Lewers

AusNet

Customer Values Research Report

MARCH 2024

Contents

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Background

Context

The energy transition is changing what customers' expect from electricity networks

As Australia moves towards net zero, the way end users interact with the NEM is changing at a rapid pace. As energy users move to 'electrify everything', switching from combustion engine vehicles to EVs, and from gas boilers to split system heating and cooling, they are more reliant than ever before on the electricity network. While this is leading to higher peak demand forecasts, the increasing ubiquity of rooftop solar has also led to lower minimum demands in the middle of sunny days.

This large divergence in min and max demand has made in more costly to the run electricity networks, with significant investment required to continue to allow customers to export their excess solar and charge their EVs whenever they wish.

All this is happening to the backdrop of more frequent major event days which can see customers be without power for days at a time. This becomes increasingly problematic as the energy transition progresses, and customers are reliant on electricity for even more of their energy needs.

These changing expectations may not be fully reflected in the current cost-benefit models which electricity networks use to justify their investments. This has been recognised by the Australian Energy Regulator (AER) on a number of occasions.

"We acknowledge that some customers may value other perceived or intangible DER benefits, such as self-reliance or a sense of contribution, and these values could be revealed by customer willingness-to-pay surveys" **- AER, DER Integration Expenditure Guidance Note pg. 25**

"We would also be interested in evidence of customers' willingness to pay for the proposed expenditure. We expect these studies to be based on genuine engagement where different feasible options to address the network are explained to customers, as well as any trade offs, and they are satisfied that the proposed expenditure should be prioritised over other proposals by the business" **– AER, Network Resilience A Note on Key Issues pg. 12**

Source: Lewers Customer Values Research Report '24

AusNet's Challenge

The energy transition has led to an evolution in how customers interact with the grid, and what they expect from it. New themes are emerging, such as resilience and DER integration, which require AusNet to understand broader outcomes delivered by investments than are traditionally considered in regulatory processes.

AusNet requires reliable and statistically valid data to align its investment with customer preferences. Specifically, AusNet would like to investigate value and willingness to pay across areas pertaining to energy reliability, resilience, customer service & information as well as Customer Energy Resources (CER) integration. This includes both service enhancement and service degradation. This will feed into a cost-benefit analysis submitted to the AER as part of the 2026 – 2031 Electricity Distribution Price Review (EDPR).

AusNet

Source: Lewers Customer Values Research Report '24

Research Design

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Research Purpose & Objectives

This research aimed to quantify the value customers place on potential improvements or degradations to the service levels provided by AusNet's distribution network.

Specific research objectives included:

1. **Develop and execute research using a reliable and statistically valid methodology to establish accurate dollar values that reflect customers' willingness to pay for service level improvements or willingness to accept service degradation.**
2. **Measure the extent to which dollar values vary across feeder groups, across both Residential and Business Customers.**
3. **Work with AusNet to ensure the research outputs can be readily applied to its proposed cost benefit analyses, underpinning investment.**

Source: Lewers Customer Values Research Report '24

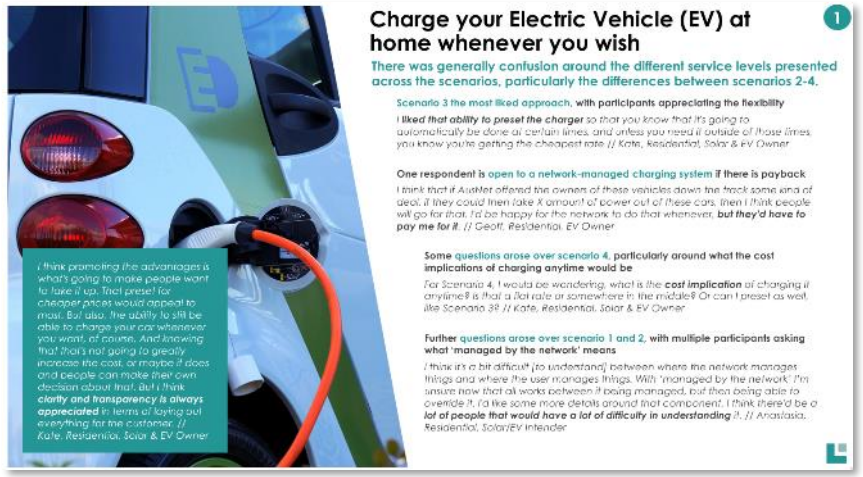
Research Plan

Qualify

Why: The aim of the qualitative phase was to test language, overall comprehension and willingness to pay for 8 benefits to identify any areas of improvement in communication, as well as understanding general thoughts and feelings towards these benefits.

The insights helped shape the quantitative stage, particularly the context surrounding the key Contingent Valuation and Choice tasks.

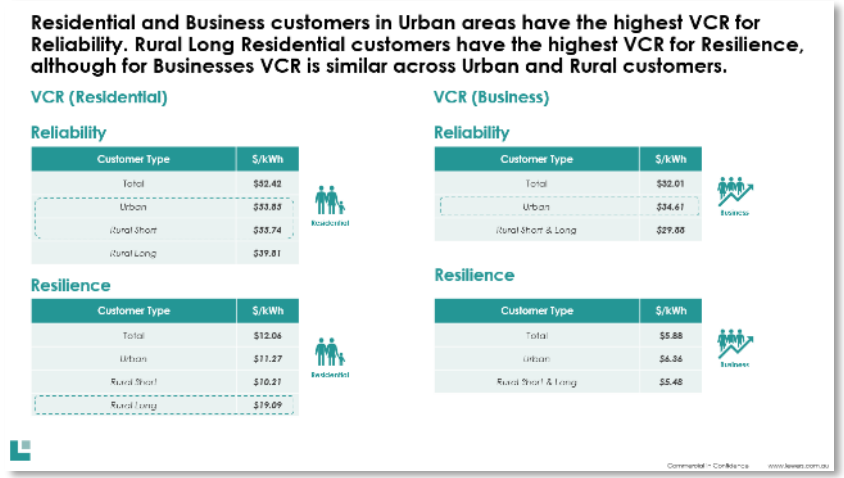
How: n=12 Depth Interviews in total, n=8 Residential and n=4 Small Business, recruited from a client list provided by AusNet.



Quantify

Why: To develop and execute the research using a reliable and statistically valid methodology to establish accurate kWh dollar values that reflect customers' willingness to pay for service level improvements or willingness to accept service degradation. Measure the extent to which dollar values vary across feeder groups, across both residential and business customers.

How: An online survey of n=3,178 Residential and n=349 Business customers, recruited from a client list provided by AusNet and supplemented by panel-based sample. This phase included cognitive interviews of the survey link and thorough pilot data checking.



Source: Lewers Customer Values Research Report '24

Quant Phase: Online Survey Rationale & Limitations

We are confident that the online approach used in this research is a reliable and statistically valid way to quantify the value customers place on potential improvements or degradations to the service levels provided by AusNet's distribution network.

Our confidence is in part based on our ability to assess and select the best method based on the benefits and limitations of each.

The rationale for using this online approach versus telephone surveying (CATI) is summarised below.

The rationale for recommending the online approach:

- Preferred method to represent the diversity of AusNet customers assessed against CATI interviewing and mail-out methods.
- Optimal approach to quantify customer values, given the best-practice analytical techniques used (more details in Measurement & Analytics section)
- Less perceived time pressure to respond due to self-completion
- Relatedly, the ability to read each question, accompanying instructions and response options for longer (and multiple times) lending itself to a more considered response versus the need to use working memory to respond to CATI.
- Convenience of responding at the time and place of respondent's choice
- Anonymity of response leading to more genuine opinions, with potential for social desirability bias with CATI (i.e. responding in a way that is perceived as socially acceptable)

Limitations:

- **Sample –** Specific groups experiencing vulnerability, e.g. those in areas with limited internet access, individuals with disability, and some elderly individuals, may face challenges in participating. While the statistical analysis for these groups may be limited, it does not compromise the overall quality and validity of the study.
- **Data quality –** Potential challenges in verifying the quality of response or detecting low-quality respondents.
- **Survey comprehension –** Potential difficulty with respondents understanding how to respond to specific questions. With a self-complete online survey, there would be no one to assist while the respondent completes the survey.

Source: Lewers Customer Values Research Report '24

Quant Phase: Mitigating Limitations

We were also cognisant of the limitations of the online approach, weighing these up against the benefits (previous page).

Detailed below are the limitations and how these were mitigated.

Data Quality

- Verifying the quality of response via:
  - Data quality checks - respondent duplications, speeders, non-sensical verbatim responses, outliers, and survey logic implementation by panel provider
  - Detecting low-quality panellist response – specific methods to detect low-quality respondents or bots include digital fingerprinting, geo-location clues, de-duping, multiple information checks, and encrypted end link behaviour monitoring to ensure that the respondent is human and is the valid respondent for the survey. It also protects against the same respondent filling out the survey across AusNet-provided sample and panel sample
    - Seventy-eight records were flagged as 'speeders' and deleted (classified as interview duration less than 6 minutes).
    - Regarding 'Contingent valuation for additional benefits' we removed outliers based on values exceeding 3 standard deviations from the mean. The contingent valuation for the base case did not have outliers removed, as this was based on the responses to cv_3, cv_4, cv_5 - which takes into account the caps.
- Quality control on reporting - Each deliverable is data checked by at least two other consultants who have not drafted the deliverable. Reports are then data checked by our Advanced Analytics team for quality control. In parallel with this process, our analytics team have created rigorously tested automation processes to negate the potential for human errors.

Qualitative Research – Set the foundation for quantitative research by testing concept comprehension and language and early indication of willingness to pay for benefits. Detailed in the next section

Cognitive Interviews – once the questionnaire was designed, approved and scripted cognitive interviews were used as a 'sanity check' of ease/understanding/appropriateness of choice exercises and willingness to pay questions. Questioning was along the same lines as depth interviews, however, with a live questionnaire to simulate the respondent experience.

Pilot Testing – initial 'soft launch' to test survey timing and precise survey routing, including respondents being allocated to the appropriate questions.

Quant Phase: Measurement Overview

To get a complete picture of customers' preferences & priorities we calculated **four different measures of value**

Willingness to Pay (WTP)

The maximum amount a customer is willing to pay for a service. This can depend on factors such as income, preferences, perceived benefits and market conditions.

Rebased Willingness to Pay

Maximum amount a customer is willing to pay for a service based on what they're willing to pay for the total bundle of services. Re-basing individual services to the overall WTP for all services gives a better idea of a realistic WTP for a bundle of services.

Willingness to Accept (WTA)

Minimum amount of compensation a customer would accept to lose a service. It depends on factors such as the individual's valuation of the item, opportunity costs and personal circumstances.

Value of Customer Reliability (VCR) & Value of Network Resilience

Minimum amount of compensation a customer would accept if they experienced an outage, weighted by the probability of that outage occurring and the volume of electricity they would normally consume. Calculated using the AER's 2019 VCR methodology

Source: Lewers Customer Values Research Report '24

Quant Phase: Willingness to Pay vs Willingness to Accept

The distinction between WTP and WTA is important, with implications for how each is interpreted.

WTP reflects the maximum monetary amount that an individual would pay to obtain a product or service, i.e. providing a purchase price on which to value a product or service to be gained[1].

Re-Based WTP reflects the maximum monetary amount that an individual would pay to obtain a product or service, framed within the bounds of their overall willingness to pay for all services. As such, it gives a better idea of a realistic WTP for a bundle of services.

WTA (also known as willingness to accept compensation) reflects the minimum monetary amount required to relinquish a product or service, i.e. providing a price on which to give up a product or service[1].

While the two may seem equivalent across the spectrum of product/service gain and loss, it is accepted that there is a disparity based on:

- **Economic reasons**, including income, transaction costs and implied value, e.g. among high income earners, tolerance for outages may me be far lower (and thus accepted compensation far higher) than those on lower incomes.
- **Endowment Effect** – an emotional bias that causes individuals to value an owned product or service higher, often irrationally, than its market value, e.g. a power outage may trigger an emotional reaction which means there is no or low tolerance for outages regardless of compensation.
- **Loss aversion** - a cognitive bias that explains why individuals feel the pain of loss twice as intensively as the equivalent pleasure of gain, e.g. in rationally weighing up energy reliability vs compensation, continued reliability may be more resilient than expected give weight towards keeping the status quo.
- **Justification** or fairness of price paid versus price accepted, e.g. in addition to the above biases, do residents believe the price offered is justified.
- **Expectation of responsibility** of the other party in providing or receiving the product or service, e.g. related to the above, do residents expect that AusNet has a responsibility to provide enduring energy supply without question.
- **Tangibility** or ambiguity of what's being gained or given up, e.g. how tangible is the benefit offered or given up vs the price paid or compensated.

The above sets the scene for data interpretation, with appropriate measurement then critical for the foundation. As detailed on the next slides, Contingent Valuation is an appropriate and widely accepted measurement for both WTP and WTA. The wording and contextualisation of each question speaks to the nuance required for design. This further highlights the value of stakeholder liaison, design workshops, qualitative research, cognitive interviews and survey piloting recommended in this proposal.

1. *Brown, T.C. and Gregory, R, (1999), Why the WTA-WTP Disparity Matters, Ecological Economics, Vol 28(3), pp. 323-335*
2. *Horowitz, J.K. and McConnel, K.E., (2002), A Review o WTA/WTP Studies, Vol. 44(3), pp. 426-447*

Source: Lewers Customer Values Research Report '24

Measurement Overview: WTP & WTA

Customers were shown each benefit in a random order and asked WTP & WTA*

Full Example of Benefit

BENEFIT 1: EVs – ASK ALL

Currently, people with EVs can charge them at home whenever they wish, including using a home fast charger (if they have one installed). However, as the number of EVs grow, AusNet may have to manage charging to ensure the grid isn't overloaded with lots of people trying to charge at once at during peak times. Lots of people charging their EVs at once will require upgrades to the network paid for by customers.

B1_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to continue to allow flexible EV charging at all times? **(NUMERIC RESPONSE)**

B1_2. How much would your **<bill frequency> electricity bills** have to **decrease by** to allow AusNet to manage EV charging? In other words, how much of a discount on your bill would you expect? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

Manage Charging: The network can limit your charging. This may mean you cannot charge your EV at peak times e.g. mornings and evenings and/or you need to charge at a slower pace at other times of the day or night.

Overloaded: Greater demand for electricity than what can be safely transported through the grid can lead to blackouts. AusNet has an obligation to manage demand to ensure this doesn't happen.

