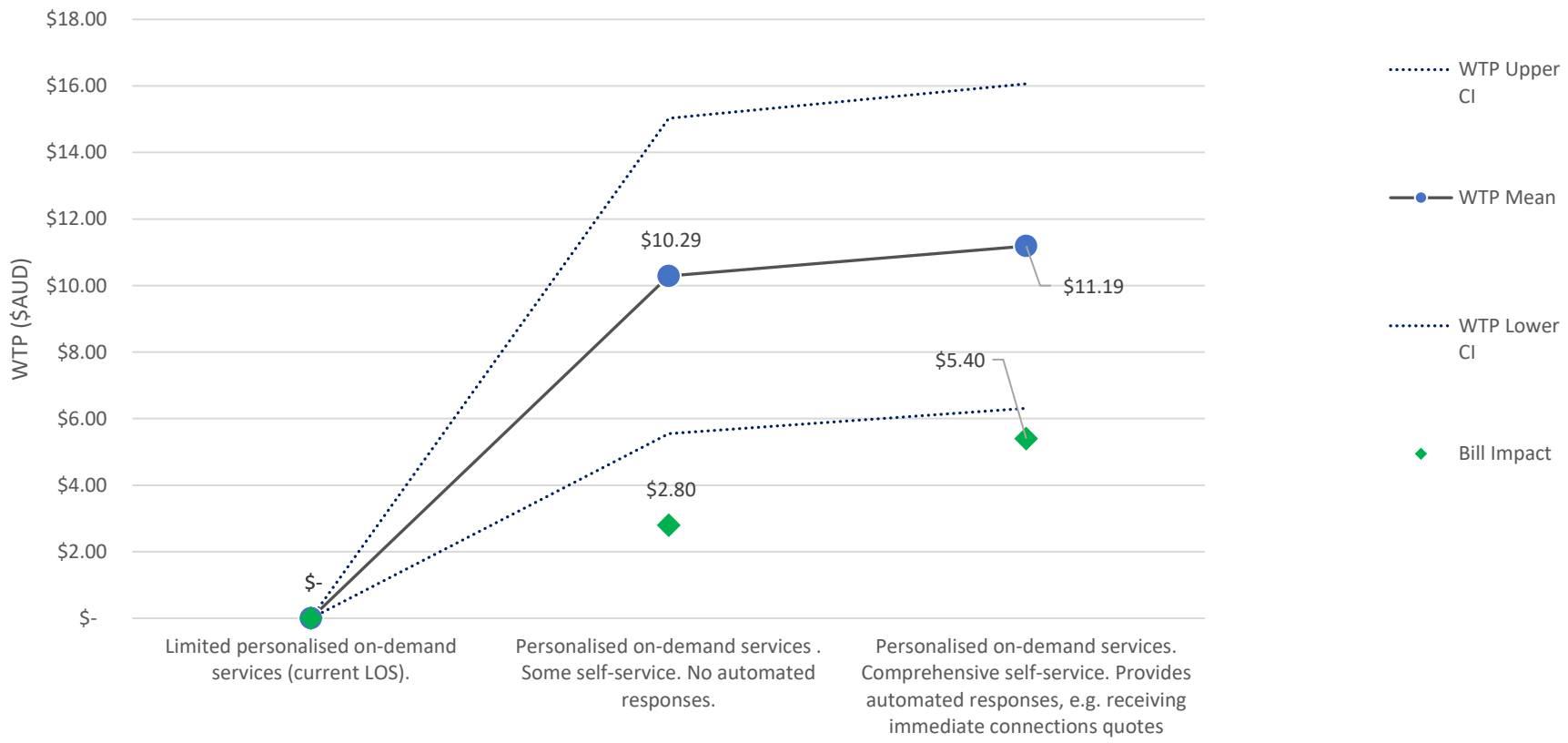
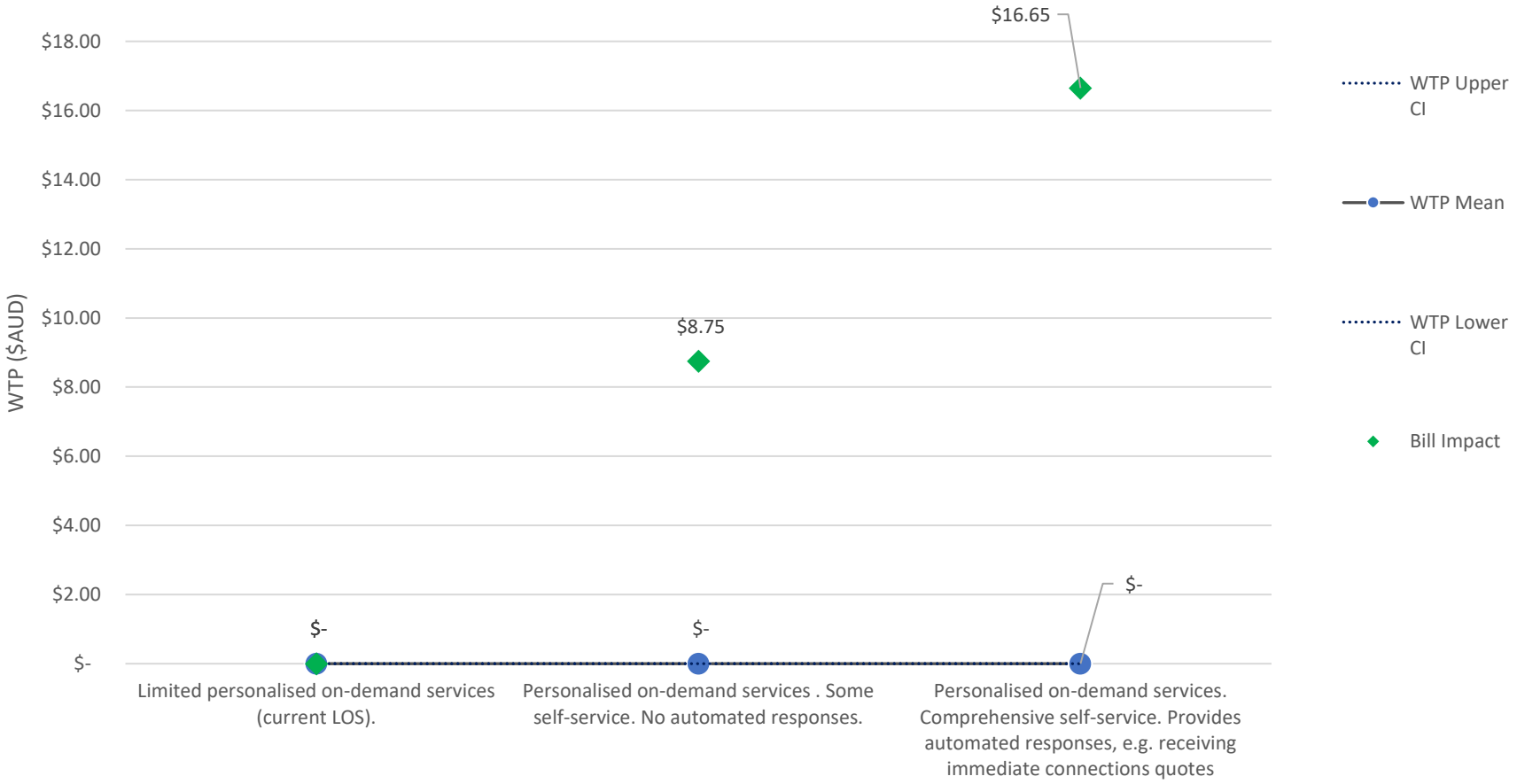


Figure 21: Website services we provide by 2030, average willingness to pay per year $, small business sample.



4.4 Caring for and protecting the environment

4.4.1 Carbon emissions from SA Power Networks' vehicle fleet by 2030

Carbon emissions from SA Power Networks' vehicle fleet by 2030 description video

Household

Estimates (Figure 22) show that South Australia households, on average, are willing to pay to reduce the volume of carbon dioxide that is emitted by SA Power Networks' vehicle fleet. They are willing to pay to reduce the volume of carbon dioxide emitted from 8,000 tonnes per year to 3,600 tonnes per year.

Across all improved levels of service, the household mean and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian households support these service proposals, on average.

Small business

Estimates (Figure 23) show that South Australia small businesses, on average, are willing to pay to reduce the volume of carbon dioxide that is emitted by SA Power Networks' vehicle fleet. They are willing to pay to reduce the volume of carbon dioxide emitted from 8,000 tonnes per year to 3,600 tonnes per year.

Across all improved levels of service, the small business mean, and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest South Australian small businesses support these service proposals, on average.

Figure 22: Carbon emission from SA Power Networks' vehicle fleet by 2030, average willingness to pay per year $, household sample.

