SA Power Networks

Supporting document 0.16

Newgate Research Community attitudes toward Solar

2020-2025 Regulatory Proposal

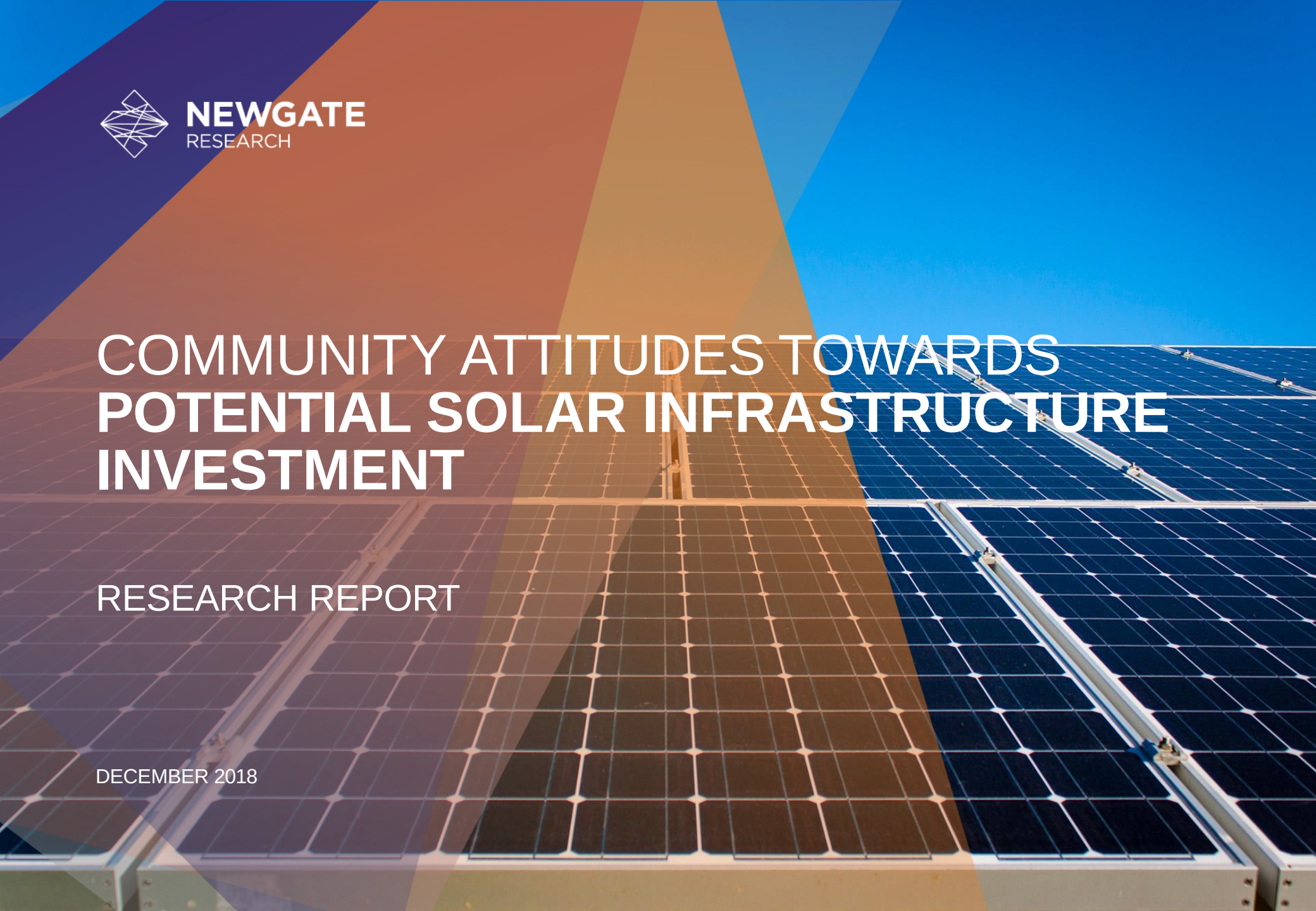
December 2018

NEWGATE RESEARCH

COMMUNITY ATTITUDES TOWARDS **POTENTIAL SOLAR INFRASTRUCTURE INVESTMENT**

RESEARCH REPORT

DECEMBER 2018



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DISCLAIMER

In preparing this report we have presented and interpreted information that we believe to be relevant for completing the agreed task in a professional manner and we have sought to ensure the accuracy of all the information incorporated into this report.