WTP Other Benefits & Total WTP

BENEFIT 2: SOLAR – ASK ALL

Currently, most households and businesses with rooftop solar can feed the excess electricity they generate but don't use back into the grid and earn a payment for this. However, as more households and businesses install solar, grid upgrades will be required to continue sharing their unused solar with others. If a household/business is producing more solar than it uses (to run appliances, charge batteries etc), the extra electricity cannot be used by other customers if it doesn't go into the grid.

B2_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to allow all unused solar electricity into the grid? **(NUMERIC RESPONSE)**

BENEFIT 3: WTP FOR IMPROVED RELIABILITY FOR WORST SERVED CUSTOMERS

Today, around 20,000 homes and businesses on the edge of the AusNet network and/or in heavily vegetated areas experience 11-20 hours without power per year (during 3-8 outages per year). This is 5 to 6 times above the network average of 2-3 hours without power per year (during 1-2 outages per year).

B3_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to improve electricity reliability for these households and businesses, so they experience a level of reliability closer to the network average? **(NUMERIC RESPONSE)**

BENEFIT 4: RELIABILITY

Currently, customers on our network experience on average 1- 2 unplanned outages per year. On average, these outages last for 1-2 hours.

B4_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to experience one less 1 hour-long unplanned outage per year? **(NUMERIC RESPONSE)**

BENEFIT 5: RESILIENCE

Sometimes, usually due to extreme weather events such as major storms, bushfires or floods, customers can lose power for over 24 hours. Last year, over 4,360 AusNet customers lost power for over 24 hours.

B5_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to avoid one 24-hour outage per year? **(NUMERIC RESPONSE)**

* WTA was not asked for improved reliability for worst served customers.
Source: Lewers Customer Values Research Report '24

Measurement Overview: Rebased WTP

After providing values for individual service benefits, customers were then asked to give a total WTP for all benefits.

Total Service Benefit Question

Customers shown the list of benefits they just responded to and asked an overall question, as follows:

- Allow flexible EV charging at all times
- Allow all unused rooftop solar electricity to be exported to the grid
- Improve electricity reliability for households and businesses with the worst reliability / most time without electricity
- Experience one less 1 hour-long unplanned outage per year
- Avoid one 24-hour outage per year due to extreme weather

T1. What is the total amount you'd be willing to pay on your <bill frequency> electricity bills to receive all the benefits you've been shown in this section?

Rational for Calculating a Rebased WTP

- Asking customers' their WTP for individual services improvements gives an indication of their priorities between the investment drivers.
- It gives them the opportunity to express a preference for trade-offs.
- However, this may overestimate appetite for total investment as customers are not considering the total impact on their bill.
- Weighting WTP for individual service improvements by total WTP results in values that reflect both the customers' investment priorities and affordability concerns.

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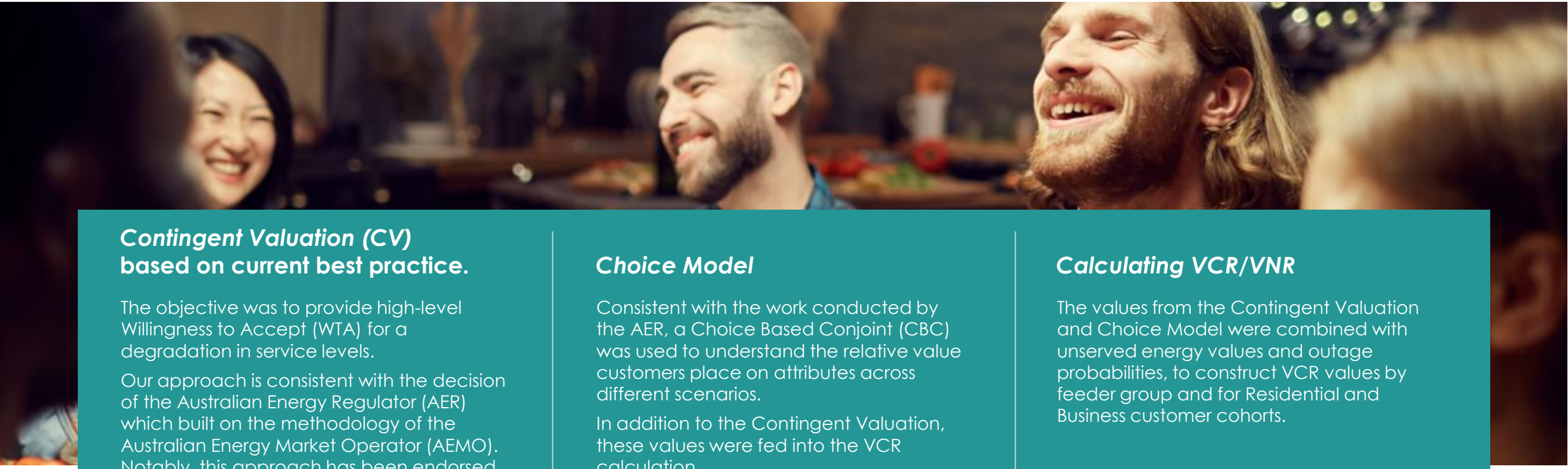
* WTA was not asked for improved reliability for worst served customers.
Source: Lewers Customer Values Research Report '24

Measurement Overview:
Reliability & Resilience Choice Models



Contingent Valuation (CV) based on current best practice.

The objective was to provide high-level Willingness to Accept (WTA) for a degradation in service levels.

Our approach is consistent with the decision of the Australian Energy Regulator (AER) which built on the methodology of the Australian Energy Market Operator (AEMO). Notably, this approach has been endorsed by KPMG/Insync and the University of Melbourne's Melbourne Energy Institute (MEI).

Choice Model

Consistent with the work conducted by the AER, a Choice Based Conjoint (CBC) was used to understand the relative value customers place on attributes across different scenarios.

In addition to the Contingent Valuation, these values were fed into the VCR calculation.

Calculating VCR/VNR

The values from the Contingent Valuation and Choice Model were combined with unserved energy values and outage probabilities, to construct VCR values by feeder group and for Residential and Business customer cohorts.

Source: Lewers Customer Values Research Report '24

Sample Composition

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Qual Phase: Sample Composition

Residential (8)

Attitudes to Solar PV/EV/EV chargers

4 Owners

2 Intenders

2 Non-Intenders

Home Status

5 Homeowners

3 Renting

Life Stage

3 Singles / Couples with no kids

5 Singles / Families with kids

Business (4)

Attitudes to Solar PV/EV/EV chargers

2 Owners

2 Non-Intenders

Business Status

2 Owners of the business

2 Employees of the business

Source: Lewers Customer Values Research Report '24

Quant Phase: Sample Source

Data from AusNet customers was collected via a 17-minute online survey. Customer sample was provided by AusNet, with both Lewers and AusNet sending survey invitations at different stages of the research. AusNet's sample was supplemented by panel sample from partner PureProfile. Fieldwork was conducted between 29/11/23 and 16/01/24. The Residential and Business cohorts were weighted by feeder group to ensure representation of AusNet's customer base.

Sample Source	Residential (n=)	Business (n=)
AusNet Client Sample	**2,800**	**226**
Panel Sample (PureProfile)	**378**	**123**
Total	***3,178***	***349***

Feeder Group	Residential	Business
Urban	**49%**	**45%**
Rural Short	**36%**	**31%**
Rural Long	**15%**	**24%**

Questionnaire Flow
Welcome & AusNet Context
Screener
Introduction & Research Context
Electricity Usage
Choice Model (Reliability or Resilience)
Contingent Valuation for Choice Model Base Case
Contingent Valuation for Service Benefits
Additional Profiling

Source: Lewers Customer Values Research Report '24

Quant Phase: Residential Sample Composition

Residential

n=3,178 households in the AusNet network.

Respondents include main energy decision maker or bill payer for the household within the AusNet network (aged 18+ years).

Age	
18-34	**10%**
35-54	**31%**
55-74	**41%**
75+	**11%**

Life Stage*	
Younger singles / couples	**11%**
Older singles / couples	**38%**
Singles / families with young kids	**13%**
Singles/ families with older kids	**24%**

Feeder Group	
Urban	**49%**
Rural Short	**36%**
Rural Long	**15%**

Electricity Products	
Rooftop Solar Owner	**45%**
Solar Battery Story Owner	**7%**
EV Owner	**3%**
EV Charger Owner	**3%**

Dwelling Type	
Apartment, unit or flat	**7%**
Townhouse or semi-detached terrace	**6%**
Free-standing house	**87%**
Another type of dwelling	**1%**

Bill Frequency	
Monthly	**50%**
Quarterly	**40%**
Other	**10%**

Financial Situation^	
Live comfortably	**28%**
Meet basic expenses, a little left over	**37%**
Just meet basic expenses	**23%**
Can't meet basic expenses	**5%**

Home Ownership	
Homeowner	**84%**
Renter	**16%**

Mains Gas	
Yes	**74%**

Avg. Bill	
Converted to Monthly	**$236**

* The remainder of customers were not allocated to a life stage.
^ The remainer of customers entered prefer not to say.
Source: Lewers Customer Values Research Report '24

Quant Phase: Business Sample Composition

n=349 businesses in AusNet network.

Respondents include business decision makers, i.e., owner or decision-maker for energy usage, for businesses with 2-199 employees within the AusNet network.

Feeder Group	
Urban	**45%**
Rural Short	**31%**
Rural Long	**24%**

Electricity Products	
Rooftop Solar Owner	**37%**
Solar Battery Story Owner	**11%**
EV Owner	**7%**
EV Charger Owner	**8%**

Mains Gas	
Yes	**32%**

Business Premises Ownership	
Owner	**42%**
Renter	**58%**

Business Size	
Micro Trader (2-5)	**34%**
Small Business (6-19)	**32%**
Medium Business (20-99)	**28%**
Large Business (100-199)	**6%**

Industry (Top 4)	
Retail Trade	**13%**
Manufacturing	**10%**
Construction	**10%**
Agriculture, Forestry and Fishing	**9%**

Avg. Bill	
Converted to Monthly	**$985**

Bill Frequency	
Monthly	**52%**
Quarterly	**36%**
Other	**12%**

Quant Phase: Sample Weighting

Data was weighted for both Residential and Business Customers based on the feeder proportions within the AusNet customer base. The table below shows the proportion of sample achieved by feeder group compared to the population proportions used for weighting.

Feeder Groups	Residential		Business	
	Sample %	Weighted to population %	Sample %	Weighted to population %
Urban	**47%**	**49%**	**42%**	**45%**
Rural Short	**37%**	**36%**	**40%**	**31%**
Rural Long	**15%**	**15%**	**18%**	**24%**

Source: Lewers Customer Values Research Report '24

Quant Phase: Outage Frequency & Impact

Residential

n=3,178 households in the AusNet network.

Respondents include main energy decision maker or bill payer for the household within the AusNet network (aged 18+ years).

# Outages Last 12 Months	Total	Urban	Rural Short	Rural Long
0	13%	18%	11%	6%
1	20%	24%	17%	12%
2	24%	25%	24%	19%
3-4	23%	20%	25%	28%
5-6	11%	9%	12%	15%
7+	9%	5%	10%	21%

Outage Impact	Total	Urban	Rural Short	Rural Long
Not at all disruptive	19%	20%	19%	14%
Neutral	52%	53%	53%	47%
Very disruptive	29%	27%	28%	39%

 # Outages Last 12 Months

Outage Impact	1	2	3-4	5-6	7+
Not at all disruptive	33%	22%	11%	10%	10%
Neutral	47%	54%	57%	52%	42%
Very disruptive	19%	24%	32%	38%	48%

Business

n=349 businesses in AusNet network.

Respondents include business decision makers, i.e., owner or decision-maker for energy usage, for businesses with 2-199 employees within the AusNet network.

# Outages Last 12 Months	Total	Urban	Rural Short & Long
0	20%	29%	12%
1	18%	21%	15%
2	21%	25%	18%
3-4	19%	17%	21%
5-6	10%	3%	16%
7+	13%	6%	19%

Outage Impact	Total	Urban	Rural Short & Long
Not at all disruptive	12%	13%	11%
Neutral	30%	29%	31%
Very disruptive	58%	58%	58%

 # Outages Last 12 Months

Outage Impact	1	2	3-4	5-6	7+
Not at all disruptive	23%	18%	4%	7%	0%
Neutral	33%	41%	23%	31%	19%
Very disruptive	44%	40%	73%	61%	81%

Source: Lewers Customer Values Research Report '24

Qualitative Analysis

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Qual Background & Methodology

Initial Testing (Qual)

Why: Set foundation for quant with initial concept testing, including general comprehension, appropriateness of specific language and willingness to pay hypothesis formation.

How: 12x Depth Interviews in total, 8x Residential and 4x Small Business, recruited from a client list provided by AusNet.

When: Interviews were held over zoom between Thursday, 28th September and Wednesday, 11th October

The aim of this qualitative phase was to test language, overall comprehension and willingness to pay for 8 benefits to identify any areas of improvement in communication, as well as understanding general thoughts and feelings towards these benefits.

The insights will help shape the quantitative stage, particularly the communication in and surrounding the key WTP/WTA and choice tasks.

1. **Primary:** Identify whether the language and overall comprehension of the benefits is understood

2. **Secondary:** Understand general willingness to pay and identify any areas of improvement to communication.

Electricity usage is typically seen to be high. Many are feeling the pressure of recent electricity cost increases and taking steps to reduce usage. Sensitivity to cost is very apparent in the current climate.

Power usage varies depending on household size and appliances used but is generally seen to be high.

Appliances that contribute most to electricity usage include **fridges, washing machines, dryers, computers and heating/cooling.**

- Those with children or who WFH tend to have higher electricity usage
- Although prices and repayments of bills vary, electricity **is commonly viewed as expensive**

Many are making a conscious efforts to manage consumption and reduce cost.

Most participants have a **good understanding of the logistics of electricity usage**, with some closely scrutinising their bills and taking steps to manage power usage. This includes:

- Checking peak/off-peak times and timing use of appliances accordingly
- Switching to energy efficient light bulbs
- Changing energy providers to reduce costs and gain rebates
- Home-owners choosing to install solar

There is a varied understanding of AusNet's role.

Most knew AusNet as the company that **sends messages during power outages.** A few understood that AusNet is responsible for the power infrastructure in their area, and specifically classified them as their distributor.