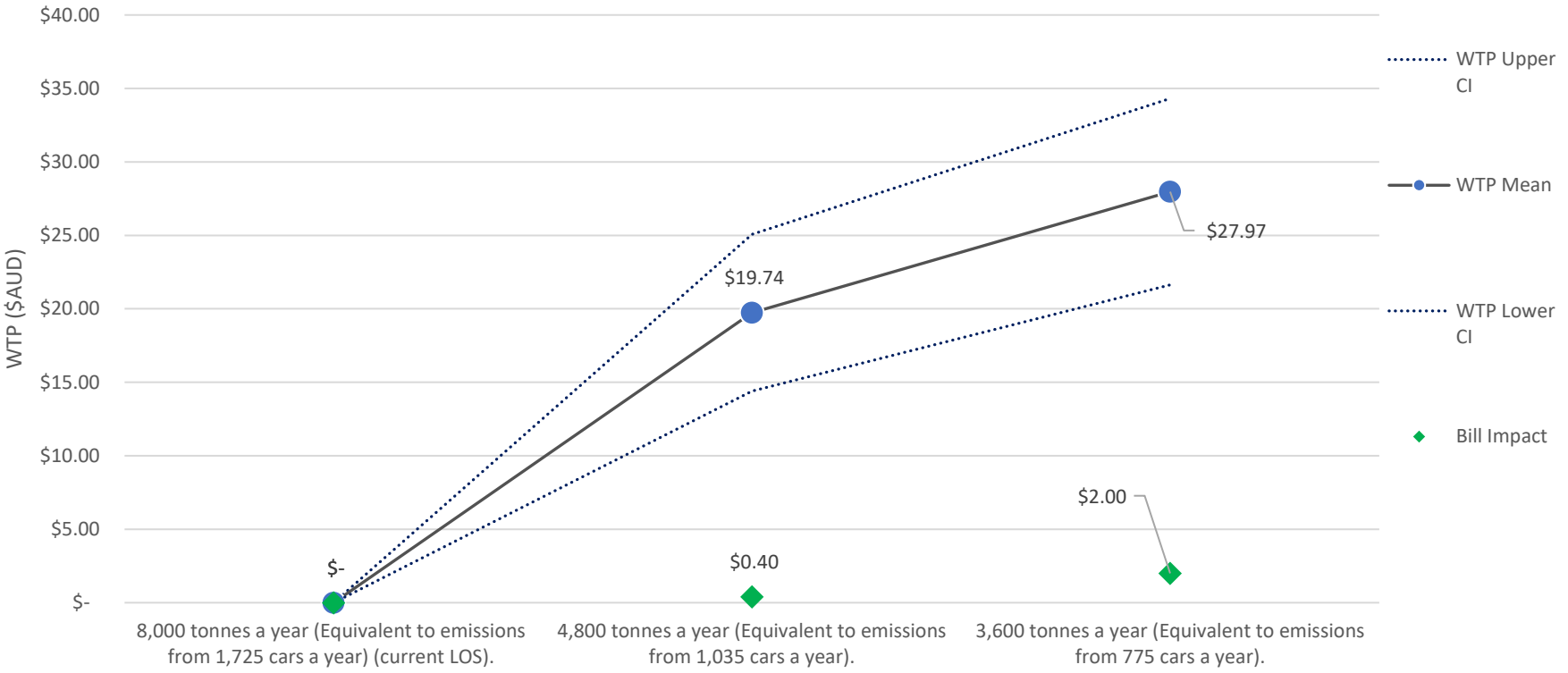
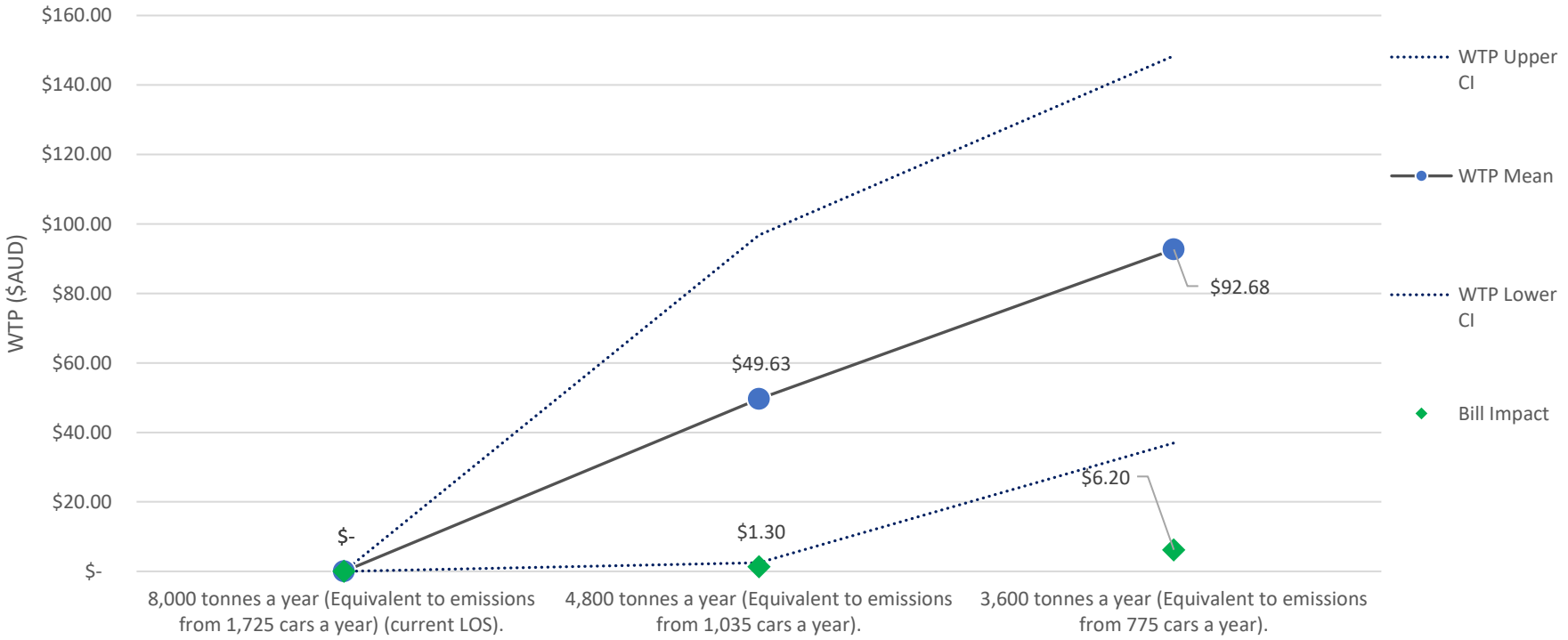


Figure 23: Carbon emission from SA Power Networks' vehicle fleet by 2030, average willingness to pay per year $, small business sample.



4.5 Enabling solar export to the network

4.5.1 Number of hours that customers' solar system exports are reduced by 2030

Number of hours that customers' solar system exports are reduced by 2030 description video.

South Australian households and small businesses were asked how much they were willing to pay to reduce the number of hours that customers' solar system exports are reduced. We measured the willingness to pay across three groups:

- Respondents that are not part of a Solar Feed-In Tariff Scheme
- Respondents that are part of a Solar Feed-In Tariff Scheme
- Respondents that are part of the Premium Solar Feed-In Tariff Scheme.[2]

Households that are not solar customers and those with solar who were not part of a Solar Feed-In Tariff Scheme

Estimates (Figure 24) show that South Australian households that were not part of the Solar Feed-In Tariff Scheme, on average, are not willing to pay to move from the current level of service where customers may have their solar exports reduced no more than 875 hours per year, to the improve levels of service where export reduction is no higher than 290 and 145 hours per year.

However, they are willing to pay to move from the current level of service to an improved level of service that sees no more than 60 hours a year where customers' solar system exports are reduced. At this level of improved level of service, the mean willingness to pay is greater than the bill impact, giving evidence to suggest South Australian households that are not part of the Solar Feed-In Tariff Scheme support this service proposal, on average.

[2] The Premium Solar Feed-In Tariff Scheme is a SA Government initiative which commenced on 1 July 2008 and is to apply for 20 years under the SA Government legislation. The payment received per kWh of energy exported to the grid under a Premium Solar Feed-in Tariff scheme is typically much higher than what customers on a standard Solar Feed-In-Tariff receive per kWh of energy exported from electricity retailers.

Households that were part of a Solar Feed-In Tariff Scheme

Estimates (Figure 25) show that South Australian households that were part of a Solar Feed-In Tariff Scheme, on average, were willing to pay to decrease the number of hours a year where customers' solar system exports are reduced. They are willing to pay to decrease the number of hours reduced per year from 875 to 60.

Across all improved levels of service, the mean and lower bound confidence interval willingness to pay estimate is greater than the bill impact, giving strong evidence to suggest that South Australian households that are part of the Solar Feed-In Tariff Scheme support these service proposals, on average.

Households that were part of the Premium Solar Feed-In Tariff Scheme[3]

Estimates (Figure 26) show that South Australian households that were part of the Premium Solar Feed-In Tariff Scheme, on average, were not willing to pay to decrease the number of hours a year where customers' solar system exports are reduced. These respondents, on average, want to be compensated for moving from the current level of service to all improved levels of service. There is no statistical difference between customers willingness to pay for limiting exports from 290 hours to 145 hours, identified from the overlapping confidence intervals. The confidence intervals surrounding these estimates are very wide (+/- 100%) and therefore should be used with caution.

Small business

Estimates (Figure 27) show that South Australia small businesses, on average, were not willing to pay to move from the current level of service of 145 hours per year to an improved level of service of 290 hours.

Small businesses were willing to pay to move from the current level of service to improved levels of service of 145 hours per year and 60 hours per year. At the improved level of service of 145 hours per year, the mean willingness to pay is greater than the bill impact giving evidence to suggest that small businesses support this service proposal on average.

[3] The Premium solar Feed-In Tariff Scheme is a South Australian Government initiative commenced on 1 July 2008 and applies for 20 years under the government legislation. The payment received per kWh of energy exported to the grid is typically much higher than a standard Feed-In-Tariff receive from electricity retailers.

At the improved level of service of 60 hours per year, the mean and lower bound confidence interval willingness to pay estimate is higher than the bill impact, giving strong evidence to suggest that small businesses support this service proposal on average.

Figure 24: Number of hours that customers' solar system exports are reduced by 2030, average willingness to pay per year $, household non-feed-in sample.