Where we have made assumptions as a part of interpreting the data in this report, we have sought to make those assumptions clear. Similarly, we have sought to make clear where we are expressing our professional opinion rather than reporting findings. Please ensure that you take these assumptions into account when using this report as the basis for any decision-making.

For the quantitative research results, the base (number and type of respondents asked each question) and the actual survey questions are shown at the bottom of each page. Results may not always total 100% due to rounding errors.

This project was conducted in accordance with AS: ISO20252:2012 guidelines, to which Newgate Research is accredited.
Project reference number: NGR 18100066.

BESTPRACTICE CERTIFICATION MSRO ISO20252 MARKET, OPINION & SOCIAL RESEARCH

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Key findings

NEWGATE RESEARCH

EXECUTIVE SUMMARY

Research background, contextual attitudes and preferred upgrade options

Background and research purpose

This report presents the findings from a quantitative study to understand customer attitudes to potential options that SA Power Networks could implement to enable more solar in South Australia. Results are based on an online survey of n=1,004 residential customers across SA Power Networks' distribution area, with quotas set by location, age and gender to ensure a representative sample. The survey was conducted between the 27th of November and 5th of December 2018.

The main objective of the study was to evaluate the following three potential management options which were introduced to participants as follows:

1. A "**Comprehensive Upgrade**" in which the network is progressively upgraded with new infrastructure as sections of the network come under strain from increased solar.
2. A "**Dynamic Upgrade**" option in which a new system would be developed to monitor, predict and manage the flow of energy in the low-voltage distribution network – avoiding the need for extensive infrastructure upgrades.
3. A "**No Upgrade**" option which would involve routine maintenance only and no additional upgrade of the network for solar customers.

This survey builds on the results of previous qualitative customer consultation on these options. The results will be used by SA Power Networks to inform its 2020-2025 regulatory reset proposal to the Australian Energy Regulator.

Information about the challenges posed by increased solar penetration, about the three proposed options, and about the implications for customers' bills, was progressively and carefully built up during the survey to enable participants to provide informed responses to the questions. This included providing overall costs for the three options, predicted bill impacts for a range of customer segments, solar export implications for solar customers as well as impacts on the state's energy generation mix and CO2 emissions.

Contextual attitudes to solar investment

In broad terms, it was clear that customers support the transition to renewables and recognise the importance of SA Power Networks in enabling more household solar connections. In an initial contextual question, around three quarters (76%) felt positively about "SA Power Networks spending money on its network to enable more solar in South Australia", with just 4% feeling negative and 20% feeling neither positive nor negative about it.

Preferred upgrade options

The Dynamic Upgrade option was clearly the most popular of the three options (54% selected it as their preferred option) and it was also the one that was considered most in the long-term interests of customers (by 48% of participants).

There was also moderate support for the Comprehensive Upgrade option with 33% selecting it as their preferred option and 40% believing it was most in the long-term interests of customers.

EXECUTIVE SUMMARY

Reasons for preferences of each potential option

Support for the No Upgrade option was limited with only 13% preferring it and only 12% believing it was most in the long-term interests of customers.

These preferences were consistent across all customer segments including those with and without solar, small, medium and large customers, as well as vulnerable customers.

Additional questions sought ratings for each option (out of 10) to gain an absolute measure of customer perspectives, in addition to the relative preferences described above. As shown in the table below, the Dynamic Upgrade option also scored most highly in relation to its alignment with long-term customer interests, fairness and the level of acceptability in proceeding with this option.

Average ratings (10 = completely, 0 = Not at all)	Long-term customer interests	Fairness	Acceptability of proceeding with this option
Dynamic upgrade	7.2	6.8	7.1
Comprehensive upgrade	6.4	6.0	6.1
No upgrade	2.9	3.7	3.4

Reasons for preferences

Reasons for customers preferring the Dynamic Upgrade option included the predicted cheaper long-term energy costs, the relatively modest bill impact, the fact that it will minimise carbon emissions and that extensive network upgrades will not be needed. Those who felt it was not in customers' long-term interests were mostly concerned about the cost being passed on to their bills, while some customers were skeptical about "the dynamic management" approach in general.

Those who thought the Comprehensive Upgrade was most in customers' long-term interests believed it was a necessary infrastructure upgrade and that, of the three options, it would do the most to encourage renewable energy, maximise solar export and reduce C02 emissions. However, the impacts on their own bill was by far the dominant reason why some customers considered this relatively expensive option to not be in the long-term interests of customers.