*I'd say we're somewhat **heavy with electricity usage** because I'm home with the baby most days. So, heating and cooling throughout the year, and then all the general things, **television, dishwasher, washing, dryer**, etc. With two young children, there's a lot of washing and drying. // Residential, Solar/EV Intender*

*To reduce my electricity bill, **I try to use appliances when the sun's out** [solar user]. I've just changed suppliers and their peak is from 3pm to 9pm, so I was going to put some washing on and thought **no, that's in the peak. I'll leave that, turn it on tomorrow** morning when we're out, and it can wash while we're not home // Residential, Solar Owner*

*The transition to a lower carbon environment is **going to have a short-term cost.** But I am concerned that there's a conflict between making a profit and doing the best they can for the environment. **Wholesale prices have gone down in the last year, so with a 30% increase in our electricity bill, somebody's doing well out of it..** // Residential, Home Owner*

*I am aware of AusNet. I know that you can't chop and change your actual distributor- **it's what area you're in that's the distributor you have**. But then you've got all the other retailers that you can swap and change, and get a better deal // Business, Solar/EV Non-Intender*

Over the next 5 years many intend to offset their usage/costs with solutions like solar, as bills are expected to increase further. The need for further investment is understood, but questions remain on the details.

Most anticipate further increases in electricity prices in the next 5 years, despite actual usage not being expected to increase dramatically.

Price increases are **particularly concerning for renters living without solar panels,** with some also expecting the shift from gas to electricity to increase bills

- Those who expect **energy usage to increase attributed this to** WFH requirements, increased reliance on electricity appliances and adoption of EVs

Adoption of renewable energy such as solar was mentioned by many as a potential solution to these increases

- Discussions revealed openness to invest in solar/solar batteries/EVs
- There's a general sense of optimism about the future of solar energy

> *We live in a house that doesn't have solar panels. **We're not protected from variations in price as a house would be with significant solar**. So, in five years' time, we're going to have to be very careful about using electricity because it's going to be more expensive than it is now. // Residential, Home Owner*

> *In 5 years' time I get the feeling that **all appliances will be electric**, they seem to be phasing out gas. I hope we can **rely more on solar and other environmentally friendly energies**. Those technologies are the way to go, but they take a **lot of infrastructure to implement**, and that's more money. // Residential, Solar/EV Intender*

Despite many acknowledging the benefits of renewable energy, some concerns are still present:

- ✕ **Upfront costs** remain a deterrent
- ✕ One notes **unsuitable roof structures** on their house
- ✕ Concern around **safety of lithium batteries** in high-risk areas (bushfires)
- ? **Questions of reliability** of renewable energy sources
- ? Questions over if there is **enough supportive infrastructure** for both solar and EVs

> *I have **reservations about the capabilities and capacities of the renewable energy sources.** The way Melbourne's built up, and the distance that we need to have the appropriate solar farms and the loss of energy efficiency... Would it be the best permanent solution? I'm not sure. I think there will always be a place for mining // Anastasia, Residential, Solar/EV Intender*

A common theme that arose across the benefits tested was the appetite for more information, context and transparency.

Language used was easy to understand

*There's not really [any information which I'd find confusing or difficult to understand]. **It's pretty easy to understand** // Residential, Solar Owner*

The benefits were clear

***How it stands, its written very clearly.** But, for me, there's not enough information // Residential, Solar/EV Non-Intender*

Participants were knowledgeable, acknowledging others may struggle with comprehension

*I don't know how better you could phrase it, but I know that there would be people like my husband, for example, it would all go over the top of his head. I don't know whether it's just because it's quite wordy, or there seems to **be more details that it needs** as well, in terms of pricing, that would make it easier to understand // Residential, Solar/EV Intender*

There was a general need for more information/ understanding of how it benefits the individual

***More detail needs to be provided** around what those upgrades would look like, and then they would justify [the investment]. **No one's going to want to invest money in something when they don't know what the product is**. // Residential, Solar/EV Intender*

And often, more context

*This is really difficult, I think, because what is extreme weather? **I don't really have a view on this because unless extreme weather can be identified** and in the next column across it will say if it's a bushfire, for example, then the next column says 'on average power goes down for X amount of time', then I could give an educated view on what I think // Residential, Owner*

Lastly, there's a desire for greater transparency on how the extra money would being used

*I think it's interesting that with your tax return or your council rates, they follow it up with a schedule of where your money has gone; they explain it**. The water companies and electricity companies, they don't explain anything** to you // Business, Solar/EV Non-Intender*

Benefit Testing Summary Findings

- **A clear introduction is needed to set the research context and AusNet's position as a regulated company .** Customers are price sensitive and wary of being taken advantage of by for-profit businesses, so they're unlikely to want to pay more for benefits/services that they see as AusNet's responsibility. An explanation of how these values could be used (e.g. as an input into cost-benefit analysis included in a regulatory proposal) would be helpful
- **A consistent future base case is needed as a foundation for the WTP/WTA/choice model exercises.** Customers' experience with the electricity service in their area varies greatly. Customers who don't experience outages struggled to frame a reduction of outages appropriately. A consistent base case will neutralise this,
- **Greater depth, detail and context is needed across all benefits**. Comprehension was generally clear. However, a common theme that arose across the benefits tested was the need for more information and context to help customers make informed decisions. Specifically, customers wanted more detail around terms like 'upgrades', 'managed by the network' and 'extreme weather', to better understand the change to service levels, and most importantly, how their investment would impact this.
- **Specifically, benefits/scenarios should be framed around the customer outcome / usage experience.** We recommend sharp, succinct, outcome focused dot points for each benefit, with greater detail available via hover over to provide further information to participants as they want it, without cluttering the exercises by default. For example: You will be able to charge your car during peak times, but it will cost more to do so.
- **Consider narrowing down the number of scenarios for some benefits.** For the benefits with more than two scenarios, consider reducing the number of scenarios to make the distinction between them more apparent. Customers struggled to choose between different service levels when they were too similar.
- **There's a need to more clearly articulate the difference between scenarios for some benefits.** Additional details are needed to more clearly spell out the differences in service delivery across scenarios, particularly if more than two scenarios are needed. Framing changes by the difference to the customer outcome / usage experience will help to do so.

Benefit Testing Application to Quantitative Study

- **Clear, simple language throughout the Choice Model and Contingent Valuation exercises .** Ensuring language is as clear, simple and concise without detracting from the meaning of the introduction, question wording or code frames.
- **Clarity on specific terminology.** It was clear that some terminology may have been interpreted inconsistently across respondents. Where we received feedback to this effect, we ensured key terms were defined. This was provided prior to the Choice Model exercises as well as being available via a hover over function during the choice task.
- **Clear explanation of the funding structure.** This was critical to set the scene to elicit accurate responses for willingness to pay and willingness to accept questions. This included an explanation of how distribution charges appear on customers' bills, how charges are calculated and investment as part of the survey purpose.
- **Language regarding future base as a foundation for the WTP/WTA/choice model exercises.** Customers' experience with the electricity service in their area varies greatly. Customers who don't experience outages struggled to frame a reduction of outages appropriately. A consistent base case will neutralise this, as per the AER VCR study.

  Example: Imagine in five years' time this is what your electricity experience will look like. We're going to present some changes to that norm. Would you..
- **More clearly differentiating between scenarios for some benefits.** Additional details are needed to more clearly spell out the differences in service delivery across scenarios, particularly if more than two scenarios are needed. Framing changes by the difference to the customer outcome / usage experience will help to do so.

These updates were then tested using cognitive interviews to ensure the quantitative survey could be widely understood.

Quantitative Phase

Lewers

Contingent Valuation

Open-ended question + double-bounded dichotomous choice

Contingent Valuation (CV) is a form of stated preference used to understand the value (utility) people place on things that are difficult to put a monetary value on (e.g., reliable energy supply). It is survey-based and asks respondents how much they are Willing to Pay (WTP) to keep or increase the utility of a feature. It is also used to measure the Willingness to Accept (WTA) compensation for the loss of the feature. It has been widely applied in environmental services and used to assess intangible benefits (e.g., clean drinking water).

One of the criticisms of CV is it asks respondents to consider a service they have likely paid little attention to prior to the survey and is hypothetical (asking respondents to consider some theoretical future state). This means close attention needs to be paid to the context and service descriptions provided to the respondent – small changes in wording or the context of the question can lead to significant differences in results. For these reasons, it is critical the "pre-amble" provided to respondents before they give WTP or WTA responses is as clear and simple as possible.

In the words of Mitchell and Carson: ***"The principal challenge facing the designer of a CV study is to make the scenario sufficiently understandable, plausible and meaningful to respondents so that they can and will give valid and reliable values despite their lack of experience with one or more of the scenario dimensions".*** [1]

This further highlights the importance of our design approach, including initial qual, workshopping, cognitive interviews and a pilot study.

Double-bounded dichotomous is generally agreed to be best practice – avoiding the cognitive load and protest votes of open ended while efficiently providing greater depth than single bounded dichotomous choice[2]. For consistency, we following the methodology applied by the AER[3]. This approach combined the benefit of both an open-ended question (maximum WTP and no need for assumptions) and double-bounded dichotomous choice (realistically bounded price points and greater information on price sensitivity).

1. Mitchell, R.C. and R.T. Carson (1989), Using Surveys to Value Public Goods: The Contingent Valuation Method, Resources for the Future, Washington, DC.
2. Carson et al. (2001), Contingent Valuation: Controversies and Evidence, Journal of Environmental and Resource Economics, Vol. 19(2), pp. 173-210.
3. Australian Energy Regulator (November 2019), Values of Customer Reliability – Final Decision, p.13

Source: Lewers Customer Values Research Report '24

Contingent Valuation Application

We ensured consistency with the AER 2019 study by maintaining the same baseline Reliability scenario. Both residential and business customers were presented with two cost prompt WTP questions, followed by an open-ended WTP question, mirroring the approach used in the AER 2019 study. This approach was then copied for Resilience, reflecting longer outages.

For Residential customers, the cost prompts were in dollar amounts. However, for business customers, the dollar value was determined as a percentage of their bill. In residential, If a respondent answered $40 for reliability and $59 for resilience, they were asked an additional question about whether they would pay for a backup system if it were available at a lower price. If they answered YES to the backup question, we assumed their WTP to be $40 for reliability and $59 for resilience. However, if the response was NO, we asked a follow-up open-ended question to determine how much they would be willing to pay for the backup system. The response to this follow-up question was considered the WTP value for that respondent, maintaining consistency with the AER 2019 CV calculation method.

The $40 and $59 values were adjusted to reflect AusNet's network composition of a higher proportion of standalone properties than the national average and were calculated by getting an average of three prices for each input (approach approved by panel). The Resilience value includes the cost of extra fuel for the longer outage.

For Business customers, we applied the same cap as in the AER 2019 study, which is set at an amount equal to the last bill indicated by the business survey respondent.

Source: Lewers Customer Values Research Report '24

Choice-Based Conjoint

CBC involves each respondent completing a series of tasks. To ensure we do not overwhelm respondents to the point where they no longer take the time to read each option in a task properly, we limited the number of tasks to 8 with 3 options offered in each task (with no "none of these" option). This results in 20 versions of the design with each respondent seeing just 1 version. Different models were developed for Reliability and Resilience, and these differed across Residential and Business customers. Often, CBC includes an option for "none of these". For this study we excluded this option, instead including the base case (no change to bill) in each of the 8 choice tasks. The inclusion of "none of these" is not a realistic representation of what will happen in the real world – consumers will not (easily) have the option to abstain from purchasing. Also, the inclusion of a "none of these" may be inflammatory and encourage higher levels of rejection (which have already been established using contingent valuation).

Choice Design

We maintained consistency with the principal approaches used in the AER 2019 study when generating choice sets. The presentation of the choice model in main survey was similar to AER 2019 study. Similar to the AER 2019 study, we randomised the location of the baseline outage scenario in the choice set.

We used **Sawtooth software** to construct and test the design. Additionally, the same design was uploaded to Q software and tested with dummy data and then tested with pilot data to ensure acceptable standard error. The 'no change' level for the 'change in your bill' attribute was only used in the baseline outage scenario. Otherwise, the distribution of attribute levels across the decision sets was near even.

Following careful review, any choice sets in which one of the three outage scenarios stood out as the best option were removed and replaced. The same design was used across business, residential, reliability, and resilience, with changes limited to attribute levels related to changes in billing and outage length, adjusted according to different respondent cohorts. The time of day attribute was exchanged for the presence of a community hub in resilience choice sets.

Choice Model Technique

A **Hierarchical Bayes (HB) statistical model** was utilized to derive estimates of Willingness to Accept (WTA) in dollars for various outage attributes tested, a different modelling approach to AER 2019's multinomial logit model. The software package Q was used to implement the HB model and compute the WTA values in dollars. Multiple rounds of cross-validation were conducted on the final models to ensure their accuracy.

Additionally, to ensure the confidence, the HB choice design modelling outcomes underwent independent review by **Scott MacLean, Director of Nulink Analytics**.

Dollar estimates were obtained by dividing individual-level coefficients of outage attributes by the individual-level bill discount coefficient, and then using the median dollar estimate value for each outage attribute. A comparison was made between these dollar estimate values and additional benefits outlined in a subsequent section of the questionnaire to verify the face validity of the pricing estimates. For residential customers, the WTA value represented as a dollar estimate, while for businesses, WTA was expressed as a percentage discount off the bill.

Source: Lewers Customer Values Research Report '24

Choice-Based Conjoint Application

Builds on the AER Reliability Study

The combination of survey techniques used is the same as AER 2019 VCR method, but with some changes. Key changes include:

- Values for 'Change to your monthly bill' attribute in choice design set in reliability were updated for inflation from $3 $7 $15 to $4 $8 $18 for residential and kept the same to AER 2019 in Business 1% 2% 3%.
- Capping residential contingent valuation question WTP at $40, to reflect AusNet's network composition of a higher proportion of standalone properties than the national average. This cap is set at the amount equal to the last bill indicated by the respondent for business customers.
- Real historical outage data from AusNet over the last 5 years was tagged and used to calculate the outage probabilities for the 32 scenarios for each segment.
- AusNet leveraged demand data and then pro-rated the averages based on the AER's profiles for the consumption inputs.
- In comparison to AER 2019, which used a multinomial logistic model, a hierarchical Bayes model was used to calculate Willingness to Accept (WTA) in the Choice Model.

Methodology updates for resilience choice model

For Resilience, the choice set design mirrored that of reliability, with adjustments made to outage duration levels and changes in bill amounts.

- The values for 'Change to your monthly bill' attribute in the resilience choice design set were adjusted to $21 $26 $36 for residential and 4% 5% 6% for business.
- The time of day attribute was replaced by the presence of a community hub.
- Fourteen outage scenarios were created to calculate the dollar value that a customer cohort places on specific outage scenarios.
- Residential contingency evaluation WTP answers were capped $59 per month and for business we capped to the amount equal to the last bill indicated by the business survey respondent.
- Outage probabilities for 14 outage scenarios were derived from AusNet 5-year historical database using unplanned outage duration between 12-72 hours.
- Hierarchical Bayes modelling techniques were used to derive WTA amounts, aligning with the Reliability model.