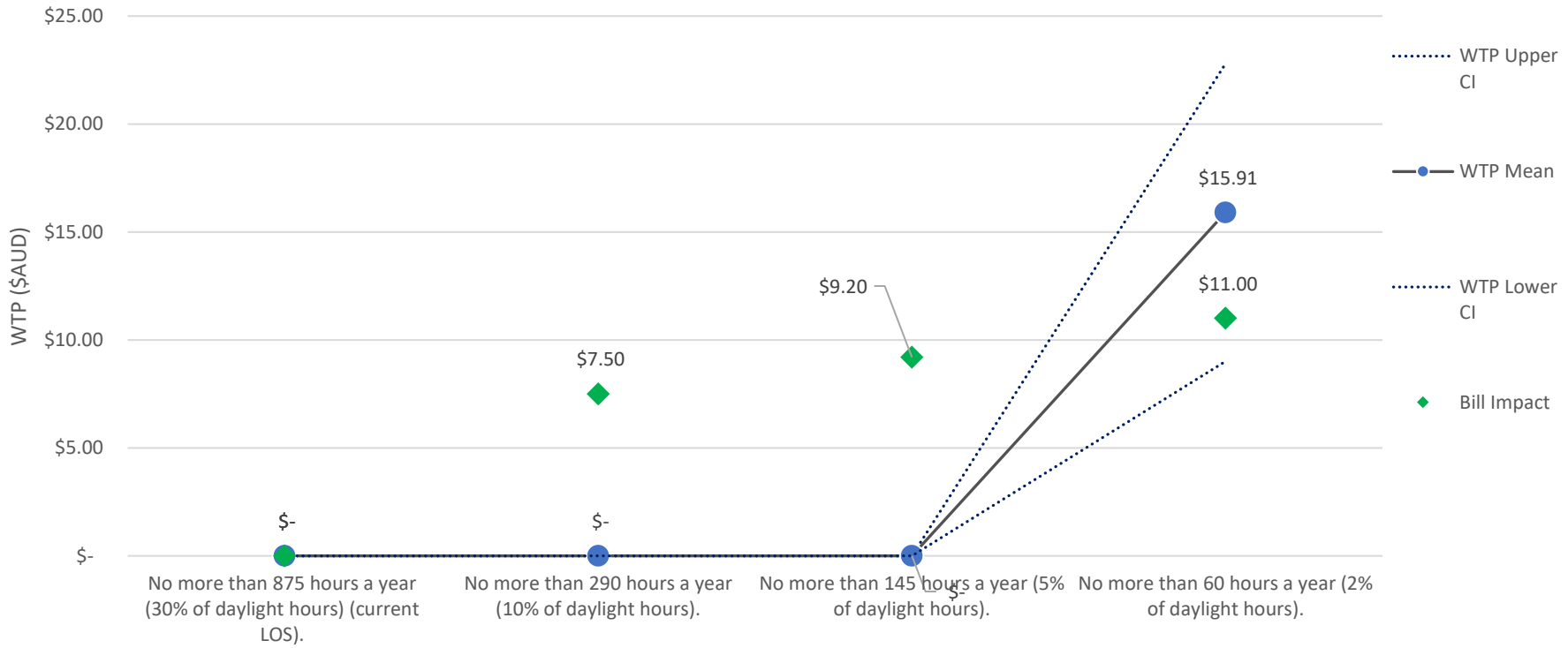


Figure 25: Number of hours that customers' solar system exports are reduced by 2030, average willingness to pay per year $, household feed-in sample.

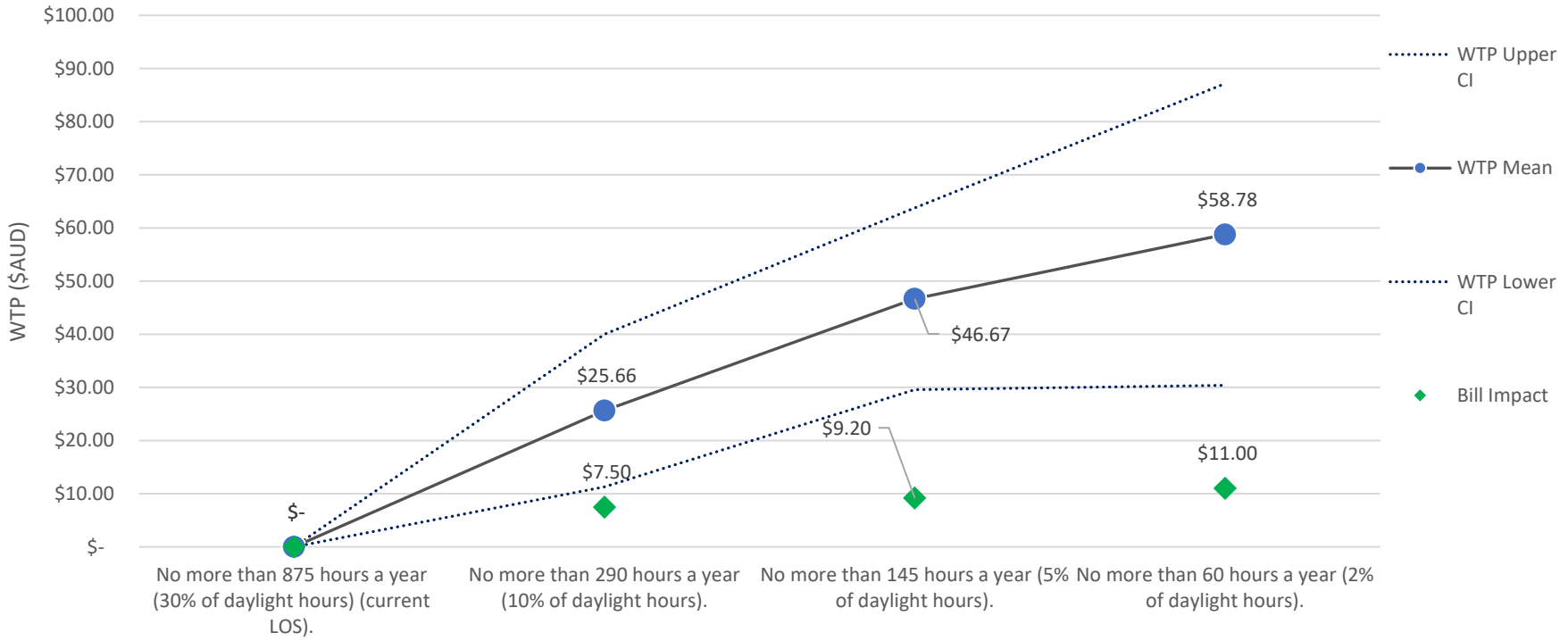


Figure 26: Number of hours that customers' solar system exports are reduced by 2030, average willingness to pay per year $, household premium feed-in sample.

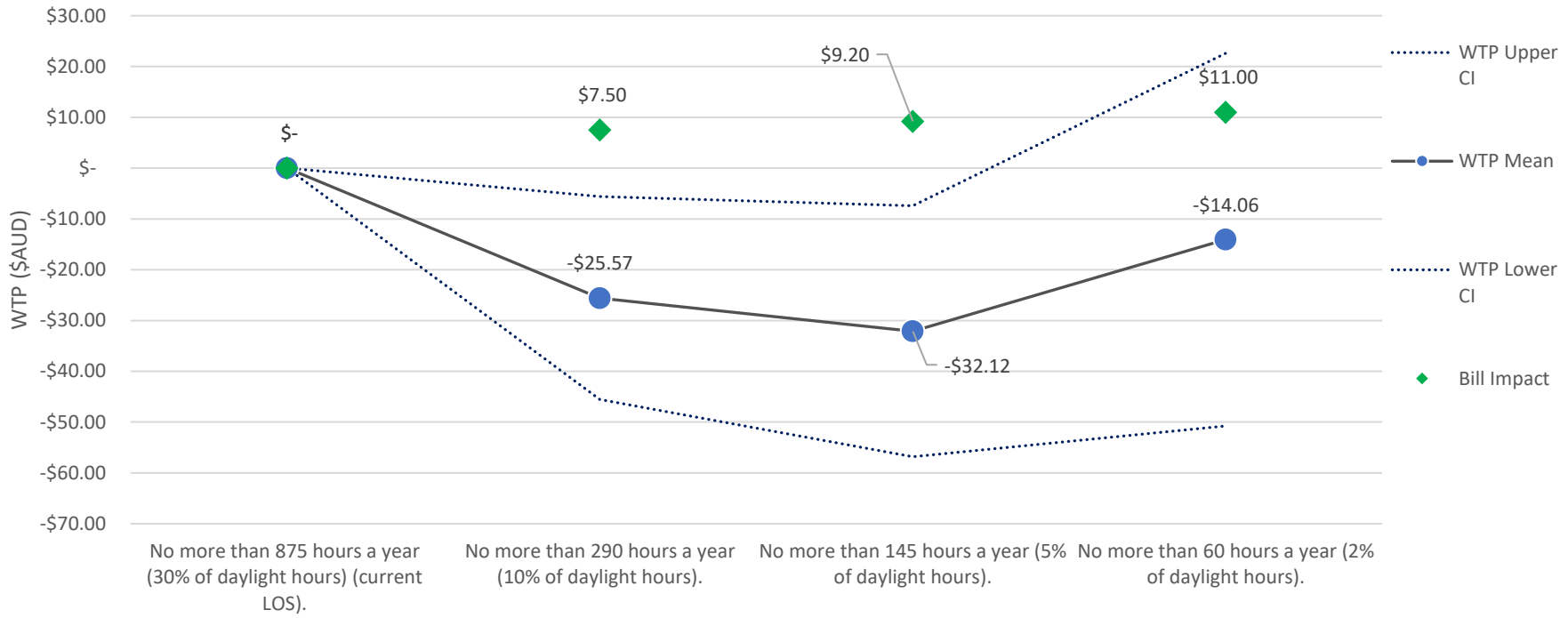


Figure 27: Number of hours that customers' solar system exports are reduced by 2030, average willingness to pay per year $, small business sample.

5. Survey comprehension, consequentiality, and incentive compatibility

Demonstrating survey comprehension and acceptance is an important step to validate the results of any customer survey. Surveys are more likely to reflect real customer values and willingness to pay for additional services when respondents understand the survey questions, have enough information to make informed choices, and believe their responses will have real impacts on the services SA Power Network proposes in their regulatory submission, and their future electricity bills.

Stated preference surveys like the SA Power Networks customer survey asks people to make what are sometimes complex trade-offs. In the SA Power Networks customer survey, we asked customers to make trade-offs between higher electricity bills in return for different service levels being provided across 7 different service areas.

Household and small business survey respondents completed this task drawing on information they were given in the survey in addition to what they already knew about electricity network services currently provided by SA Power Networks, and the bills they already pay for these services through their electricity retailer.

The survey results showed that many South Australians did not know that SA Power Networks is a regulated entity (Figure 28 and Figure 29).

Given these pre-conditions, understanding whether respondents completing the SA Power Networks customer survey understood the information presented, and believed the survey was consequential and hence, incentive-compatible, is an important precursor to having confidence in the willingness to pay estimates in this report.

Appendix 2 provides technical material on the survey design, discusses the 'good practice' approaches we used to make the survey consequential and incentive-compatible for respondents. As we discuss in the Appendix 2, the values and preferences obtained from

respondents who believe their survey answers are at least 'weakly' consequential and incentive-compatible closely approximate actual behaviour in real markets.

To prepare and test respondents for understanding and consequentiality, we primed them with five questions before the choice tasks, and with several questions after the choice tasks at the end of the survey.