Source: Lewers Customer Values Research Report '24

Choice-Based Conjoint Application

Outage Scenarios

The **Reliability** analysis comprised 32 outage scenarios, mirroring those outlined in the AER 2019 study. These scenarios consisted combination of following characteristics, including summer or winter, off-peak or peak times, and weekends or weekdays, with outage durations ranging from three minutes to one hour, one to three hours, three to six hours, and six to 12 hours.

For **Resilience** analysis, we formulated 14 outage scenarios. These scenarios considered factors such as summer or winter conditions, weekdays or weekends, and outage durations spanning from 12 to 13 hours, 13 to 24 hours, 24 to 36 hours, and 36 to 72 hours. Notably, two scenarios exceeding 36 hours on weekends were deemed invalid and hence were excluded from the analysis.

Example of Residential Reliability Choice Model

C1_1. Please indicate which of these three options you would prefer.
You can point your cursor on the definitions below for further information to help you answer.

Question 1 out of 8

	Option 1	Option 2	Option 3
Change to your bill	No change	$4 less per bill	$18 less per bill
Localised / Widespread	Localised	Localised	Widespread
Duration	1 hour	3 hours	1 hour
Frequency	*Twice a year*	*Twice a year*	*Twice a year*
Summer / Winter	Winter	Winter	Winter
Weekday / Weekend	Weekday	Weekday	Weekday
Time of day	Off-peak	Off-peak	Peak

Example of Residential Resilience Choice Model

C2_1. Please indicate which of these three options you would prefer.
You can point your cursor on the definitions below for further information to help you answer.

Question 1 out of 8

	Option 1	Option 2	Option 3
Change to your bill	No change	$21 less per bill	$36 less per bill
Localised / Widespread	Localised	Localised	Widespread
Duration	12 hours	24 hours	72 hours
Frequency	*Twice a year*	*Twice a year*	*Twice a year*
Summer / Winter	Winter	Winter	Winter
Weekday / Weekend	Weekday	Weekday	Weekday
Presence of Community Hub in your suburb	Yes	Yes	No

Source: Lewers Customer Values Research Report '24

Unserved Energy Calculations

To convert into $/kWh values, the dollar value are divided by an estimate of the energy a customer would typically consume during the outage

Residential

- Typical energy consumption profiles were created for each feeder type using thirty-minute smart meter readings for all customers on a residential tariff.
- Using the difference in typical consumption between customers with and without rooftop solar we created a ‘solar factor’.
- This was then used to escalate the consumption of rooftop solar customers to reflect the energy they would consume during an outage which is not captured in our smart meter readings.
- The base line consumption profile was then escalated for peak demand, and to account for the larger amount of energy used during winter.

Business

- Business demand profiles for each feeder type were calculated using both smart meter readings and billing data for all customers on a small or medium business tariff.

Outage Probability Tagging

We used **five years of real outage data provided by AusNet** for the calculations, spanning from June 2018 winter to February 2023 summer, capturing five winter seasons and five summers. Similar to the AER 2019 study, to develop reliability outage profiles following criteria was used;

- Outage must be unplanned
- Outage must be 3 minutes or more and not longer than 12 hours (for reliability choice model) and must be between 12 – 72 hours (for resilience choice model)
- Outage must effect minimum of one customer
- We only considered winter and summer outages.

When tagging the outage profiles, we included outages where 50% or more of the outage duration fell within winter or summer seasons.

Resilience Tagging:

- We categorised outages according to their occurrence during weekdays or weekends. This was determined by assessing whether the majority of the outage duration fell within either the weekday or weekend timeframe. Specifically, if 50% or more of the outage duration was observed during weekdays, we tagged it as a weekday outage; conversely, if the majority of the outage duration occurred over weekends, we classified it as a weekend outage.
- We took into account both the time of outage and duration of outages. We categorized each outage into specific duration blocks and labelled every minute of the outage according to whether it fell in summer or winter, as well as whether it occurred on a weekday or weekend.
- To determine the likelihoods of the 14 outage scenarios, we first computed the total "customer minutes" impacted by each outage falling into these scenarios. This involved multiplying the number of customers affected by the outage by the corresponding duration in minutes to obtain the total customer minutes for each relevant outage scenario. Subsequently, we distributed these customer minutes among feeder groups.
- We aggregated the customer minutes for each outage scenario within a cohort. Then, for each cohort, we calculated the likelihood of each outage scenario by dividing the total number of customer minutes associated with that scenario by the total number of customer minutes across all 14 outage scenarios

Reliability Tagging:

- Each minute of outage was tagged weekday weekend , peak and off peak, summer and winter.
- A number of outages fell across different outage scenarios.
- For example, a 10 hour outage starting at 8 am and ending at 6 pm in summer on a weekday would have two hours falling within the peak period (8 am to 10 am)
- , and six hours falling within the off-peak period (10am to 5 pm), and 1 hour falling with in peak (5pm to 6pm).
- In this example, 3 hours were allocated to the Summer-Weekday-Peak-6-12 Hour Duration outage scenario, and the remaining 7 hours were allocated to the Summer-Weekday-Off Peak-6-12 Hour Duration outage scenario.
- The customer minutes and likelihood across all 32 outage scenarios were then calculated in the same way as described in the resilience section.

Source: Lewers Customer Values Research Report '24

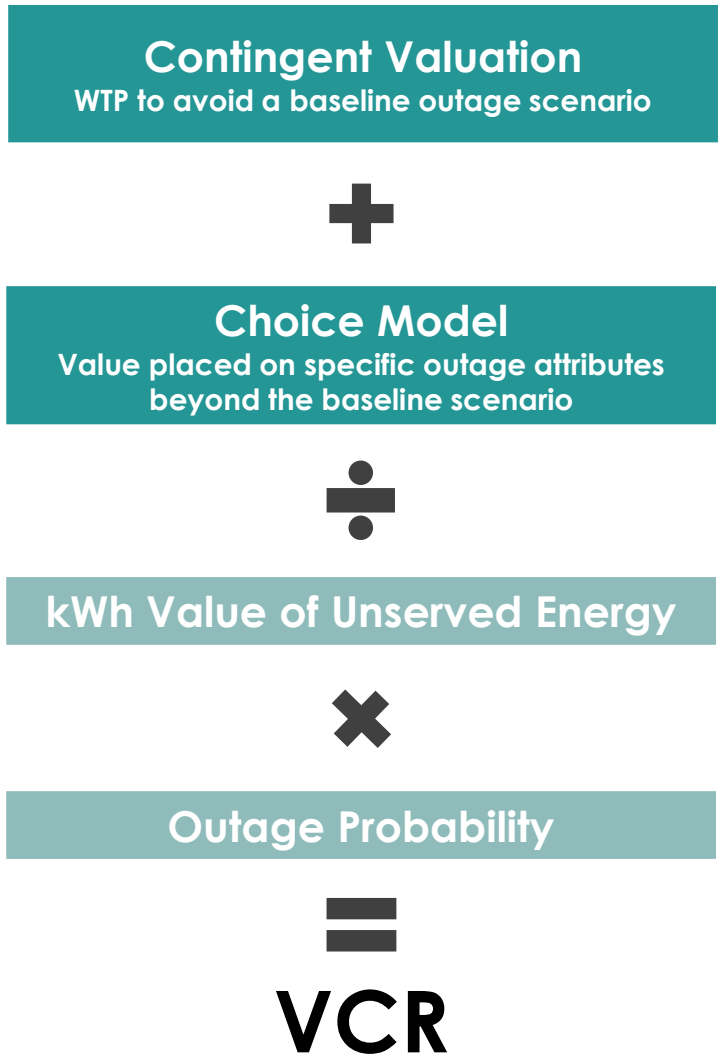
Calculating VCR/VNR

The VCR values calculated in the report have been derived in accordance with the VCR methodology outlined in the AER's 2019 final decision on VCR methodology.

Reliability VCR Calculation:
Contingent valuation assessed the willingness to pay (WTP) to avoid a baseline outage scenario, defined as two localized one-hour outages occurring in winter during off-peak times. Choice modelling determined the additional value respondents placed on specific outage attributes beyond the baseline scenario, including peak and off-peak times, season, day of the week, severity, and duration up to 12 hours.

Resilience VCR Calculation:
Contingent valuation assessed the WTP to avoid a baseline outage scenario, defined as two localized twelve-hour outages occurring in winter during off-peak times. Choice modelling determined the value respondents attributed to specific outage attributes in addition to the baseline scenario, such as season, day of the week, severity and duration more than 12 hours and up to 72 hours

The results from contingent valuation and choice modelling were then integrated to calculate the dollar value that a customer cohort places on particular outage scenarios. These dollar values were subsequently used to determine the VCR/VNR for the customer segment.



Source: Lewers Customer Values Research Report '24

Quality Assurance & External Peer Review

The quality assurance processes for the results involved both internal and external reviews to ensure the accuracy and reliability of the VCR values. Internally, Lewers undertook a comprehensive review encompassing all computational methodologies and input data instrumental in the derivation of the VCR values. Additionally, an external review was conducted by Scott MacLean, overseeing several key processes to reinforce the robustness and validity of the model results. This included:

- The choice set design and design testing results were reviewed.
- The effectiveness of the choice set design was evaluated using dummy data with a hierarchical Bayes (HB) model, confirming satisfactory standard errors.
- A comparison between the HB model and the multinomial logit (MNL) model data showed that HB provided superior accuracy and data fit.
- The pilot data underwent testing to ensure alignment with observations from the initial design testing.
- Multiple cross-validation iterations were performed on final models to confirm model accuracy.
- The results were reviewed after removing respondents displaying counterintuitive utilities and the results remained consistent.
- Examination of model outcomes was undertaken after excluding individuals providing extreme values for other benefits, with no significant change observed in the results.
- The use of individual-level coefficients from HB output as model inputs for VCR was agreed.
- Endorsement was given for the use of median value of each attribute to derive the final $WTA values.
- Recognising the presence of negative price coefficient values and the associated protest votes, it was agreed to use the absolute values of the price coefficients.
- A comprehensive comparison of model results against additional benefits was conducted to verify face validity.
- The DisplayR simulator facilitated the determination of the shares of preference for alternative offers, serving as an additional validation mechanism for the model outcomes.

Scott is widely accepted and renowned as an expert in the market research industry with dozens of peer-reviewed publications since the 1980s. He is trusted as such by the Australian Research Society, presenting full-day workshops for them in Choice Modelling and Latent Class Analysis. He has significant experience in designing and implementing similar advanced analytics for the development and assessment of public policy and feasibility research. Given the highly scrutinised nature of this research, many have required peer review and explanation of highly technical matters to non-technical stakeholders.

Scott MacLean
BSc(Hons) MAppSci
Fellow of the Australian Research Society

Source: Lewers Customer Values Research Report '24

Executive Summary

Lewers

Residential

All Benefits

- Customers place the highest value resilience than any of the other tested benefits.
- Some respondents are not willing to pay for any improvements, however almost all customers expect compensation for service degradation
  - As expected, customers' desire for compensation to accept service disruption or degradation is significantly higher than their WTP. For Residential customers, the order of the benefits remains the same.

VCR

- Residential VCR values are almost double the current AER values. This reflects the increased likelihood of longer outages and most accurate value of unserved energy.

VNR

- All demographics placed a higher value on avoiding a 24hr outages than any other benefit. However, the large amount of energy consumed during a long duration outage dwarfs the final $/kWh value.

Source: Lewers Customer Values Research Report '23

Benefits

	WTP (per month)	Re-Based WTP (per month)	WTA (per month)
Resilience – Avoid One 24H Outage	**$6.12**	**$3.30**	**$33.33**
Improved Reliability for Worst Served Customers	**$4.63**	**$2.50**	**n/a**
Allow Unused Solar Into Grid	**$4.38**	**$2.36**	**$23.84**
EV Charging	**$3.13**	**$1.68**	**$20.68**
Reliability – Avoid One 1H Unplanned Outage	**$2.64**	**$1.42**	**$16.61**
Total	***$20.90***	***$11.26***	***$94.46***

VCR

Feeder Type	$/kWh
Total	**$52.42**
Urban	***$53.85***
Rural Short	***$55.74***
Rural Long	***$39.81***

VNR

Feeder Type	$/kWh
Total	**$12.06**
Urban	***$11.27***
Rural Short	***$10.21***
Rural Long	***$19.09***

Business

All Benefits

- Businesses report greater impact from outages (both under and over 12 hours) and are therefore willing to pay more to avoid outages and they also expect greater compensation.
- Businesses report a greater impact from outages, this is reflected in a much higher relative value for avoiding 1H outages.
- The geographic pattern evident among Residential customers does not play out among Business customers as there is more ubiquitous disruption from outages, regardless of location.

VCR

- Business VCR values are lower than residential VCR values, indicating the higher quantity of unserved energy businesses consume during outages.
- The analysis focused exclusively on small and medium businesses. A broader cross-section of businesses might demonstrate a higher willingness to pay.

VNR

- All demographics placed a higher value on avoiding a 24hr outages than any other benefit. However, the large amount of energy consumed during a long-duration outage dwarfs the final $/kWh value.

Benefits

	WTP (per month)	Re-Based WTP (per month)	WTA (per month)
Resilience – Avoid One 24H Outage	**$24.43**	**$14.90**	**$107.93**
Improved Reliability for Worst Served Customers	**$18.69**	**$11.40**	**n/a**
Allow Unused Solar Into Grid	**$16.48**	**$10.05**	**$54.33**
EV Charging	**$14.32**	**$8.74**	**$76.65**
Reliability – Avoid One 1H Unplanned Outage	**$9.88**	**$6.03**	**$65.71**
Total	***$83.90***	***$51.13***	***$304.62***

VCR

Feeder Type	$/kWh
Total	**$32.01**
Urban	***$34.61***
Rural Short & Long	***$29.88***

VNR

Feeder Type	$/kWh
Total	**$5.88**
Urban	***$6.36***
Rural Short & Long	***$5.48***

Source: Lewers Customer Values Research Report '23

Service Benefits: WTP

Lewers

Avoiding a 24H outage had the highest WTP, while avoiding a 1H outage had the lowest. However, Businesses place greater value on avoiding outages hence are willing to pay more (relatively) to avoid a 1H outage.

Service Benefit WTP

Residential

Service Benefit (in order of WTP)	WTP (Mean)	kWh	$/kWh
Resilience – Avoid One 24H Outage	$6.12	10.79	$0.57
Improved Reliability for Worst Served Customers	$4.63	n/a	n/a
Allow Unused Solar Into Grid	$4.38	n/a	n/a
EV Charging	$3.13	6.95	$0.45
Reliability – Avoid One 1H Unplanned Outage	$2.64	5.39	$0.49
Sum	*$20.90*		

Business

Service Benefit (in order of WTP)	WTP (Mean)	kWh	$/kWh
Resilience – Avoid One 24H Outage	$24.43	26.44	$0.92
Improved Reliability for Worst Served Customers	$18.69	n/a	n/a
Allow Unused Solar Into Grid	$16.48	n/a	n/a
Reliability – Avoid One 1H Unplanned Outage	$14.32	13.22	$1.08
EV Charging	$9.88	2.65	$3.73
Sum	*$83.80*		

The EV Charging kWh for Residential customers is significantly higher than Business customers because AEMO modelling assumes that most Business vehicles will be charged outside of peak hours. The number of hours chosen was based on the mean distance travelled by Victorians every year, reported in the most recent vehicle census.

Note: As there was no cap set, $ values outside 3 times the standard deviation were removed as outliers. The questions were phrased to the bill frequency of the customer, then converted to a monthly value.

Base: Residential Customers (n=3,178), Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

WTP for service benefits increases the closer to customer is to a metro area. Younger singles/couples and singles/families with young kids also have higher WTP.

Residential

Service Benefit WTP (Residential) by Feeder Group & Life Stage

Service Benefit (in order of WTP)	WTP (Mean)	Urban	Rural Short	Rural Long	Younger singles / couples	Older singles / couples	Singles / families with young kids	Singles/ families with older kids \
Resilience – Avoid One 24H Outage	$6.12	$6.81	$5.50	$5.35	$9.18	$5.38	$7.26	$5.92
Improved Reliability for Worst Served Customers	$4.63	$5.02	$4.48	$3.73	$6.36	$4.29	$5.45	$4.67
Allow Unused Solar Into Grid	$4.38	$4.88	$4.21	$3.21	$6.56	$3.69	$6.54	$4.41
EV Charging	$3.13	$3.60	$2.74	$2.49	$5.13	$2.59	$4.44	$3.38
Reliability – Avoid One 1H Unplanned Outage	$2.64	$2.92	$2.52	$2.01	$4.34	$2.33	$3.12	$2.30
Sum	*$20.91*	*$23.24*	*$19.46*	*$16.79*	*$31.56*	*$18.28*	*$26.81*	*$20.68*

Base: Residential Customers (n=3,178). Urban (n=1,505), Rural Short (n=1,185), Rural Long (n=488).
Source: Lewers Customer Values Research Report '24

Customers who have money left over after meeting basic expenses are more WTP, increasing further among customers who are living comfortably. Customers with mains gas are WTP more for service improvements.

Residential

Service Benefit WTP (Residential) by Financial Situation & Mains Gas Ownership

Service Benefit (in order or WTP)	WTP (Mean)	Live comfortably	Meet basic expenses, a little left over	Just meet basic expenses	Can't meet basic expenses	Have Mains Gas	Do Not Have Mains Gas
Resilience – Avoid One 24H Outage	$6.12	$7.53	$6.02	$5.24	$4.28	$6.42	$5.12
Improved Reliability for Worst Served Customers	$4.63	$5.87	$4.60	$3.76	$4.23	$4.67	$4.50
Allow Unused Solar Into Grid	$4.38	$5.04	$4.31	$3.87	$5.61	$4.52	$3.89
EV Charging	$3.13	$3.83	$3.32	$2.52	$2.46	$3.41	$2.25
Reliability – Avoid One 1H Unplanned Outage	$2.64	$3.10	$2.61	$2.39	$2.13	$2.78	$2.08
Sum	*$20.91*	*$22.27*	*$20.86*	*$17.78*	*$18.71*	*$21.8*	*$17.84*

Base: Residential Customers (n=3,178). Live comfortably (n=894), Meet basic expenses, a little left over (n=1,160), Just meet basic expenses (n=737). Can't meet basic expenses (n=167). Have Mains Gas (n=2,333), Do Not Have Mains Gas (n=798).
Source: Lewers Customer Values Research Report '24

WTP for service benefits is higher among owners and intenders of EV products, as well as rooftop solar intenders.

Residential

Service Benefit WTP (Residential) by Solar & EV Ownership/Intention to Own by 2031

Service Benefit (in order or WTP)	**WTP** (Mean)	Have: Rooftop Solar	Have: EV Vehicle or Charger	Intend 2031: Rooftop Solar	Intend 2031: EV Vehicle or Charger
Resilience – Avoid One 24H Outage	**$6.12**	**$5.54**	**$7.50**	**$7.54**	**$7.25**
Improved Reliability for Worst Served Customers	**$4.63**	**$3.98**	**$7.44**	**$5.96**	**$5.96**
Allow Unused Solar Into Grid	**$4.38**	**$4.02**	**$5.78**	**$5.56**	**$5.85**
EV Charging	**$3.13**	**$2.87**	**$4.24**	**$4.38**	**$5.85**
Reliability – Avoid One 1H Unplanned Outage	**$2.64**	**$2.29**	**$2.80**	**$3.25**	**$3.38**
Sum	***$20.91***	***$18.69***	***$27.84***	***$26.69***	***$28.29***

Base: Residential Customers (n=3,178).
Source: Lewers Customer Values Research Report '24

WTP for service benefits increases as Business size gets larger. Aligning with Residential customers, Urban businesses have higher WTP, except for allowing unused solar back into the grid.

Business

Service Benefit WTP (Business) by Feeder Group & Business Size

Service Benefit (in order or WTP)	WTP	Urban	Rural Short & Long	Micro Trader (2-5)	Small Business (6-19)	Medium Business (20-99)	Large Business (100-199)
Resilience – Avoid One 24H Outage	$24.43	$28.17	$21.28	8.78	28.61	$36.51	$35.43
Improved Reliability for Worst Served Customers	$18.69	$20.62	$17.08	6.93	19.38	$27.73	$42.86
Allow Unused Solar Into Grid	$16.48	$15.50	$17.28	5.74	16.96	$23.10	$46.37
Reliability – Avoid One 1H Unplanned Outage	$14.32	$16.10	$12.85	6.32	13.30	$22.95	$25.51
EV Charging	$9.88	$9.97	$9.82	3.02	8.24	$19.21	$16.04
Sum	$83.80	$90.37	$78.31	30.79	86.49	$129.51	$166.21

Base: Business Customer (n=349). Urban (n=145), Rural Short & Long (n=204).
Source: Lewers Customer Values Research Report '24

WTP for service benefits is higher among Businesses who own or intend to own EV products. Aligning with Residential customers, Businesses with mains gas have higher WTP.

Business

Service Benefit WTP (Business) by Solar & EV Ownership/Intention to Own by 3031

Service Benefit (in order or WTP)	**WTP**	**Have: Rooftop Solar**	**Have: EV Vehicle or Charger**	**Intend 2031: Rooftop Solar**	**Intend 2031: EV Vehicle or Charger**	**Have Mains Gas**	**Do Not Have Mains Gas**
Resilience – Avoid One 24H Outage	**$24.43**	**$30.48**	**$48.40**	**$19.93**	**$28.59**	**$38.67**	**$18.39**
Improved Reliability for Worst Served Customers	**$18.69**	**$24.13**	**$42.89**	**$16.52**	**$22.45**	**$31.04**	**$12.48**
Allow Unused Solar Into Grid	**$16.48**	**$23.72**	**$44.99**	**$16.48**	**$20.07**	**$29.53**	**$10.43**
Reliability – Avoid One 1H Unplanned Outage	**$14.42**	**$19.36**	**$33.42**	**$10.80**	**$15.30**	**$24.76**	**$9.64**
EV Charging	**$9.88**	**$14.01**	**$32.05**	**$10.50**	**$14.13**	**$20.17**	**$5.41**
Sum	***$83.80***	***$111.71***	***$201.75***	***$74.23***	***$100.54***	***$144.17***	***$56.35***

Base: Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

Service Benefits: Re-Based WTP

Lewers

Asking respondents their WTP for the total bundle of services allows us to assess their WTP for individual services within the context of their willingness to accept total bill impacts. This allows us to assess their preferences for investments between expenditure streams.

Residential

Service Benefit Re-Based WTP (Residential)

Service Benefit (in order or WTP)	**WTP** (Mean)
Resilience – Avoid One 24H Outage	**$6.12**
Improved Reliability for Worst Served Customers	**$4.63**
Allow Unused Solar Into Grid	**$4.38**
EV Charging	**$3.13**
Reliability – Avoid One 1H Unplanned Outage	**$2.64**
Sum	***$20.90***
WTP For All Service Benefits	**$11.26**

Service Benefit (in order or WTP)	**% of Total WTP**	**Re-Based WTP (Mean)**
Resilience – Avoid One 24H Outage	**29.28%**	**$3.30**
Improved Reliability for Worst Served Customers	**22.17%**	**$2.50**
Allow Unused Solar Into Grid	**20.97%**	**$2.36**
EV Charging	**14.95%**	**$1.68**
Reliability – Avoid One 1H Unplanned Outage	**12.63%**	**$1.42**
Sum	***100%***	***$11.26***

When asked individually and then summed together, the total WTP of all service benefits is almost twice as high as when respondents were asked to give a WTP for all propositions at once.

By converting the individual WTP of each service benefit into a proportion, we can then re-base each to the total value, to provide a view that fits the overall bounds provided.

Note: As there was no cap set, $ values outside 3 times the standard deviation were removed as outliers. The questions were phrased to the bill frequency of the customer, then converted to a monthly value.

Base: Residential Customers (n=3,178).
Source: Lewers Customer Values Research Report '24

Re-basing the individual service benefits to the overall WTP for the total bundle allows us gives a better idea of a realistic WTP for a bundle of services. The implication is that spreading investment across benefits will reduce the investment per benefit, as there's a finite pool to leverage.

Residential

Service Benefit Re-Based WTP (Residential)

Service Benefit (in order or WTP)	**WTP** (Mean)
Resilience – Avoid One 24H Outage	**$6.12**
Improved Reliability for Worst Served Customers	**$4.63**
Allow Unused Solar Into Grid	**$4.38**
EV Charging	**$3.13**
Reliability – Avoid One 1H Unplanned Outage	**$2.64**
Sum	***$20.90***
WTP For All Service Benefits	**$11.26**

Service Benefit (in order or WTP)	**% of Total WTP**	**Re-Based WTP (Mean)**
Resilience – Avoid One 24H Outage	**29.28%**	**$3.30**
Improved Reliability for Worst Served Customers	**22.17%**	**$2.50**
Allow Unused Solar Into Grid	**20.97%**	**$2.36**
EV Charging	**14.95%**	**$1.68**
Reliability – Avoid One 1H Unplanned Outage	**12.63%**	**$1.42**
Sum	***100%***	***$11.26***

When asked individually and then summed together, the total WTP of all service benefits is almost twice as high as when respondents were asked to give a WTP for all propositions at once.

By converting the individual WTP of each service benefit into a proportion, we can then re-base each to the total value, to provide a view that fits the overall bounds provided.

Note: As there was no cap set, $ values outside 3 times the standard deviation were removed as outliers. The questions were phrased to the bill frequency of the customer, then converted to a monthly value.

Base: Residential Customers (n=3,178).
Source: Lewers Customer Values Research Report '24

Re-basing WTP largely neutralised the differences by feeder group, with the exception of EV Charging, which is higher in urban areas. Younger singles/couples and singles/families with young kids retain their higher WTP.

Residential

Service Benefit Re-Based WTP (Residential) by Feeder Group & Life Stage

Service Benefit (in order of WTP)	Re-Based WTP (Mean)	Urban	Rural Short	Rural Long	Younger singles / couples	Older singles / couples	Singles / families with young kids	Singles/ families with older kids \
Resilience – Avoid One 24H Outage	$3.30	$3.40	$3.16	$3.33	$5.61	$2.88	$3.67	$3.03
Improved Reliability for Worst Served Customers	$2.50	$2.51	$2.57	$2.32	$3.89	$2.30	$2.76	$2.39
Allow Unused Solar Into Grid	$2.36	$2.44	$2.41	$1.99	$4.00	$1.98	$3.30	$2.26
EV Charging	$1.68	$1.80	$1.57	$1.55	$3.13	$1.39	$2.24	$1.73
Reliability – Avoid One 1H Unplanned Outage	$1.42	$1.46	$1.45	$1.25	$2.65	$1.25	$1.58	$1.18
WTP For All Service Benefits	**$11.26**	**$11.60**	**$11.16**	**$10.44**	**$19.28**	**$9.80**	**$13.55**	**$10.57**

Base: Residential Customers (n=3,178). Urban (n=1,505), Rural Short (n=1,185), Rural Long (n=488).
Source: Lewers Customer Values Research Report '24

Customers who have money left over after meeting basic expenses and customers living comfortably still show a higher re-based WTP for most benefits. Customers who can't meet basic expenses are most WTP for allowing unused solar into the grid.

Residential

Service Benefit Re-Based WTP (Residential) by Financial Situation & Mains Gas Ownership

Service Benefit (in order or WTP)	Re-Based WTP (Mean)	Live comfortably	Meet basic expenses, a little left over	Just meet basic expenses	Can't meet basic expenses	Have Mains Gas	Do Not Have Mains Gas
Resilience – Avoid One 24H Outage	$3.30	$3.55	$3.32	$3.26	$2.18	$3.34	$3.08
Improved Reliability for Worst Served Customers	$2.50	$2.77	$2.53	$2.33	$2.16	$2.43	$2.71
Allow Unused Solar Into Grid	$2.36	$2.38	$2.37	$2.41	$2.86	$2.35	$2.35
EV Charging	$1.68	$1.81	$1.83	$1.56	$1.25	$1.77	$1.36
Reliability – Avoid One 1H Unplanned Outage	$1.42	$1.46	$1.44	$1.49	$1.09	$1.44	$1.26
WTP For All Service Benefits	**$11.26**	**$11.96**	**$11.49**	**$11.04**	**$9.53**	**$11.33**	**$10.76**

Base: Residential Customers (n=3,178). Live comfortably (n=894), Meet basic expenses, a little left over (n=1,160), Just meet basic expenses (n=737). Can't meet basic expenses (n=167). Have Mains Gas (n=2,333), Do Not Have Mains Gas (n=798).
Source: Lewers Customer Values Research Report '24

Re-based WTP gives more realistic values for owners, with their WTP falling below mean. Customers intending to buy an EV product have the highest WTP for EV Charging, while customers who intend to buy rooftop solar have the highest WTP for resilience and improving reliability for WSC.