The questions we primed respondents with (Table 5) show that over 95 percent of customers were aware immediately before the choice tasks what they said in the SA Power Networks survey would be used to make decisions about services and prices SA Power Networks proposes in its next regulatory submission to the AER. It also shows that more than 90 percent understood clearly that SA Power Networks would begin providing services during the next regulatory period, and that any differences in charges would commence 1 July 2025. It also shows more than 90 percent were aware that we applied inflation to the other components of the bill so that the retail electricity bills were inflated to 2024 prices. We discuss this inflation and why and how we applied further in the Appendix 1. We also discuss in Appendix 1 how we tested whether responses to the questions in Table 5 impacted customer preferences or WTP. We found that customers' understanding did not impact preferences or WTP.

Table 7 shows that following the choice survey most household and small business customer respondents said they understood the information provided to them in the questionnaire, had enough information to make an informed decision and said they could make the trade-offs required in the willingness to pay tasks.

Table 7 also shows 79 percent of household respondents and 78 percent of small business respondents were consequential for the question 'I think my choices will impact on the services SA Power Networks proposes and prices in its next price submission.', and 16 percent and 15 percent were neutral (weakly consequential) for household and small business customers respectively. Almost 90 percent of household and over 90 percent of small business participants were consequential for the question 'I think SA Power Networks customers' bills will increase if the Australian Energy Regulator says that SA Power Networks can make some or all of the investments,' and 8 percent were weakly consequential. These self-response outcomes indicate the (significant) majority of respondents believed the survey was at least weakly consequential [20-24].

Statistical evaluation of the survey responses that tested for understanding and hypothetical bias shows that comprehension, consequentiality, and incentive compatibility self-reporting scores are largely the same across respondent groups by age, ownership status, location, and other factors. It also showed that respondents who were neutral or disagreed with the statements about the

impact of their choices did not have statistically different values and willingness to pay for the SA Power Networks services proposed.

Figure 28: Household customers' self-reported assessments of understanding SA Power Networks and regulation by the Australian Energy Regulator

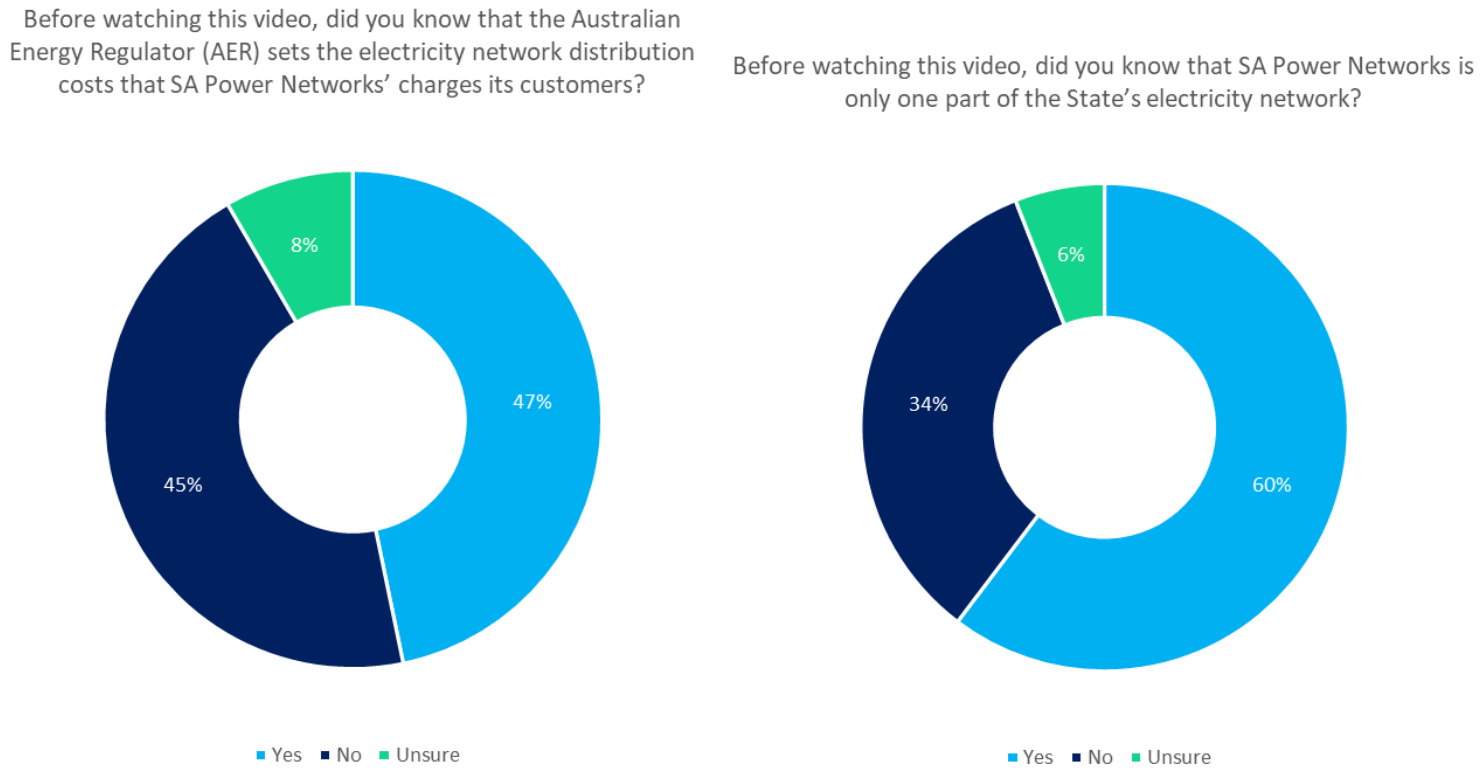


Figure 29: Small business customers' self-reported assessments of understanding SA Power Networks and regulation by the Australian Energy Regulator

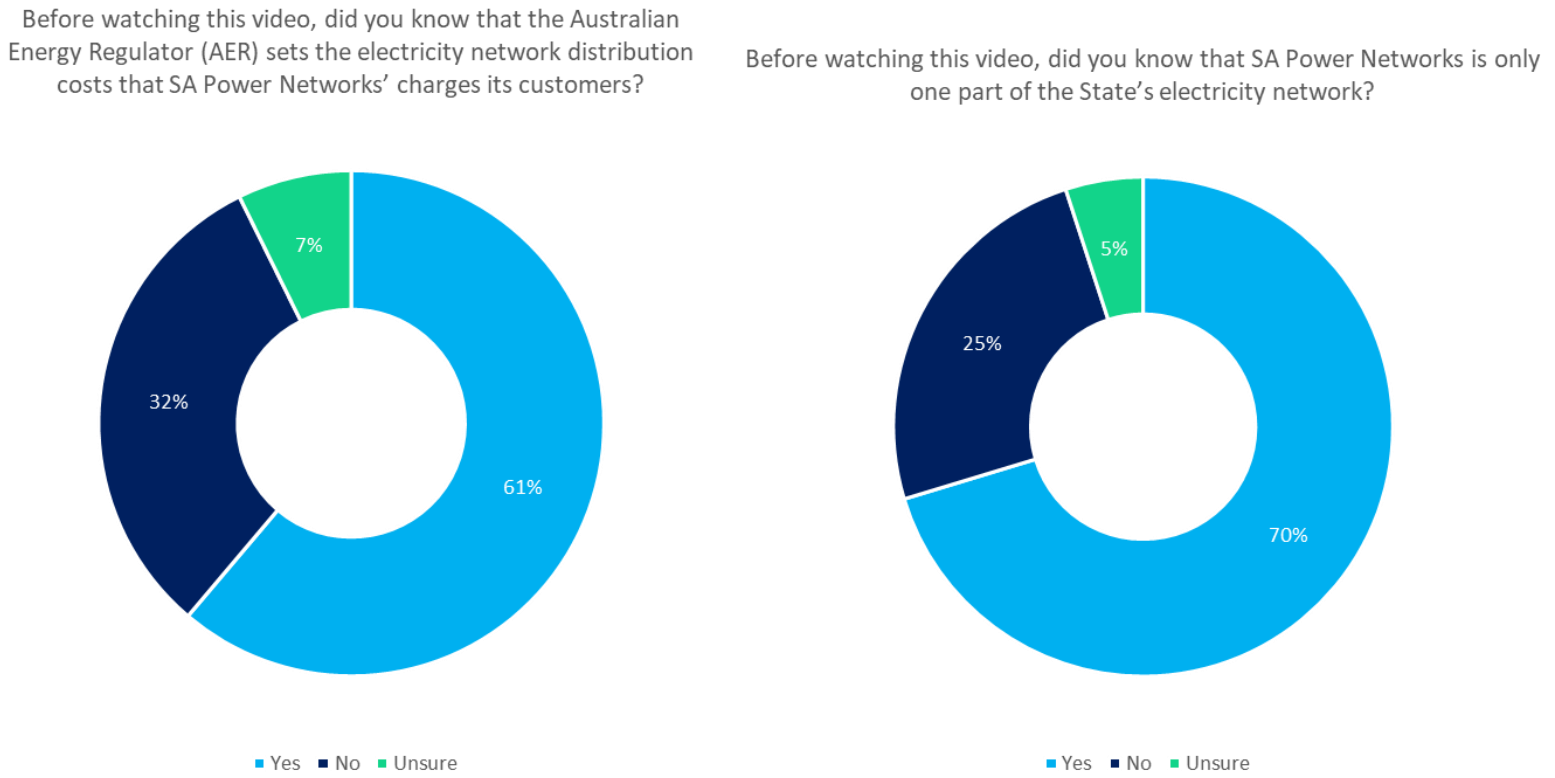


Table 6: Self-reported acknowledgement of understanding and consequentiality before the choice tasks