Residential

Service Benefit Re-Based WTP (Residential) by Solar & EV Ownership/Intention to Own by 2031

Service Benefit (in order or WTP)	Re-Based WTP (Mean)	Have: Rooftop Solar	Have: EV Vehicle or Charger	Intend 2031: Rooftop Solar	Intend 2031: EV Vehicle or Charger
Resilience – Avoid One 24H Outage	$3.30	$3.15	$2.85	$3.81	$3.43
Improved Reliability for Worst Served Customers	$2.50	$2.27	$2.82	$3.01	$2.82
Allow Unused Solar Into Grid	$2.36	$2.28	$2.19	$2.81	$2.77
EV Charging	$1.68	$1.63	$1.61	$2.21	$2.76
Reliability – Avoid One 1H Unplanned Outage	$1.42	$1.30	$1.10	$1.64	$1.60
WTP For All Service Benefits	**$11.26**	**$10.63**	**$10.57**	**$13.48**	**$13.37**

Base: Residential Customers (n=3,178).
Source: Lewers Customer Values Research Report '24

Re-basing the individual service benefits to the overall WTP for all services gives a better idea of a realistic WTP for a bundle of services. The implication is that spreading investment across benefits will reduce the investment per benefit, as there's a finite pool to leverage.

Business

Service Benefit Re-based WTP (Business)

Service Benefit (in order or WTP)	**WTP (Mean)**
Resilience – Avoid One 24H Outage	**$24.43**
Improved Reliability for Worst Served Customers	**$18.69**
Allow Unused Solar Into Grid	**$16.48**
Reliability – Avoid One 1H Unplanned Outage	**$14.42**
EV Charging	**$9.88**
Sum	***$83.80***
WTP For All Service Benefit	**$51.13**

Service Benefit	**% of Total WTP**	**Re-Based WTP (Mean)**
Resilience – Avoid One 24H Outage	**29.15%**	**$14.90**
Improved Reliability for Worst Served Customers	**22.30%**	**$11.40**
Allow Unused Solar Into Grid	**19.66%**	**$10.05**
Reliability – Avoid One 1H Unplanned Outage	**17.09%**	**$8.74**
EV Charging	**11.80%**	**$6.03**
Sum	***100%***	***$51.13***

When asked individually and then summed together, the total WTP of all service benefits is almost twice as high as when respondents were asked to give a WTP for all propositions at once.

By converting the individual WTP of each service benefit into a proportion, we can then re-base each to the total value, to provide a view that fits the overall bounds provided.

Note: As there was no cap set, $ values outside 3 times the standard deviation were removed as outliers. The questions were phrased to the bill frequency of the customer, then converted to a monthly value.

Base: Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

Re-basing WTP does better highlight differences by feeder group, with rural customers more WTP for allowing unused solar into the grid and EV charging. Larger businesses continue to demonstrate a greater WTP when re-based.

Business

Service Benefit Re-Based WTP (Business) by Feeder Group & Business Size

Service Benefit (in order or WTP)	Re-Based WTP (Mean)	Urban	Rural Short & Long	Micro Trader (2-5)	Small Business (6-19)	Medium Business (20-99)	Large Business (100-199)
Resilience – Avoid One 24H Outage	$14.90	$15.51	$14.21	$7.39	$15.87	$22.50	$17.62
Improved Reliability for Worst Served Customers	$11.40	$11.35	$11.40	$5.84	$10.75	$17.09	$21.32
Allow Unused Solar Into Grid	$10.05	$8.53	$11.54	$4.83	$9.41	$14.23	$23.07
Reliability – Avoid One 1H Unplanned Outage	$8.74	$8.86	$8.58	$5.32	$7.37	$14.14	$12.69
EV Charging	$6.03	$5.49	$6.55	$2.55	$4.57	$11.84	$7.98
WTP For All Service Benefit	**$51.13**	**$49.74**	**$52.27**	**$25.93**	**$47.96**	**$79.80**	**$82.67**

Base: Business Customer (n=349). Urban (n=145), Rural Short & Long (n=204).
Source: Lewers Customer Values Research Report '24

WTP for service benefits is higher across all benefits among businesses who own or intend to own EV products. Aligning with Residential customers, Businesses with mains gas have higher WTP. All three cohorts have a higher overall WTP.

Business

Service Benefit Re-Based WTP (Business) by Solar & EV Ownership/Intention to Own by 3031

Service Benefit (in order or WTP)	Re-Based WTP (Mean)	Have: Rooftop Solar	Have: EV Vehicle/ Charger	Intend 2031: Rooftop Solar	Intend 2031: EV Vehicle/Charger	Have Mains Gas	Do Not Have Mains Gas
Resilience – Avoid One 24H Outage	$14.90	$30.48	$48.40	$19.93	$28.59	$38.67	$18.39
Improved Reliability for Worst Served Customers	$11.40	$24.13	$42.89	$16.52	$22.45	$31.04	$12.48
Allow Unused Solar Into Grid	$10.05	$23.72	$44.99	$16.48	$20.07	$29.53	$10.43
Reliability – Avoid One 1H Unplanned Outage	$8.74	$19.36	$33.42	$10.80	$15.30	$24.76	$9.64
EV Charging	$6.03	$14.01	$32.05	$10.50	$14.13	$20.17	$5.41
WTP For All Service Benefit	**$51.13**	**$76.15**	**$83.87**	**$40.54**	**$70.72**	**$67.28**	**$43.22**

Base: Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

Service Benefits: WTA

Lewers

There is very little appetite among respondents for service degradations, they would expect large reductions in their electricity bills if their was to occur. For Residential customers, the order of the benefits remains the same. However, with Businesses reporting a greater impact from outages, this is reflected in a much higher relative value for avoiding 1H outages.

Service Benefit WTA

Residential

Service Benefit (in order or WTP)	WTA (Mean)
Resilience – Avoid One 24H Outage	$33.33
Allow Unused Solar Into Grid	$23.84
EV Charging	$20.68
Reliability – Avoid One 1H Unplanned Outage	$16.61
Sum	*$94.46*

Business

Service Benefit (in order or WTP)	WTA (Mean)
Resilience – Avoid One 24H Outage	$107.93
Reliability – Avoid One 1H Unplanned Outage	$76.65
EV Charging	$65.71
Allow Unused Solar Into Grid	$54.33
Sum	*$304.61*

Note: As there was no cap set, $ values outside 3 times the standard deviation were removed as outliers. The questions were phrased to the bill frequency of the customer, then converted to a monthly value.

Base: Residential Customers (n=3,178), Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

Expected compensation for longer outages is highest among Urban customers, while Rural Short customers expect more compensation for the other service benefits. Older singles/couples have a lower expectation compared to other life stages.

Residential

Service Benefit WTA (Residential) by Feeder Group & Life Stage

Service Benefit (in order of WTP)	WTA (Mean)	Urban	Rural Short	Rural Long	Younger singles / couples	Older singles / couples	Singles / families with young kids	Singles/ families with older kids \
Resilience – Avoid One 24H Outage	$33.33	$34.97	$32.80	$29.26	$43.74	$29.48	$37.31	$40.73
Allow Unused Solar Into Grid	$23.84	$23.34	$24.77	$23.25	$28.84	$22.96	$26.58	$28.01
EV Charging	$20.68	$20.50	$21.72	$18.77	$23.71	$18.72	$23.39	$25.31
Reliability – Avoid One 1H Unplanned Outage	$16.61	$16.51	$17.76	$14.23	$18.54	$14.81	$17.59	$20.57

Base: Residential Customers (n=3,178). Urban (n=1,505), Rural Short (n=1,185), Rural Long (n=488).
Source: Lewers Customer Values Research Report '24

Customers who can't meet basic expenses have a significantly higher expectation for compensation. There is no difference based on gas ownership.

Residential

Service Benefit WTA (Residential) by Financial Situation & Mains Gas Ownership

Service Benefit (in order or WTP)	WTA (Mean)	Live comfortably	Meet basic expenses, a little left over	Just meet basic expenses	Can't meet basic expenses	Have Mains Gas	Do Not Have Mains Gas
Resilience – Avoid One 24H Outage	$33.33	$30.49	$31.99	$32.87	$48.81	$33.31	$33.34
Allow Unused Solar Into Grid	$23.84	$22.28	$21.67	$25.19	$39.53	$23.80	$23.82
EV Charging	$20.68	$18.33	$19.49	$21.83	$25.60	$20.34	$21.82
Reliability – Avoid One 1H Unplanned Outage	$16.61	$15.19	$14.29	$18.14	$26.08	$16.99	$15.51

Base: Residential Customers (n=3,178). Live comfortably (n=894), Meet basic expenses, a little left over (n=1,160), Just meet basic expenses (n=737). Can't meet basic expenses (n=167). Have Mains Gas (n=2,333), Do Not Have Mains Gas (n=798).
Source: Lewers Customer Values Research Report '24

Owners of EV products and rooftop solar intenders report a greater expectation for compensation.

Residential

Service Benefit WTA (Residential) by Solar & EV Ownership/Intention to Own by 2031

Service Benefit (in order or WTP)	**WTA** (Mean)	Have: Rooftop Solar	Have: EV Vehicle or Charger	Intend 2031: Rooftop Solar	Intend 2031: EV Vehicle or Charger
Resilience – Avoid One 24H Outage	**$33.33**	**$32.79**	**$37.72**	**$36.64**	**$33.78**
Allow Unused Solar Into Grid	**$23.84**	**$26.61**	**$36.36**	**$26.49**	**$26.35**
EV Charging	**$20.68**	**$21.12**	**$28.94**	**$22.50**	**$19.89**
Reliability – Avoid One 1H Unplanned Outage	**$16.61**	**$16.23**	**$16.68**	**$18.44**	**$16.11**

Base: Residential Customers (n=3,178).
Source: Lewers Customer Values Research Report '24

Expected compensation is generally lower among Rural Business customers. Micro Businesses have notably high expectations for longer outages, while large Businesses have the highest expectations for compensation overall.

Business

Service Benefit WTA (Business) by Feeder Group & Business Size

Service Benefit (in order or WTP)	WTA (Mean)	Urban	Rural Short & Long	Micro Trader (2-5)	Small Business (6-19)	Medium Business (20-99)	Large Business (100-199)
Resilience – Avoid One 24H Outage	$107.93	$107.93	$92.34	$115.35	$104.85	$97.13	$133.09
Reliability – Avoid One 1H Unplanned Outage	$76.65	$76.65	$74.47	$69.95	$67.68	$83.22	$134.95
EV Charging	$65.71	$65.71	$60.86	$62.34	$61.78	$73.40	$71.04
Allow Unused Solar Into Grid	$54.33	$54.33	$52.24	$41.86	$58.08	$56.25	$98.36

Base: Business Customer (n=349). Urban (n=145), Rural Short & Long (n=204).
Source: Lewers Customer Values Research Report '24

Businesses with an EV product have higher expectations for compensation for shorter outages and EV charging. Unlike Residential, Businesses with mains gas have a higher expectation for compensation.

Business

Service Benefit WTA (Business) by Solar & EV Ownership/Intention to Own by 3031

Service Benefit (in order or WTP)	**WTA** (Mean)	Have: Rooftop Solar	Have: EV Vehicle/ Charger	Intend 2031: Rooftop Solar	Intend 2031: EV Vehicle/Charger	Have Mains Gas	Do Not Have Mains Gas
Resilience – Avoid One 24H Outage	$107.93	$105.42	$60.89	$114.05	$122.52	$122.63	$105.37
Reliability – Avoid One 1H Unplanned Outage	$76.65	$79.64	$107.02	$60.02	$79.38	$82.54	$72.76
EV Charging	$65.71	$55.01	$77.72	$62.73	$49.60	$84.46	$55.27
Allow Unused Solar Into Grid	$54.33	$63.48	$61.72	$60.34	$62.04	$72.82	$45.57

Base: Business Customer (n=349).
Source: Lewers Customer Values Research Report '24

Values of Customer Reliability and Values of Network Resilience

Lewers

Customers in Urban areas reported the highest WTP, particularly evident among Businesses. WTP to avoid outages greater than 12 hours (Resilience) was notably lower among Rural customers.

Base Case Contingent Valuation (Residential)

Reliability

Customer Type	$/month
Urban	$3.63
Rural Short	$3.46
Rural Long	$3.40

Residential

Resilience

Customer Type	$/month
Urban	$7.82
Rural Short	$7.57
Rural Long	$5.97

Residential

Base Case Contingent Valuation (Business)

Reliability

Customer Type	%	Converted to $/month
Urban	6.12%	$17.82
Rural Short & Long	4.95%	$14.05

Business

Resilience

Customer Type	%	Converted to $/month
Urban	11.33%	$33.00
Rural Short & Long	7.16%	$20.32

Business

The proportions that business customers provided were multiplied by their bill amount and converted to a monthly value, resulting in like for like figures with residential customers.

Base per Model (Reliability/Resilience): Residential Customers: Urban (n=753), Rural Short (n=593), Rural Long (n=244). Business Customers: Urban (n=73), Rural Short & Long (n=102).
Source: Lewers Customer Values Research Report '24

Rural customers are much more likely to have a backup generator; customers with a backup generator have significantly lower WTP. Customers who are likely to be without gas in the future also have higher WTP.

Residential

Base Case Contingent Valuation (Residential) by Cohort (for face validity)

Reliability

EV Vehicle Ownership/Intention	$/month
Currently have this product	$5.98
Am intending to purchase before 2031	$4.64
Don't intend to purchase before 2031	$3.02
Don't ever intend to purchase	$3.02

Financial Situation	$/month
Live comfortably	$4.59
Meet basic expenses with a little left over	$3.48
Just meet basic expenses	$2.74
Don't have enough to meet basic expenses	$2.35

Likelihood to have Gas in 2031	$/month
Very Unlikely / Unlikely	$4.33
Neither likely nor unlikely	$3.74
Somewhat likely / Very likely	$3.10

Resilience

EV Vehicle Ownership/Intention	$/month
Currently have this product	$11.21
Am intending to purchase before 2031	$8.86
Don't intend to purchase before 2031	$7.09
Don't ever intend to purchase	$6.41

Financial Situation	$/month
Live comfortably	$9.54
Meet basic expenses with a little left over	$7.39
Just meet basic expenses	$6.23
Don't have enough to meet basic expenses	$4.97

Backup Measures Taken	$/month
Have a backup generator	$5.87

	Urban	Rural Short	Rural Long
Have a backup generator	8.91%	21.79%	27.05%

WTP shows strong face validity when looking at EV ownership/intention and financial situation.

Base per Model (Reliability/Resilience): Residential Customers: Urban (n=753), Rural Short (n=593), Rural Long (n=244).
Source: Lewers Customer Values Research Report '24

High backup generator ownership also aligns with lower WTP among Rural Businesses. However, businesses who have taken backup measures generally are more WTP to avoid outages below 12 hours, aligning with business size.