	I understand that the feedback provided to SA Power Networks in this survey will be used to make decisions about the services and prices SA Power Networks proposes in its next regulatory proposal to the Australian Energy Regulator.	I understand that I will be shown packages for seven services and have been asked to choose the package I most prefer. I also understand that other services that are not shown will stay at the same levels of service SA Power Networks currently provides.	I understand that SA Power Networks will begin providing the services that customers support and the AER approves before 30 June 2030, and that I will begin paying any difference in charges for these services from 1 July 2025.	I understand that for each package, SA Power Networks has applied an estimated change to my current electricity bill to reflect possible changes in the costs of providing electricity network services from 1 July 2025.	I understand that some of the packages I am shown may look unusual, and that this is because there are a range of ways SA Power Networks can deliver the packages and their outcomes. I understand that all I need to do is choose the package I most prefer.
Household					
Agree	96.5%	95.9%	91.7%	93.4%	94.9%
Disagree	0.9%	1.1%	2.7%	2.2%	1.0%
Unsure	2.6%	3.0%	5.6%	4.4%	4.1%
Small business					
Agree	97.6%	94.1%	91.7%	94.1%	94.1%
Disagree	0.6%	3.0%	3.0%	3.6%	3.0%
Unsure	1.8%	3.0%	5.3%	2.4%	3.0%

Table 7: Household and small business customer self-reported assessments of understanding and consequentiality

	I think SA Power Networks customers' bills will increase if the Australian Energy Regulator says that SA Power Networks can make some or all of the investments.	I understood the outcomes described.	I understood the idea of making choices between different outcomes.	I think my choices will impact on the services SA Power Networks proposes and prices in its next price submission.	I understood all of the information provided.	I was given enough information to make a decision.
Residential						
Strongly agree	29%	24%	14%	25%	25%	34%
Agree	60%	62%	43%	54%	56%	50%
Neither agree nor disagree	8%	11%	33%	16%	15%	13%
Disagree	2%	2%	7%	5%	3%	2%
Strongly disagree	1%	1%	3%	2%	1%	1%
Small Business						
Strongly agree	29%	28%	11%	20%	28%	34%
Agree	63%	61%	40%	58%	60%	50%
Neither agree nor disagree	8%	10%	37%	15%	10%	11%
Disagree	1%	1%	9%	5%	1%	3%
Strongly disagree	0%	0%	3%	2%	1%	1%

6. References

[1] B. McNair and M. Ward, "W*illingness to pay research project.*," ed. Canberra: Australian National University., 2012.

[2] WSAA, "Willingness to pay.," in *Principles for a robust study*, Marsden Jacob Associates and The Centre for International Economics, Eds., ed. Sydney, 2019.

[3] Centre for International Economics, "Customer willingness to pay," in *Customer-informed IPART submission (CIPA) Phase 2*, ed. Canberra, 2018.

[4] Centre for International Economics, "Customer willingness to pay," in *Water and wastewater system performance*, ed. Canberra, 2021.

[5] A. E. M. Operator, "2014, Value of Customer Reliability Review. Final Report - Appendix. September," ed.

[6] B. G. C. Dellaert, B. Donkers, and A. Van Soest, "Complexity Effects in Choice Experiment–Based Models," *Journal of Marketing Research,* vol. 49, no. 3, pp. 424-434, 2012/06/01 2012, doi: 10.1509/jmr.09.0315.

[7] E. T. Bradlow, "Current issues and a 'wish list' for conjoint analysis," *Applied Stochastic Models in Business and Industry,* vol. 21, no. 4-5, pp. 319-323, 2005, doi: https://doi.org/10.1002/asmb.559.

[8] P. E. Green and V. Srinivasan, "Conjoint Analysis in Marketing: New Developments with Implications for Research and Practice," *Journal of Marketing,* vol. 54, no. 4, pp. 3-19, 1990, doi: 10.1177/002224299005400402.

[9] R. Johnson *et al.*, "- Constructing Experimental Designs for Discrete-Choice Experiments: Report of the ISPOR Conjoint Analysis Experimental Design Good Research Practices Task Force," - *Value in Health,* no. - 1, pp. - 3, doi: - 10.1016/j.jval.2012.08.2223.

[10] D. A. Hensher and J. M. Rose, "Simplifying choice through attribute preservation or non-attendance: Implications for willingness to pay," *Transportation Research Part E: Logistics and Transportation Review,* vol. 45, no. 4, pp. 583-590, 2009/07/01/ 2009, doi: https://doi.org/10.1016/j.tre.2008.12.001.

[11] R. Kessels, B. Jones, and P. Goos, "A comparison of partial profile designs for discrete choice experiments with an application in software development," 01/01 2012.

[12] K. Chrzan, "Using Partial Profile Choice Experiments to Handle Large Numbers of Attributes," *International Journal of Market Research,* vol. 52, no. 6, pp. 827-840, 2010/11/01 2010, doi: 10.2501/S1470785310201673.

[13] J. F. Bridges *et al.*, "Conjoint analysis applications in health--a checklist: a report of the ISPOR Good Research Practices for Conjoint Analysis Task Force," (in eng), *Value Health,* vol. 14, no. 4, pp. 403-13, Jun 2011, doi: 10.1016/j.jval.2010.11.013.

[14] R. D. Hays, A. Liu H Fau - Kapteyn, and A. Kapteyn, "Use of Internet panels to conduct surveys," (in eng), no. 1554-3528 (Electronic).

[15] V. Lehdonvirta, A. Oksanen, P. Räsänen, and G. Blank, "Social Media, Web, and Panel Surveys: Using Non-Probability Samples in Social and Policy Research," *Policy & Internet,* vol. 13, no. 1, pp. 134-155, 2021, doi: https://doi.org/10.1002/poi3.238.

[16] NSW Treasury, "NSW Government Guide to Cost-Benefit Analysis (TPP17-03)," in *Policy and Guidelines Paper*, ed. Sydney, 2017.

[17] G. Solon, S. J. Haider, and J. M. Wooldridge, "What Are We Weighting For?," *The Journal of Human Resources,* vol. 50, no. 2, pp. 301-316, 2015.

[18] J. Meyerhoff and U. Liebe, "Determinants of protest responses in environmental valuation: A meta-study," *Ecological Economics,* vol. 70, no. 2, pp. 366-374, 2010/12/15/ 2010, doi: https://doi.org/10.1016/j.ecolecon.2010.09.008.

[19] U. Frey and F. Pirscher, "Distinguishing protest responses in contingent valuation: A conceptualization of motivations and attitudes behind them.," *PLoS ONE 14(1): e0209872.,* 2019, doi: https://doi.org/10.1371/journal.pone.0209872.

[20] R. T. Carson and T. Groves, "Incentive and informational properties of preference questions," *Environmental and Resource Economics,* journal article vol. 37, no. 1, pp. 181-210, May 01 2007, doi: 10.1007/s10640-007-9124-5.

[21] R. Carson and T. Groves, "Incentive and information properties of preference questions: commentary and extensions," in *The international handbook of non-market environmental valuation*, J. Bennett Ed. Cheltenham: Edward Elgar, 2011.

[22] J. Herriges, C. Kling, C.-C. Liu, and J. Tobias, "What are the consequences of consequentiality?," *Journal of Environmental Economics and Management,* vol. 59, no. 1, pp. 67-81, 2010/01/01/ 2010, doi: https://doi.org/10.1016/j.jeem.2009.03.004.

[23] C. A. Vossler and S. B. Watson, "Understanding the consequences of consequentiality: Testing the validity of stated preferences in the field," *Journal of Economic Behavior & Organization,* vol. 86, pp. 137-147, 2013/02/01/ 2013, doi: https://doi.org/10.1016/j.jebo.2012.12.007.

[24] R. J. Johnston *et al.*, "Contemporary Guidance for Stated Preference Studies," *Journal of the Association of Environmental and Resource Economists,* vol. 4, no. 2, pp. 319-405, 2017, doi: 10.1086/691697.

[25] J. Rolfe and J. Bennett, "The impact of offering two versus three alternatives in Choice Modelling experiments," *Ecological Economics,* vol. 68, pp. 1140-1148, 02/01 2009, doi: 10.1016/j.ecolecon.2008.08.007.

[26] B. G. C. Dellaert, B. A. S. Donkers, and A. Van Soest, "Complexity Effects in Choice Experiment-Based Models," *Journal of Marketing Research,* vol. 49, no. 3, pp. 424-434, 2012.

[27] J. Barreiro-Hurle, M. Espinosa-Goded, J. Martínez-Paz, and A. Perni, "Choosing not to choose: A meta-analysis of status quo effects in environmental valuations using choice experiments," *Economia Agraria y Recursos Naturales,* vol. 18, 06/28 2018, doi: 10.7201/earn.2018.01.04.

[28] C. Chung, T. Boyer, and S. Han, "How Many Choice Sets and Alternatives are Optimal? Consistency in Choice Experiments," *Agribusiness,* vol. 27, pp. 114-125, 12/01 2011, doi: 10.1002/agr.20252.

[29] R. G. Cummings, D. S. Brookshire, and W. D. Schulze, "Valuing Environmental Goods: A State of the Arts Assessment of the Contingent Valuation Method.," ed. Totowa: Roweman and Allanheld, 1986.

[30] J. L. Walker, Y. Wang, M. Thorhauge, and M. Ben-Akiva, "D-efficient or deficient? A robustness analysis of stated choice experimental designs," *Theory and Decision,* vol. 84, no. 2, pp. 215-238, 2018/03/01 2018, doi: 10.1007/s11238-017-9647-3.
[31] M. C. J. Bliemer and J. M. Rose, "Efficiency and Sample Size Requirements for Stated Choice Studies," 2005.
[32] J.-C. Yang, F. R. Johnson, V. Kilambi, and A. F. Mohamed, "Sample size and utility-difference precision in discrete-choice experiments: A meta-simulation approach," *Journal of Choice Modelling,* vol. 16, pp. 50-57, 2015/09/01/ 2015, doi: https://doi.org/10.1016/j.jocm.2015.09.001.
[33] J. Penn and W. Hu, "Cheap talk efficacy under potential and actual Hypothetical Bias: A meta-analysis," *Journal of Environmental Economics and Management,* vol. 96, pp. 22-35, 2019/07/01/ 2019, doi: https://doi.org/10.1016/j.jeem.2019.02.005.
[34] D. Hatton MacDonald and M. Morrisson, "Valuing a multistate river: the case of the River Murray," *Agricultural Water Management,* vol. 55, pp. 374-392, 2011.
[35] A. Risa Hole, "MIXLOGITWTP: Stata module to estimate mixed logit models in WTP space," ed. Statistical Software Components: Boston College Department of Economics, 2015.

Appendix 1. Technical material

A1.1. Number of alternatives per question

Our study used three alternatives in each choice task, including a status quo option. Our approach balances evidence that studies have found surveys using two alternatives can result in lower statistical significance for the same sample size [25] and evidence that four alternatives can be too cognitively demanding [26], which is consistent with feedback we received when considering using four alternatives during our piloting of the survey instrument.

We included a status quo alternative as this allows for estimation of asymmetric valuation of gains and losses, and because SA Power Networks was interested in understanding customer values relative to the status quo.

Choice studies often find that respondents exhibit a preference for the status-quo that is unrelated to the attributes and their levels [27]. [27] find that preference for the status-quo reduces when heterogeneity is accounted for in the econometric analysis, when protest responses are excluded, and when the choice's cognitive burden is reduced through survey design. We have followed this good practice design guidance in the current SA Power Networks survey.

A1.2. Number of attribute levels per attribute

Consistent with ISPOR Good Research Practices for Conjoint Analysis Task Force recommendations [13] we limited attributes to generally less than four levels per attribute. We also avoided the use of extreme values in the attribute levels to avoid risks of grounding effects.

A1.3. Number of questions per respondent

Increasing the number of questions per respondents is considered an efficient way to obtain more information about each respondent's preferences. At the same time, increasing the number of choice questions can increase the risk of respondents becoming fatigued and dropping out of the survey.

Studies that have investigated complexity and the constancy of choices [28] generally find that respondents' choices do vary with the amount of information given, and that around six choice questions per survey may be optimal. Consistent with these findings and balancing the need for efficiency information gathering with risks of drop-out rates, our survey used six questions per respondent.

A1.4. Experimental design

The goal of choice study experimental design is to create a set of tasks that will yield as much statistical information as possible for estimating unbiased, precise preference parameters [13].

The ISPOR Conjoint Analysis Good Research Practices Task Force recommends that there is no gold standard or best approach for experimental design [9, 13, 29]. Rather, researchers should describe, evaluate and document how the design meets the goals of the study. In doing so good practice guidance is that experimental design should [9]:

- allow treatment effects and relevant attribute interactions to be individually or jointly identified
- should generally allow for interactions and nonlinear-in-attributes utility functions
- employ constraints on implausible attribute levels and combinations
- use designs that are robust to alternative econometric model specifications, and
- consider how the levels chosen for each attribute influence design properties.

There are several approaches available for experimental design for choice studies, including D-optimal and near-D-optimal designs, C-optimal designs, utility-imbalanced designs, cyclical designs, and random designs. [24] identify that each of these approaches has advantages and disadvantages, including conformity with theoretical optimality, flexibility in accommodating prior information on preferences and constraints on plausible combinations, and ease of construction. Interested readers are encouraged to consult [9, 13, 24, 29] for more information.

Many experimental designs generally aim to improve the statistical efficiency of willingness to pay estimates compared to a randomly generated design. A significant body of academic literature demonstrates the efficiency improvements (and cost savings) that can be achieved by employing efficient designs.

In most of this literature testing occurs where the priors used to generate the efficient design are, or are assumed, to be accurate. Recent work [30] shows that when priors are not accurate the estimation efficiency of D-optimal design may be lower than orthogonal and random designs. This work also shows that orthogonal and random designs produce unbiased estimates that are more robust than D-efficient designs, where robustness is measured in terms of the D-error and the standard error. The authors conclude that all factors considered, "the random design (which is the easiest to generate) can perform as well as any efficient design, and that it (as well as any design) will perform even better if data cleaning is done to remove choice tasks where one alternative dominates the other". The authors also conclude that it is risky to use an efficient design in cases where priors are even moderately uncertain. Interested readers are encouraged to consult [30] for more information.

The findings in [30] are important because we are aware most applied choice studies conducted for utilities in Australia have relied on small samples from pilot studies and focus groups to develop their priors. Given the small sample size nature of these datasets and the way they are obtained, there is a risk that the priors are at least moderately uncertain. Where this is the case, these efficient designs may underperform alternatives such as random and orthogonal designs, while also imposing constraints on model estimation.

There is a logic for preferring efficient designs over random designs when using smaller sample sizes. With larger sample sizes asymptotic efficiency reduces the need for efficient designs. [31] [32] show empirically that larger sample sizes provide greater precision of estimates, irrespective of the experimental design employed. When sample sizes are small (<100 respondents) they show increasing sample size results in large improvements in precision. When sample sizes are large (>400) increases in sample size provide very minimal improvements in efficiency of measurement. The practical upshot of this is to demonstrate that experimental design becomes less important with larger sample sizes (circa >200 respondents) and is largely irrelevant beyond samples with >400 respondents.

The SA Power Networks survey employed a random design. We did this for reasons set out above, including because we did not preclude being able to assess interactions between variables during the statistical analysis by imposing constraints on the design, because constructing highly accurate priors is problematic, and because we surveyed more than 1,400 customers using surveying approaches to seek to ensure that we had larger samples (>200 respondents) for key customer cohorts such as vulnerable customers. We consider this design approach was prudent for the study objectives. This is because the design is robust and likely

provides similar if not superior estimation efficiency compared to alternatives, plus the approach maximises opportunities to explore and include:

- all possible treatment effects and relevant attribute interactions to be individually or jointly identified
- all possible interactions and nonlinear-in-attributes utility functions to be evaluated
- all possible alternative econometric model specifications.

A1.5. Inflation adjustments

As discussed in section 2.3 of the main report, the total retail electricity bill that survey respondents were shown in the choice tasks (see "Your estimated electricity bill starting 1 July 2025" in Figure 5) was based on two components:

- **The quarterly bill impact of each option** shown in the choice task. This is amount that says "Your quarterly bill stays the same" in Current level of service in Figure 1 and "Your quarterly bill increases by $X" in Alternative A and B. This bill impact reflects the additional costs of SA Power Networks providing the services customers were being asked about.
- **Customer's 'base bill'.** Respondents base bill was based on the estimate customers gave of how much they currently pay for their electricity bill (Figure 6 and Figure 7).

Customers responses to the question on how much they pay in electricity bills used together with the bill impact of each choice option to estimate the respondent's future total electricity bill shown in each choice question they completed (see bottom of Figure 5).

SA Power Networks instructed us to assume that the cost of providing electricity network services will increase in the next regulatory period due to inflation and other factors impacting the business. Customers' electricity bills will increase because of this. SA Power Networks advised they believe that this bill increase will be somewhere between 8% and 22% of current electricity bills, but that they do not yet know what the final figure will be.

In this survey it is important that customers make their choices about what they are willing to pay for in the context of prices that they will pay in the next regulatory period commencing July 2025. This is particularly the case when bills and other costs of living are

likely to increase due to Australia's current and predicted future inflation rates. Where electricity network costs are likely to increase in the future, asking customers for their preferences and willingness to pay for services using their current bills risks that customers will overstate their willingness to pay, because they are not considering future inflation impacts and how these impact on future household budget constraints, affordability, and ability and willingness to pay.

We incorporated inflation assumptions directly in this survey. Customers responding to the survey to (1) be aware that they were making their choices based on bills with an inflation assumption embedded in it and (2) make their choices to questions like that shown in Figure 1 using bills that included an inflation adjustment of between 8% and 22% of the bill estimate the customer provided to the question shown in Figure 2.

We applied the inflation adjustment randomly to respondents using a random number generator coded into to the survey engine. We subsequently tested interaction effects in the models estimating customer willingness to pay to evaluate whether the inflation adjustment % or the total inflated bill impacted on customer preferences, or willingness to pay, in a statistically significant way.

In the current surveys we found that inflation did not impact on customer WTP, or the structure of customers' preferences in a statistically significant way. This is an important result because it means that, all other factors held constant, SA Power Networks may assume that the customer values and WTP estimates in this report are robust and will not change if underlying electricity bills increase by anywhere between 8% and 22% in the next regulatory period. We discuss results of these tests in further Appendix 2.

A1.6. Good practices

Stated preference surveys for public and quasi-public goods (such as environmental improvements) run a greater risk that respondents will give answers that do not reflect their real preferences than stated preference surveys of private goods [20, 24]. One reason that respondents may not give their real preferences is when they believe that they will not actually have to pay for the policy to be implemented that will secure the public good. This is called hypothetical bias. Stated preference surveys are also at risk of other forms of strategic response bias.

The SA Power Networks customer survey addressed the risk of hypothetical and other forms of response bias by using proven good practice approaches, including following the ISPOR Conjoint Analysis Good Research Practices Task Force recommendations [13, 29] and other contemporary good practice guidance for stated preference studies [24]. Practices we have used are summarised below.

Satisfying good design conditions to reduce hypothetical bias risk

We designed the survey to ensure the survey met good design practices identified by the ISPOR Conjoint Analysis Experimental Design Good Research Practices Task Force including [29]: pp104)

- Ensuring that subjects are familiar with the commodity being valued: this was achieved through the videos customers were shown, and using follow up questions to check for understanding before and after the choice questions were asked
- Minimising uncertainty in the survey's scenario, outcomes, and provision rules: this was achieved through the scenario descriptions, and through a clear articulation of outcomes for each service level
- Eliciting willingness to pay not willingness to accept preferences. The study was a willingness to pay study.

Using procedures that emphasised the consequentiality of the survey

Providing incentives for respondents to reveal their true preferences in stated preference questions is an important aspect of questionnaire design. Carson and Groves [20] have demonstrated that to achieve this 'incentive compatibility' in stated preference questions requires that respondents consider their answers to be 'consequential': i.e. respondents believe that the context of the survey is realistic to the point where they think that their answers will have consequences for the amount they will have to pay in the future. We emphasised consequentiality in this survey in multiple ways that included:

- Stating that the survey was being run by SA Power Networks, and that the context was to understand whether South Australian residents and small businesses would be willing to pay more in electricity bills to in return for additional services and / or better services outcomes.
- SA Power Networks is considering discretionary expenditure as part of its next regulatory submission to the AER.
- SA Power Networks would make investments only if there was sufficient evidence of customer willingness to pay for the services proposed.
- Any price increase would reflect South Australian residents' and small business' willingness to pay for the additional services, based on the survey results.