Business

Base Case Contingent Valuation (Business) by Cohort (for face validity)

Reliability

Business Size	$/month
Large Business (100-199)	11.22%
Medium Business (20-99)	7.49%
Small Business (6-19)	4.64%
Micro Trader (2-5)	3.22%

Backup Measures Taken	$/month
Have taken a (any) measure	7.67%
Have not taken any measure	1.19%

	Urban	Rural Short	Rural Long
Have taken a (any) measure	52.63%	73.61%	83.87%

Resilience

Business Size	$/month
Large Business (100-199)	7.83%
Medium Business (20-99)	11.88%
Small Business (6-19)	7.22%
Micro Trader (2-5)	8.36%

Backup Measures Taken	$/month
Have a backup generator	6.38%

	Urban	Rural Short	Rural Long
Have a backup generator	28.99%	41.18%	45.45%

Base per Model (Reliability/Resilience): Business Customers: Urban (n=73), Rural Short & Long (n=102).
Source: Lewers Customer Values Research Report '24

For Residential customers, the Choice Model utility coefficients were converted into dollar values. Value increased in a linear way with increased outage duration, which was the biggest driver of increased value across scenarios.

Residential

Choice Model WTA (Residential Reliability)

Reliability ($/month)

Attribute	Urban	Rural Short	Rural Long
Duration 12 hours	$29.86	$33.02	$24.82
Duration 6 hours	$22.15	$24.84	$19.20
Duration 3 hours	$14.98	$14.15	$12.38
Peak	$5.17	$5.70	$3.88
Summer	$2.98	$2.50	$3.46
Severity	$1.36	$2.17	$4.25
Weekend	$1.03	$2.49	-$0.09

Choice Model WTA (Residential Resilience)

Resilience ($/month)

Attribute	Urban	Rural Short	Rural Long
Duration 72 hours	$54.15	$48.60	$68.98
Duration 36 hours	$51.69	$44.52	$59.74
Duration 24 hours	$33.26	$33.48	$46.33
Summer	$5.09	$5.08	$10.82
Severity	$4.80	$4.66	$8.97
Community Hub	$3.16	$2.86	$6.02
Weekend	$2.94	$3.91	$3.21

The utility coefficients provided by the Choice Model outputs were converted into dollar values.

Base per Model (Reliability/Resilience): Residential Customers: Urban (n=753), Rural Short (n=593), Rural Long (n=244).
Source: Lewers Customer Values Research Report '24

For Business customers, the Choice Model utility coefficients were converted into proportions. Similarly, value increased in a linear way with increased outage duration, which was the biggest driver of increased value across scenarios.

Business

Choice Model WTA (Business Reliability)

Reliability (% of bill)

Attribute	Urban	Rural Short & Long
Duration 12 hours	**2.22%**	**2.68%**
Duration 6 hours	**2.42%**	**1.53%**
Duration 3 hours	**0.76%**	**1.42%**
Peak	**1.29%**	**0.70%**
Summer	**0.60%**	**0.50%**
Severity	**0.70%**	**0.13%**
Weekend	**-0.70%**	**-0.18%**

Choice Model WTA (Business Resilience)

Resilience (% of bill)

Attribute	Urban	Rural Short & Long
Duration 72 hours	**4.75%**	**5.44%**
Duration 36 hours	**3.83%**	**4.96%**
Duration 24 hours	**3.64%**	**3.88%**
Severity	**2.17%**	**1.32%**
Summer	**0.59%**	**1.26%**
Weekend	**1.21%**	**0.06%**
No hub	**0.04%**	**0.23%**

The utility coefficients provided by the Choice Model outputs were converted into a proportion of customers' bill.

Base per Model (Reliability/Resilience): Business Customers: Urban (n=73), Rural Short & Long (n=102).
Source: Lewers Customer Values Research Report '24

Resilience values are lower due to the large amounts of unserved energy. Residential and Business customers in Urban areas have the highest Reliability values, while Rural Long Residential customers have the highest Resilience values. Businesses values are similar across Urban and Rural customers.

Residential

Reliability

Customer Type	$/kWh
Total	$52.42
Urban	*$53.85*
Rural Short	*$55.74*
Rural Long	*$39.81*

Resilience

Customer Type	$/kWh
Total	$12.06
Urban	*$11.27*
Rural Short	*$10.21*
Rural Long	*$19.09*

Business

Reliability

Customer Type	$/kWh
Total	$32.01
Urban	*$34.61*
Rural Short & Long	*$29.88*

Resilience

Customer Type	$/kWh
Total	$5.88
Urban	*$6.36*
Rural Short & Long	*$5.48*

Base per Model (Reliability/Resilience): Residential Customers: Urban (n=753), Rural Short (n=593), Rural Long (n=244). Business Customers: Urban (n=73), Rural Short & Long (n=102).
Source: Lewers Customer Values Research Report '24

Lewers

CLARITY CREATES COURAGE

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Appendix

-Inputs to survey design

Lewers

Customer Introduction & Context

Who is AusNet

- AusNet is your electricity distributor
- Their network covers 80,000km2 and delivers electricity to more than 800,000 homes and businesses (and almost 2 million people) in eastern and north-eastern Victoria and outer Melbourne.
- They are responsible for ensuring customers have a safe and reliable supply of electricity, managing any outages and ensuring the network is planned well for how people want to use electricity.

Why are AusNet doing this research

- AusNet are currently preparing their proposal for 2026 - 2031.
- This survey will help ensure AusNet's proposal reflects its customers' preferences, that they are investing in things that customers value (and not investing in things customers *don't* value).
- Although we are talking about potential changes to your current electricity bill, when completing this survey, remember to think about *your future self* and how your household will want to use electricity in 2026 – 2031.
- You may consider things like:
  - Will you be charging EVs rather than putting petrol in cars?
  - Will you be heating your home with gas or electricity?
  - Will you be doing your laundry in the middle of the day to make use of cheaper solar energy?

Customers were shown the following context as part of the survey introduction.

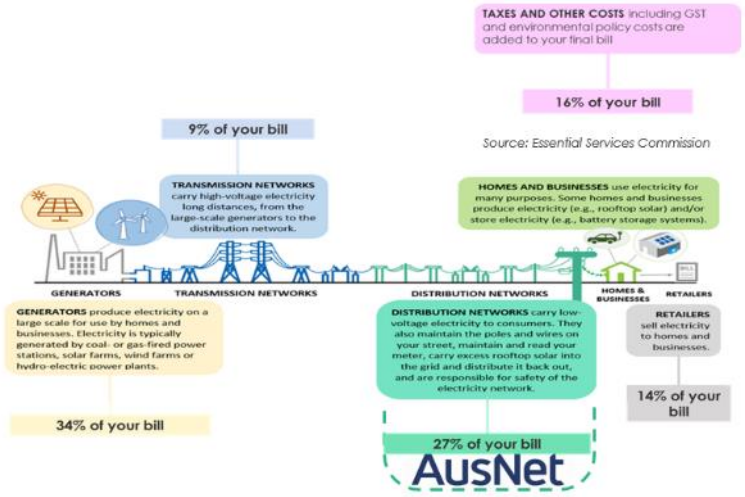
Source: Lewers Customer Values Research Report '24

Background Information Shown In Survey

Distribution Charges

- You pay for AusNet's services as part of your electricity bill.
- In 2023, a typical AusNet residential customer* will pay $550 in distribution network charges over the year, no matter where they are located on the network.

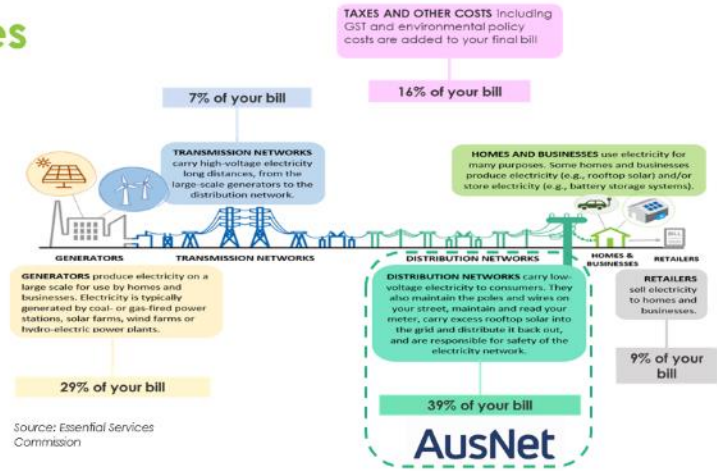
* This is based on 4,000 k/Wh of energy used over the year.



Distribution Charges

- You pay for these services and investments as part of your electricity bill
- In 2023, a typical AusNet small business customer* will pay $1,980 in distribution network charges over the year, no matter where they are located on the network.

* This is based on 10,000 k/Wh of energy used over the year.



How are these charges calculated?

- AusNet's distribution charges are set through a process called a *price review*, which happens every 5 years. All electricity, gas and water network businesses undertake these reviews. AusNet's price review process is overseen by the Australian Energy Regulator (AER).
- Through the price review process AusNet prepares a proposal detailing;
  - What investments will be made to the network
  - What levels of service will be delivered
  - What this will cost customers
- If the AER is satisfied that AusNet's proposal 'stacks-up' i.e. the benefits to customers outweigh the costs, it will be approved.
- The costs are then paid for by all customers connected to the network, depending on how much energy they use.

Service Benefits

Benefit 1. EVs
B1_1. How much would you be willing to pay on your <bill frequency> electricity bills to continue to allow flexible EV charging at all times?
B1_2. How much would your <bill frequency> electricity bills have to decrease by to allow AusNet to manage EV charging? In other words, how much of a discount on your bill would you expect?

Benefit 2. Solar
B2_1. How much would you be willing to pay on your <bill frequency> electricity bills to allow all unused solar electricity into the grid?
B2_2. How much would your <bill frequency> electricity bills have to decrease by to accept any new solar systems being blocked from sending unused rooftop solar into the grid? In other words, how much of a discount on your bill would you expect?

Benefit 3. WTP for improved reliability for worst served customers
B3_1. How much would you be willing to pay on your <bill frequency> electricity bills to improve electricity reliability for these households and businesses, so they experience a level of reliability closer to the network average?

Benefit 4. WTP for improved reliability for worst served customers
B4_1. How much would you be willing to pay on your <bill frequency> electricity bills to experience one less 1 hour-long unplanned outage per year?
B4_2. How much would your <bill frequency> electricity bills have to decrease by to accept an additional 1 hour-long unplanned outage a year? In other words, how much of a discount on your bill would you expect?

Benefit 5. Resilience
B5_1. How much would you be willing to pay on your <bill frequency> electricity bills to avoid one 24-hour outage per year?
B5_2. How much would your electricity <bill frequency> electricity bills have to decrease by to accept an additional 24-hour outage per year? In other words, how much of a discount on your bill would you expect?

Full Example of Service Benefits

BENEFIT 1: EVs – ASK ALL

Currently, people with EVs can charge them at home whenever they wish, including using a home fast charger (if they have one installed). However, as the number of EVs grow, AusNet may have to manage charging to ensure the grid isn't overloaded with lots of people trying to charge at once at during peak times. Lots of people charging their EVs at once will require upgrades to the network paid for by customers.

B1_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to continue to allow flexible EV charging at all times? **(NUMERIC RESPONSE)**

B1_2. How much would your **<bill frequency> electricity bills** have to **decrease by** to allow AusNet to manage EV charging? In other words, how much of a discount on your bill would you expect? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

Manage Charging: The network can limit your charging. This may mean you cannot charge your EV at peak times e.g. mornings and evenings and/or you need to charge at a slower pace at other times of the day or night.

Overloaded: Greater demand for electricity than what can be safely transported through the grid can lead to blackouts. AusNet has an obligation to manage demand to ensure this doesn't happen.

BENEFIT 2: SOLAR – ASK ALL

Currently, most households and businesses with rooftop solar can feed the excess electricity they generate but don't use back into the grid and earn a payment for this. However, as more households and businesses install solar, grid upgrades will be required to continue sharing their unused solar with others. If a household/business is producing more solar than it uses (to run appliances, charge batteries etc), the extra electricity cannot be used by other customers if it doesn't go into the grid.

B2_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to allow all unused solar electricity into the grid? **(NUMERIC RESPONSE)**

B2_2. How much would your **<bill frequency> electricity bills** have to **decrease by** to accept any new solar systems being blocked from sending unused rooftop solar into the grid? In other words, how much of a discount on your bill would you expect? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

Most households and businesses with rooftop solar: The amount of solar fed into the grid depends on how much capacity the grid has to hold energy. This depends on a number of factors including demand and network quality in your area. Today, many households and small businesses can feed as much solar as they like into the grid, but some have limits, and a small number cannot feed any in.

Earn a payment for this: The minimum amount earned is set annually by state government. Currently it is set at 4.9c/kWh. Retailers may offer extra amounts on top of this.

Grid Upgrades: The electricity system was designed to take power in one direction, out from powerplants and into homes and businesses. The existing powerlines on streets can support some electricity flowing from homes and businesses, but as the limit is reached in more areas, network capacity and control systems need to be upgraded to ensure AusNet can safely manage energy flowing both ways and prevent power surges.

Full Example of Service Benefits

BENEFIT 3: WTP FOR IMPROVED RELIABILITY FOR WORST SERVED CUSTOMERS

Today, around 20,000 homes and businesses on the edge of the AusNet network and/or in heavily vegetated areas experience 11-20 hours without power per year (during 3-8 outages per year). This is 5 to 6 times above the network average of 2-3 hours without power per year (during 1-2 outages per year).

B3_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to improve electricity reliability for these households and businesses, so they experience a level of reliability closer to the network average? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

Network Average of 2-3 Hours: Note this average is calculated using unplanned outages only (i.e. when you are given no warning). It does not include planned (scheduled) outages.

BENEFIT 4: RELIABILITY

Currently, customers on our network experience on average 1- 2 unplanned outages per year. On average, these outages last for 1-2 hours.

B4_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to experience one less 1 hour-long unplanned outage per year? **(NUMERIC RESPONSE)**

B4_2. How much would your **<bill frequency> electricity bills** have to **decrease by** to accept an additional 1 hour-long unplanned outage a year? In other words, how much of a discount on your bill would you expect? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

On average these outages last for 1 – 2 hours: This average is calculated using unplanned outages only (i.e. when you are given no warning). It does not include planned (scheduled) outages.

BENEFIT 5: RESILIENCE

Sometimes, usually due to extreme weather events such as major storms, bushfires or floods, customers can lose power for over 24 hours. Last year, over 4,360 AusNet customers lost power for over 24 hours.