One method sometimes used in stated preference questionnaires to encourage response accuracy is the 'cheap talk' method. This involves respondents being told about the hypothetical nature of the questioning and a request that they answer accurately because of the importance of the issue at hand. Cheap talk was not used in the SA Power Networks survey primarily because the approach potentially reduces the already established consequentiality of responses by telling the respondent that the survey deals with hypothetical choices.

Evaluations of the efficacy of cheap talk scripts tests show that of the method's success in field applications show mixed usefulness with studies often finding no significant differences in value estimates [33]. In a meta-analysis of over 400 studies [33] found that cheap talk had little to no efficacy in cases where hypothetical bias is less relevant, including when survey respondents believe their choices will have real consequences. This was the SA Power Networks survey where respondents believed they would pay for the additional services if SA Power Networks provided them.

Other studies do find significant differences in willingness to pay with and without cheap talk scripts. However, these studies are generally based on academic stated preference studies where respondents may not believe the survey, or their responses have consequences. Therefore, it is not clear that findings hold for 'real world' applications of the stated preference technique, such as the SA Power Networks survey. In sum, our preference is not risk losing consequentiality by unnecessarily emphasising the hypothetical nature of the survey by telling respondents they should answer "as if" the customer was "really facing these decisions". This is a technical issue that would benefit from further research.

Using an incentive compatible payment vehicle that gives a precise understanding of how SA Power Networks customers would pay for the discretionary services

Some stated preference studies (for example [34]) have used levies paid through increased taxes and higher prices for consumables (food) as the payment vehicle. Evidence shows that changes to income-based taxes (and food prices) are generally not incentive compatible payment vehicles in stated preference surveys. Changes to income-based taxes are not incentive compatible because people pay different tax rates. For example, if the survey respondent is a university student with no income and who pays no income tax, they may think they will not have to pay for the environmental improvement that is going to be paid for by increased taxes and will therefore potentially overstate their willingness to pay for it.

It is generally recommended that the payment vehicle in stated preference surveys is some type of fee or charge that can be directly charged to individuals or households by the proponent. This was the approach used in the SA Power Networks customer survey, where we stated charges would be passed through the household or business' electricity retailer as additional charges on the electricity bill, commencing in the next pricing period.

Reminding and demonstrating budget constraints

Many stated preference studies have shown that respondents' willingness to pay is impacted by reminders of budget constraints and how cost information is presented [33]. The ISPOR Conjoint Analysis Experimental Design Good Research Practices Task Force recommends all stated preference surveys include budget constraint reminders. Our survey included budget constraint and income reminders in two ways in the survey:

- We reminded people in the survey before the choice tasks that they had a limited budget and needed to spend income on other things as well as services provided by SA Power Networks
- In the choice set presentations we showed respondents the impact of their choices through the (1) the bill impact of their choice alone (2) their quarterly bill, which combined their total electricity bill and any increase or decrease in the bill based on the alternative they chose and (3) their total annual electricity bill, including their choices.

Our view is that showing people the total electricity bill including the attribute bill impact is better than just showing the marginal bill impact of the choice selection, as has been done in work for other Australian energy and water utilities [3].

Figure 30: Choice option showing the quarterly additional bill impact of choice, plus the total quarterly and annual electricity bill.

	Current package	Alternative A	Alternative B
Number of hours that customers' solar system exports are reduced by 2030.	No more than 875 hours a year (30% of daylight hours)	No more than 60 hours a year (2% of daylight hours)	No more than 145 hours a year (5% of daylight hours)
Customers experiencing service interruptions to stop powerlines starting fires by 2030.	5,000 customers a year (0.56% of all customers) 6-12 hours of interruptions a year per customer	5,000 customers a year (0.56% of all customers) 6-12 hours of interruptions a year per customer	3,000 customers a year (0.33% of all customers) 6-12 hours of interruptions a year per customer
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030.	60,000 customers a year (7% of all customers)	45,000 customers a year (5% of all customers)	30,000 customers a year (3% of all customers)
Customers experiencing service interruptions in worst-served areas by 2030.	90,000 customers a year (10% of all customers) 12 hours of interruptions a year per customer	90,000 customers a year (10% of all customers) 12 hours of interruptions a year per customer	25,000 customers a year (3% of all customers) 9 hours of interruptions a year per customer
Your Electricity Bill from 1 July 2025:	Your quarterly bill stays the same Your quarterly bill would be $362 Your annual bill would be $1446	Your quarterly bill increases by $20 Your quarterly bill would be $382 Your annual bill would be $1526	Your quarterly bill stays the same Your quarterly bill would be $362 Your annual bill would be $1446
	Select	Select	Select

This is because not presenting the total electricity bill may result in respondents placing less awareness on their residential or small business budgets compared to if the total electricity bill is shown. This may result in respondents overstating willingness to pay compared to if they have the total electricity bill available to them.

Using pre- and de-briefing questions and ex post approaches identify respondents with potential response bias.

The survey included debriefing questions that asked respondents if they responded truthfully, whether they understood and believed the scenarios, and whether they thought they would have to pay for the improvements if the policy is implemented.

These debriefing questions were used to identify and remove respondents whose debriefing responses indicate that they do not believe the scenario being described, believe they will not have to pay for the environmental improvement described in the survey, or were protest responses. This is a recommended best-practice procedure for stated preference surveys [24].

Evidence from the recent literature on consequentiality in stated preference surveys shows clearly that all data arising from respondents who believe the survey is *at least weakly consequential* can be assumed to provide truthful answers to stated preference survey questions [22-24]. As discussed in this report we included serial non-respondents, so called protest respondents as zero value bids in our analyses. Our treatment of protest responses is set out in Appendix 3.

Use of neutral language

The survey invitation was information neutral to limit response bias risk and obtain objective responses. The invitation to the survey did not specifically state that the survey was about service levels and willingness to pay for things like solar exports and reliable and resilient power. The invitation informed people that SA Power Networks was currently deciding what investments in electricity distribution and other services SA Power Networks would make in its next regulatory submission, and that SA Power Networks was seeking end-user customer input on these issues.

The survey design and wording aimed to ensure that the engagement was not biased towards a particular outcome. It presented information in a clear form. The engagement purpose and how SA Power Networks would use the information was made clear in the survey. Trade-offs between services provided and future electricity bill changes were clear. The impacts of willingness to pay

questions (including cumulative impacts on services and/or bills) of the options being considered were clear, and survey respondents could amend their service preferences to change their bills.

Priming and debriefing questions

We employed a range of priming questions in anticipation of some survey respondents not attending to all the information presented to them, and to ensure that respondents were aware of the context in which SA Power Networks set prices. These priming questions included respondents confirming through their answers, after the introduction video and content that they were aware that:

- the AER sets SA Power Networks' electricity distribution prices for our customers through the regulatory submission process: we included this question to ensure respondents were aware that SA Power Networks could not charge monopoly prices for services
- SA Power Networks is only one part of South Australia's electricity network: we included this question to ensure respondents were aware of SA Power Networks' area of operations

Before the choice task respondents were asked to confirm that respondents understood:

- In all questions the first column shows the services SA Power Networks currently provides, which is the 'do nothing' option.
- For each package SA Power Networks had estimated an increase in the customer's current quarterly bill to reflect possible increases in the costs of providing essential electricity distribution services to the customer from 1 July 2025. As a result, in the choice questions customers would see how much they will start paying from 1 July 2025, in 2025 dollars.
- For services not shown, respondents were to assume that the services not shown stay at the level of service SA Power Networks currently provides and that the customer's bill does not change for these services.
- Some of the packages may look strange. Customers were made aware that this was because there are a range of ways SA Power Networks can deliver the packages and their outcomes. SA Power Networks wanted customers to choose the package they preferred the most from the ones shown.
- A reminder that the respondent has a limited budget and that there may be other things they would prefer to spend their money on other than the proposed SA Power Network services.

Our survey included debriefing questions to understand respondents' decision-making process and gather information on their characteristics. These questions included:

- the extent of any difficulty experienced when answering choice questions.
- respondents' perceptions of the accuracy of the 'current package' and feasibility of the service alternatives in the choice questions.
- how respondents answered any questions with alternatives they perceived to be inaccurate or infeasible, if this occurred.
- reasons for choosing the status quo alternative in all questions where this occurred.
- views on whether the survey would impact on the services SA Power Networks provided going forward, and whether they would pass on the bill impact.
- the respondents' frequency and type of interactions with SA Power Networks over the past 24 months; and
- a range of socioeconomic information so we could better understand respondents.

Appendix 2. Statistical estimation of customer value

We estimated several models to identify the preferred model for understanding SA Power Networks customers' preferences and willingness to pay. This Appendix sets out our estimation approaches and results.

Our preferred model for understanding residential customers' preferences for the SA Power Networks services is a panel mixed logit models in willingness to pay space model with fixed and random (normal and lognormal distribution) parameters. We estimated separate models for the residential sample, and small business sample. The preferred models are shown in Table 7. The models were estimated in Stata using the *mixlogitwtp* module [35]. Key elements of the model are that:

- The model includes interactions between the service attributes presented in the choice tasks and explanatory variables in the model. These interactions were included significantly improved model fit and are shown in Table 6.
- The model includes fixed parameters for bill interactions, status quo interactions and several service attributes. The model also includes random parameters for several attributes, assuming independence between the distributions of the random parameters.

We selected the preferred model by working through an iterative process that included:

- testing interactions between model parameters and respondent characteristics to capture unobserved heterogeneity. We tested for and found no significant interaction effects for most of the respondent characteristics in Table 2 and Table 3 including for residential customers: age; workforce status; dwelling type; household structure; born overseas; household income; location (Greater Adelaide or outside); whether pools, essential medical devices that relied on electricity, and whether respondents were on a payment hardship plan or receiving concessions through a State Government department. We did however find significant preference heterogeneity between respondents self-reporting higher self-reported financial stress (defined as respondents who stated they felt a little bit or very stressed when they open an SA Power bill). We also found that gender and age impacted on stated preferences. We also found that respondents receiving feed-in tariffs had different preferences for export curtailment then respondents who did not receive tariffs.
- estimating pooled and un-pooled residential and residential and business models to assess impacts on model outputs and willingness to pay estimates.

- estimating pooled and un-pooled financial stress models to assess the impact of higher self-reported financial stress on model outputs and willingness to pay estimates.
- testing interactions between service level attributes.
- testing for linear and non-linear specifications between utility and service attributes.
- testing for asymmetric preferences using effects coding.
- selecting model parameters and models based on goodness of fit criteria.

Willingness to pay estimates from the preferred model for the residential sample are shown in Table 7. Willingness to pay estimates from the preferred model for the business sample are shown in Table 8.

Willingness to pay estimates in the Tables are shown without the adjustment for the 29% of survey respondents who discontinued the survey after starting it (see section 3.3 for discussion and treatment).

Table 8: Interaction coding

Variable	Interacted with
Gender	Status quo
Number of hours that customers' solar system exports are reduced by 2030	Customers part of Feed-In Tariff Scheme
Number of hours that customers' solar system exports are reduced by 2030	Customers part of Premium Feed-In Tariff Scheme
Number of hours that customers' solar system exports are reduced by 2030	Small business customers with on-site battery storage
Does your business own the building you operate in or are you renting?	Total Bill
Customers experiencing service interruptions to stop powerlines starting fires by 2030	Metro

Table 9: Willingness to pay, residential sample

	Coef.	z	P>|z|	[95%	Conf. Interval]
Fixed parameters					
Status Quo: Male	8.36	1.97	0.00	4.49	12.22
Customers part of Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	7.27	2.03	0.00	3.29	11.24
Customers part of Feed-In Tariff Scheme: No more than 145 hours a year (5% of daylight hours)	14.01	2.41	0.00	9.29	18.74
Customers part of Feed-In Tariff Scheme: No more than 60 hours a year (2% of daylight hours)	13.23	3.28	0.00	6.79	19.66
Customers part of Premium Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	-7.12	3.18	0.03	-13.36	-0.88
Customers part of Premium Feed-In Tariff Scheme: No more than 145 hours a year (5% of daylight hours)	-9.10	4.12	0.03	-17.18	-1.03
Customers part of Premium Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	-7.87	5.10	0.12	-17.87	2.13
Customers experiencing service interruptions in worst-served areas by 2030: 110, customers a year (12% of all customers). 15 hours of interruptions a year per customer.	-2.71	0.93	0.00	-4.54	-0.88
Customers experiencing service interruptions in worst-served areas by 2030: 56,000 customers a year (6% of all customers). 9 hours of interruptions a year per customer.	4.85	0.97	0.00	2.95	6.75
Customers experiencing service interruptions in worst-served areas by 2030: 25,000 customers a year (3% of all customers). 9 hours of interruptions a year per customer.	6.31	0.92	0.00	4.51	8.12
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030: 45,000 customers a year (5% of all customers).	2.27	0.85	0.01	0.61	3.93
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030: 30,000 customers a year (3% of all customers).	3.83	0.88	0.00	2.10	5.56

	Coef.	z	P>|z|	[95%	Conf. Interval]
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 7,000 customers a year (0.78% of all customers). 6-12 hours of interruptions a year per customer.	-2.77	0.93	0.00	-4.59	-0.94
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 3,000 customers a year (0.33% of all customers). 6-12 hours of interruptions a year per customer.	1.57	0.85	0.06	-0.09	3.23
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 1,000 customers a year (0.11% of all customers). 6-12 hours of interruptions a year per customer.	2.50	0.86	0.00	0.81	4.20
Energy advisory services we provide by 2030: Personalised Energy Advisory service. Online portal. Limited phone support.	5.15	0.85	0.00	3.48	6.82
Energy advisory services we provide by 2030: Personalised Energy Advisory service. Online portal. Comprehensive phone support.	5.65	0.94	0.00	3.81	7.49
Website services we provide by 2030: Personalised on-demand services. Some self-services. No automated responses.	2.57	0.78	0.00	1.05	4.10
Website services we provide by 2030: Personalised on-demand services. Comprehensive self-service. Provides automated responses, e.g., receiving immediate connections quotes.	2.90	0.77	0.00	1.40	4.40
Carbon emissions from SA Power Networks' vehicle fleet by 2030: 4,800 tonnes a year (Equivalent to emissions from 1,035 cars a year).	5.68	0.85	0.00	4.02	7.35
Carbon emissions from SA Power Networks' vehicle fleet by 2030: 3,600 tonnes a year (Equivalent to emissions from 775 cars a year).	8.31	0.97	0.00	6.40	10.21
Number of hours that customers' solar system exports are reduced: No more than 60 hours a year (2% of daylight hours).	4.40	1.05	0.00	2.34	6.45
Cost: the permanent change in your total electricity bill	-2.45	0.07	0.00	-2.58	-2.32
Random parameters: means					
Status Quo: Current package	-9.50	1.72	0.00	-12.86	-6.14
Random parameters: standard deviations					
Status Quo: Current package	25.32	2.10	0.00	21.20	29.44

	Coef.	z	P>|z|	[95%	Conf. Interval]
Model fit					
Mixed logit model in WTP space					
Number of choice observations = 20,376					
Wald chi2(24) = 1637.57					
Log pseudo likelihood = -8521.5761					
Prob > chi2 = 0.0000					

Table 10: Willingness to pay, small business sample

	Coef.	z	P>|z|	[95%	Conf. Interval]
Fixed parameters	0.79	0.45	0.08	-0.09	1.67
Total Bill: Does your business own the building you operate in or are you renting?	-6.50	45.35	0.89	-95.39	82.39
Small business customers with on-site battery storage: No more than 290 hours a year (10% of daylight hours)	-105.30	47.84	0.03	-199.07	-11.53
Small business customers with on-site battery storage: No more than 145 hours a year (5% of daylight hours)	-73.12	46.31	0.11	-163.88	17.64
Small business customers with on-site battery storage: No more than 60 hours a year (2% of daylight hours)	31.35	22.18	0.16	-12.11	74.81
Customers part of Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	34.90	21.36	0.10	-6.96	76.77
Customers part of Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	27.16	22.96	0.24	-17.85	72.16
Customers part of Feed-In Tariff Scheme: No more than 290 hours a year (10% of daylight hours)	-31.78	18.74	0.09	-68.51	4.96
Metro: 7,000 customers a year (0.78% of all customers). 6-12 hours of interruptions a year per customer.	-38.43	18.84	0.04	-75.35	-1.50

	Coef.	z	P>|z|	[95%	Conf. Interval]
Metro: 3,000 customers a year (0.33% of all customers). 6-12 hours of interruptions a year per customer.	-24.64	18.59	0.19	-61.08	11.79
Metro: 1,000 customers a year (0.11% of all customers). 6-12 hours of interruptions a year per customer.	-22.13	11.50	0.05	-44.68	0.41
Customers experiencing service interruptions in worst-served areas by 2030: 110, customers a year (12% of all customers). 15 hours of interruptions a year per customer.	30.35	11.26	0.01	8.27	52.42
Customers experiencing service interruptions in worst-served areas by 2030: 56,000 customers a year (6% of all customers). 9 hours of interruptions a year per customer.	27.76	11.37	0.02	5.47	50.05
Customers experiencing service interruptions in worst-served areas by 2030: 25,000 customers a year (3% of all customers). 9 hours of interruptions a year per customer.	8.34	9.81	0.40	-10.90	27.57
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 7,000 customers a year (0.78% of all customers). 6-12 hours of interruptions a year per customer.	6.20	12.78	0.63	-18.86	31.26
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 3,000 customers a year (0.33% of all customers). 6-12 hours of interruptions a year per customer.	20.06	13.39	0.13	-6.18	46.30
Customers experiencing service interruptions to stop powerlines starting fires by 2030: 1,000 customers a year (0.11% of all customers). 6-12 hours of interruptions a year per customer.	22.86	13.00	0.08	-2.62	48.34
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030: 54,000 customers a year (6% of all customers).	5.02	8.85	0.57	-12.32	22.36
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030: 45,000 customers a year (5% of all customers).	12.93	9.08	0.16	-4.87	30.73
Customers who may experience service interruptions longer than 24 hours due to extreme weather by 2030: 30,000 customers a year (3% of all customers).	22.76	9.95	0.02	3.25	42.27
Energy advisory services we provide by 2030: Personalised Energy Advisory service. Online portal. Limited phone support.	9.47	7.80	0.23	-5.81	24.76

	Coef.	z	P>|z|	[95%	Conf. Interval]
Energy advisory services we provide by 2030: Personalised Energy Advisory service. Online portal. Comprehensive phone support.	21.98	9.04	0.02	4.25	39.71
Website services we provide by 2030: Personalised on-demand services. Some self-services. No automated responses.	8.25	7.93	0.30	-7.29	23.78
Website services we provide by 2030: Personalised on-demand services. Comprehensive self-service. Provides automated responses, e.g., receiving immediate connections quotes.	4.40	7.90	0.58	-11.09	19.88
Carbon emissions from SA Power Networks' vehicle fleet by 2030: 4,800 tonnes a year (Equivalent to emissions from 1,035 cars a year).	17.48	8.48	0.04	0.86	34.09
Carbon emissions from SA Power Networks' vehicle fleet by 2030: 3,600 tonnes a year (Equivalent to emissions from 775 cars a year).	32.63	10.01	0.00	13.01	52.26
Number of hours that customers' solar system exports are reduced: No more than 290 hours a year (10% of daylight hours).	16.62	10.86	0.13	-4.67	37.91
Number of hours that customers' solar system exports are reduced: No more than 145 hours a year (5% of daylight hours).	23.99	11.21	0.03	2.01	45.97
Number of hours that customers' solar system exports are reduced: No more than 60 hours a year (2% of daylight hours).	55.70	16.19	0.00	23.97	87.43
Cost: the permanent change in your total electricity bill	-3.63	0.21	0.00	-4.03	-3.22
Random parameters: means					
Status Quo: Current package	-82.24	60.08	0.17	-200.00	35.52
Random parameters: standard deviations					
Status Quo: Current package	14.02	6.86	0.00	10.02	18.03
Model fit					
Mixed logit model in WTP space					
Number of choice observations = 2,595					
Wald chi2(30) = 906.08					
Log likelihood = -852.51298					
Prob > chi2 = 0.0000					

MARSDEN JACOB ASSOCIATES

Contact us

Jeremy Cheesman

jcheesman@marsdenjacob.com.au

0414 765739

Marsden Jacob Associates Pty Ltd

03 8808 7400

Marsden Jacob Associates

economists@marsdenjacob.com.au

www.marsdenjacob.com.au