B5_1. How much would you be **willing to pay** on your **<bill frequency> electricity bills** to avoid one 24-hour outage per year? **(NUMERIC RESPONSE)**

B5_2. How much would your electricity **<bill frequency> electricity bills** have to **decrease by** to accept an additional 24-hour outage per year? In other words, how much of a discount on your bill would you expect? **(NUMERIC RESPONSE)**

HOVER OVER PROMPTS

Lose power for over 24 hours: If the power is out for this long, it is usually because there are widespread (many) outages, across the network, extreme damage to the network, or crews cannot access the network to undertake repairs. For example, across two major storms in June and October 2021, around 90,000 Victorian electricity distribution customers experienced outages of up to 36 hours.

Full Example of Service Benefits

SHOW A DOT POINT LIST OF EACH OF THE BENFITS SHOWN PER RESPONDENT

- **Allow flexible EV charging at all times**
- **Allow all unused solar electricity into the grid?**
- **Improve electricity reliability for households and businesses with the worst reliability / most time without electricity**
- **To experience one less 1 hour-long unplanned outage per year**
- **To avoid one 24-hour outage per year due to extreme weather**

T1. What is the **total amount you'd be willing to pay** on your **<bill frequency> electricity bills** to receive **all the benefits** you've been shown in this section? **(NUMERIC RESPONSE)**

Full Example of Contingent Valuation for Residential Reliability Base Case

CV1_1. Imagine you experience two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

THE ORIGINAL $/% IS DOUBLED IF YES IS SELECTED, HALVED IF NO IS SELECTED.

CV1_2. Continue to imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

(NUMERICAL RESPONSE)

CV1_3. Again, imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.
What is the **maximum increase in $** you would be willing to pay on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

ASK RESIDENTIAL DECISION MAKERS IF THE INPUT AT CV1_3 IS HIGHER THAN THE CAP FOR THEIR BILL FREQUENCY. (SINGLE RESPONSE).

CV1_4. Imagine a company would install a **backup power system** at **your home**. This system would readily provide electricity at your home for one hour if an outage occurs. The total cost of this system, including installation, would be **<$>** per **<bill frequency>.**

Would you get the company to **install the backup system at your home** at a cost of **<$>**?

Yes	1
No	2

ASK RESIDENTIAL DECISION MAKERS & ASK IF NO IS SELECTED AT CV1_4. (NUMERIC RESPONSE).

CV1_5. What is the **maximum $** you would be willing to pay per **<bill frequency>** for this system?

NOTE, THE DOLLAR FIGURE WILL CHANGE DEPENDING ON THE RESPONDENT'S BILL FREQUENCY.

Change to Bill	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	**$/monthly**	**$/bi-monthly**	**$/quarterly**
Residential	$4, $6, $8, $10, $12, $14, $16	$8, $12, $16, $20, $24, $28 $32	$12, $18, $24, $30, $36, $42, $48 $
Business	1% - 10%	1% - 10%	1% - 10%

Note, for business respondents, show % as a % of their bill from E4, E.G. If E4 = $1000 & 5% selected, display: 5% = $50 per <bill frequency>, if $500 & 4% selected, display: 4% ($20) per <bill frequency>

Cap	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	**$/monthly**	**$/bi-monthly**	**$/quarterly**
Residential	$40	$80	$120

Full Example of Contingent Valuation for Residential Resilience Base Case

CV2_1. Imagine you experience two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for 12 hours. Each one of these affects your local area. A community hub is available near to your area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

NOTE, THE ORIGINAL $/% IS DOUBLED IF YES IS SELECTED, HALVED IS NO IS SELECTED.

CV2_2. Continue to imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for 12 hours. Each one of these affects your local area. A community hub is available near to your area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

(NUMERICAL RESPONSE)

CV2_3. Again, imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for 12 hours. Each one of these affects your local area. A community hub is available near to your area.

What is the **maximum increase in $** you would be willing to pay on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

CV2_4. Imagine a company would install a **backup power system** at **your home**. This system would readily provide electricity at your home for 12 hours if an outage occurs. The total cost of this system, including installation, would be **<$>** per **<bill frequency>.**

Would you get the company to **install the backup system at your home** at a cost of **<$>**?

Yes	1
No	2

ASK RESIDENTIAL DECISION MAKERS & ASK IF NO IS SELECTED AT CV2_4. (NUMERIC RESPONSE).

CV2_5. What is the **maximum $** you would be willing to pay per **<bill frequency>** for this system?

Cap	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	**$/monthly**	**$/bi-monthly**	**$/quarterly**
Residential	$59	$118	$177

Full Example of Residential Reliability Choice Model

C1_1. Please indicate which of these three options you would prefer.
You can point your cursor on the definitions below for further information to help you answer.

Question 1 out of 8

	Option 1	Option 2	Option 3
Change to your bill	No change	$4 less per bill	$18 less per bill
Localised / Widespread	Localised	Localised	Widespread
Duration	1 hour	3 hours	1 hour
Frequency	*Twice a year*	*Twice a year*	*Twice a year*
Summer / Winter	Winter	Winter	Winter
Weekday / Weekend	Weekday	Weekday	Weekday
Time of day	Off-peak	Off-peak	Peak

RELIABILITY DEFINITIONS

Duration	The number of hours your home or business is without power.
Time of Day	**Peak time** occurs between 7-10 am and 5-8 pm every day. **Off-peak** means anytime except 7-10 am and 5-8 pm every day.
Localised / Widespread Outage	**Localised** means an electricity outage that is limited to homes and businesses in your street and surrounding streets. **Widespread** means your area and the surrounding areas.
Frequency	Is the number of outages each year.
Summer/Winter	Electricity is important all year round, but some people value it more at particular times of the year. **Summer** is December, January and February **Winter** is June, July and August
Weekday/Weekend	You may use more or less electricity on weekends compared to weekdays.
Change to Bill	To answer these questions, consider whether you would accept a less reliable electricity supply if you received a lower electricity bill. This may mean you would experience more severe electricity outages.

RELIABILITY CHOICE ATTRUBUTES AND LEVELS

Attributes	Levels
Outage Duration	1, 3, 6, 12 hours
Time of Day	Peak time (7 – 10 am, 5 – 8 pm) Off-peak (all other times)
Location	Localised, Widespread
Time of Week	Weekday, Weekend
Time of Year	Summer, Winter
Change to Bill	RESIDENTIAL: No change, $4, $8, $18 Note, these are monthly values. These values will change depending on the respondent's bill frequency. BUSINESS: No change, 1%, 2%, 3% Note, for business respondents, show % as a % of their bill from E4, E.G. If E4 = $1000 & 2% selected, display: 2% = $20 per <bill frequency>, if $500 & 1% selected, display: 1% ($5) per <bill frequency>,

Change to Bill	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	**$/monthly**	**$/bi-monthly**	**$/quarterly**
Residential	$4, $8, $18	$8, $16, $32	$12, $24, $54

Full Example of Residential Resilience Choice Model

C2_1. Please indicate which of these three options you would prefer.
You can point your cursor on the definitions below for further information to help you answer.

Question 1 out of 8

	Option 1	Option 2	Option 3
Change to your bill	No change	$21 less per bill	$36 less per bill
Localised / Widespread	Localised	Localised	Widespread
Duration	12 hours	24 hours	72 hours
Frequency	*Twice a year*	*Twice a year*	*Twice a year*
Summer / Winter	Winter	Winter	Winter
Weekday / Weekend	Weekday	Weekday	Weekday
Presence of Community Hub in your suburb	Yes	Yes	No

RESILIENCE DEFINITIONS

Duration	The number of hours your home or business is without power.
Presence of Community Hub in your suburb	During a major storm event impacting power supply, a **hub is established within or nearby a community building in your area** (or at an alternative, accessible location in close proximity to areas with disrupted supply), where you would be able to **access a range of services** during the power disruption, such as tea/coffee making facilities, hot water, lighting, seating, mobile reception, ability to charge your phone and power other devices.
Localised / Widespread Outage	**Localised** means an electricity outage that is limited to homes and businesses in your street and surrounding streets. **Widespread** means your area and the surrounding areas.
Frequency	Is the number of outages each year.
Summer/Winter	Electricity is important all year round, but some people value it more at particular times of the year. **Summer** is December, January and February **Winter** is June, July and August
Weekday/Weekend	You may use more or less electricity on weekends compared to weekdays.
Change to Bill	To answer these questions, consider whether you would accept a less reliable electricity supply if you received a lower electricity bill. This may mean you would experience more severe electricity outages.

RESILIENCE CHOICE ATTRUBUTES AND LEVELS

Attributes	Levels
Outage Duration	12, 24, 36, 72 hours
Presence of Community Hub in your suburb	Yes, No
Location	Localised, Widespread
Time of Week	Weekday, Weekend
Time of Year	Summer, Winter
Change to Bill	RESIDENTIAL: No change, $21, $26, $36 Note, these are monthly values. These values will change depending on the respondent's bill frequency. BUSINESS: No change, 4%, 5%, 6% Note, for business respondents, show % as a % of their bill from E4, E.G. If E4 = $1000 & 5% selected, display: 5% = $50 per <bill frequency>, if $500 & 4% selected, display: 4% ($20) per <bill frequency>,

Change to Bill	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	$/monthly	$/bi-monthly	$/quarterly
Residential	$21, $26, $36	$42, $52, $72	$63, $72, $108

Appendix
-VCR Calculations

Lewers

Contingent Valuation was used to determine customers' WTP for the base case for the Reliability and Resilience Choice Models, respectfully.

Example of Residential Reliability Base Case Contingent Valuation

CV1_1. Imagine you experience two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

THE ORIGINAL $/% IS DOUBLED IF YES IS SELECTED, HALVED IF NO IS SELECTED.
CV1_2. Continue to imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.

Would you be willing to pay an increase of **<$/%>** on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

Yes	1
No	2

(NUMERICAL RESPONSE)
CV1_3. Again, imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.
What is the **maximum increase in $** you would be willing to pay on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

ASK RESIDENTIAL DECISION MAKERS IF THE INPUT AT CV1_3 IS HIGHER THAN THE CAP FOR THEIR BILL FREQUENCY. (SINGLE RESPONSE).

CV1_4. Imagine a company would install a **backup power system** at **your home**. This system would readily provide electricity at your home for one hour if an outage occurs. The total cost of this system, including installation, would be **<$>** per **<bill frequency>.**

Would you get the company to **install the backup system at your home** at a cost of **<$>**?

Yes	1
No	2

ASK RESIDENTIAL DECISION MAKERS & ASK IF NO IS SELECTED AT CV1_4. (NUMERIC RESPONSE).
CV1_5. What is the **maximum $** you would be willing to pay per **<bill frequency>** for this system?

Source: Lewers Customer Values Research Report '24

Residential customers were shown a range of values, aligning with their bill frequency. Business customers were shown a range of values representing a proportion of their bill. Residential customers' final numeric figure was capped.

Example of Residential Reliability Base Case Contingent Valuation (cont'd)

NOTE, THE DOLLAR FIGURE WILL CHANGE DEPENDING ON THE RESPONDENT'S BILL FREQUENCY.

Change to Bill	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	$/monthly	$/bi-monthly	$/quarterly
Residential	$4, $6, $8, $10, $12, $14, $16	$8, $12, $16, $20, $24, $28 $32	$12, $18, $24, $30, $36, $42, $48 $
Business	1% - 10%	1% - 10%	1% - 10%

Note, for business respondents, show % as a % of their bill from E4, E.G. If E4 = $1000 & 5% selected, display: 5% = $50 per <bill frequency>, if $500 & 4% selected, display: 4% ($20) per <bill frequency>

Cap	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	$/monthly	$/bi-monthly	$/quarterly
Residential	$40	$80	$120

(NUMERICAL RESPONSE)

CV1_3. Again, imagine the same scenario – there are two unexpected electricity outages a year. It turns out that each unexpected outage occurs on a different random weekday in winter (Jun, Jul or Aug) and lasts for one hour in off-peak times (outside of 7-10 am and 5-8 pm). Each one of these affects your local area.
What is the **maximum increase in $** you would be willing to pay on your **<bill frequency> electricity bills** to avoid both electricity outages described in this scenario?

ASK RESIDENTIAL DECISION MAKERS IF THE INPUT AT CV1_3 IS HIGHER THAN THE CAP FOR THEIR BILL FREQUENCY. (SINGLE RESPONSE).

CV1_4. Imagine a company would install a **backup power system** at **your home**. This system would readily provide electricity at your home for one hour if an outage occurs. The total cost of this system, including installation, would be **<$>** per **<bill frequency>.**

Would you get the company to **install the backup system at your home** at a cost of **<$>**?

Yes	1
No	2

ASK RESIDENTIAL DECISION MAKERS & ASK IF NO IS SELECTED AT CV1_4. (NUMERIC RESPONSE).

CV1_5. What is the **maximum $** you would be willing to pay per **<bill frequency>** for this system?

Source: Lewers Customer Values Research Report '24

Choice Modelling was used to determine customers' utility for each attribute across the two models. Customers were shown 8 tasks representing different scenarios, framed with three discount to bill options.

Example of Residential Reliability Choice Model

C1_1. Please indicate which of these three options you would prefer.
You can point your cursor on the definitions below for further information to help you answer.

Question 1 out of 8

	Option 1	Option 2	Option 3
Change to your bill	No change	$4 less per bill	$18 less per bill
Localised / Widespread	Localised	Localised	Widespread
Duration	1 hour	3 hours	1 hour
Frequency	*Twice a year*	*Twice a year*	*Twice a year*
Summer / Winter	Winter	Winter	Winter
Weekday / Weekend	Weekday	Weekday	Weekday
Time of day	Off-peak	Off-peak	Peak

RELIABILITY CHOICE ATTRUBUTES AND LEVELS

Attributes	Levels
Outage Duration	1, 3, 6, 12 hours
Time of Day	Peak time (7 – 10 am, 5 – 8 pm) Off-peak (all other times)
Location	Localised, Widespread
Time of Week	Weekday, Weekend
Time of Year	Summer, Winter
Change to Bill	RESIDENTIAL: No change, $4, $8, $18 Note, these are monthly values. These values will change depending on the respondent's bill frequency. BUSINESS: No change, 1%, 2%, 3% Note, for business respondents, show % as a % of their bill from E4, E.G. If E4 = $1000 & 2% selected, display: 2% = $20 per <bill frequency>, if $500 & 1% selected, display: 1% ($5) per <bill frequency>,

Change to Bill	Monthly	Bi-monthly (every 2 months)	Quarterly (every 3 months)
Display As	$/monthly	$/bi-monthly	$/quarterly
Residential	$4, $8, $18	$8, $16, $32	$12, $24, $54

Source: Lewers Customer Values Research Report '24