Those who preferred the No Upgrade option were typically skeptical of the need to invest any more in the network and, in several cases, had negative views about energy companies, which they held responsible for cost increases. They felt that electricity prices were already too high and were unwilling to pay for any additional upgrades. In contrast, the need to take some action to enable more solar, concerns about increased carbon pollution, and the prospect of solar wastage were key reasons why many felt it was not in customers' long-term interests.

EXECUTIVE SUMMARY

Solar uptake, barriers and concluding remarks

Solar uptake, intentions and barriers

The desire to enable additional solar energy is reflected in the relatively high uptake of new energy technology in South Australia. Around a third of participants (36%) already had solar PV panels installed and around half (48%) were considering or actively researching home battery storage (noting that only 3% currently had it).

The biggest barriers to getting solar (among those not researching or actively considering buying solar panels) were, in descending order of importance, that:

1. They rent, so it is not their decision (48% noted this);
2. The upfront costs are too expensive (32%);
3. The length of time it takes to realise any savings to cover the upfront costs (21%); and
4. A lack of knowledge (12%).

Conclusion

Newgate is confident that this research provides a sound evidence base to support SA Power Networks in pursuing the Dynamic Upgrade as the most acceptable option from the customer perspective. It was well ahead of the No Upgrade option which only a small minority preferred, and is seen as a more moderate approach than the Comprehensive Upgrade.

INTRODUCTION

Background, objectives and methodology

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BACKGROUND

The popularity of solar continues to grow, with the Australian Energy Market Operator (AEMO) reporting that on average six rooftop solar panels are being installed across the country every minute.

However, the electricity network has very real constraints around how much solar energy it can accommodate and there are now predictions that Australia could become the first country in the world to reach 'peak solar' – where the grid cannot handle the excess level of solar power generated, which would therefore be wasted.

This is an issue SA Power Networks is facing most squarely, with around a third of homes in South Australia already having rooftop solar installations.

SA Power Networks is interested in exploring whether customers are willing to pay for network upgrades that enable solar, and, if so, which specific options they prefer.

RESEARCH PURPOSE

The main objective of the study was to evaluate the following three potential management options:

1. **A "Comprehensive Upgrade"** in which the network is progressively upgraded with new infrastructure as sections of the network come under strain from increased solar.
2. **A "Dynamic Upgrade"** option in which a new system would be developed to monitor, predict and manage the flow of energy in the low-voltage distribution network – avoiding the need for extensive infrastructure upgrades.
3. **A "No Upgrade"** option which involved routine maintenance only and no additional upgrade of the network for solar customers.

This report presents the results from a quantitative survey of residential customers to evaluate these options in relation to their perceived fairness, acceptability and alignment with customer's long-term interest.

The survey builds on the results of previous qualitative customer consultation on these options and results will be used by SA Power Networks to inform its 2020-2025 regulatory reset proposal to the AER.

SURVEY METHODOLOGY

The fieldwork for this study involved a 20-minute online survey with n=1,004 residential customers. An online methodology is ideal for a complex quantitative study such as this as it allows participants to read information and consider options at their own pace.

The sample was representative of SA Power Networks' customers which we defined as those who are responsible for paying electricity bills or choosing electricity providers.

Quotas were set to ensure the sample was representative of electricity decision makers in terms of age, gender and location. These quotas were based on a profiling of South Australian electricity makers conducted by Newgate Research for the Australian Energy Market Commission in 2017 as part of its retail competition review and ABS Census data.

The sample size of n=1,004 has a maximum error margin of +/- 3.1% at the 95% confidence level. Higher error margins may apply to sub-samples, as noted at right and in the appendix, which presents additional information on the sample.

Fieldwork was conducted online by quality accredited panel provider CanvasU between the 27th of November and 5th of December 2018.

Results are presented as percentages, these may not total 100% due to rounding, if the question allowed for multiple choices, or where the chart / table displays the main responses rather than all response categories. The questionnaire is presented as an appendix to this report.

SAMPLE COMPOSITION

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Sample achieved	Metro (n)	Regional (n)	Total (n)	Margin of error
Male	392	77	469	+/- 4.5%
Female	430	105	535	+/- 4.2%
18-34	222	41	263	+/- 6.0%
35-54	287	49	336	+/- 5.3%
55+	313	92	405	+/- 4.9%
TOTAL	822	182	1004	+/- 3.1%

CUSTOMER SEGMENTATION

Research results were typically analysed at an overall level and amongst the following key customer segments.

Solar uptake:

- Those who have rooftop PV solar
- Those who are considering solar
- Those who do not have solar

Customer bill size (with quarterly total bills as follows)

- Small = $0 - $349
- Medium = $350 - $699
- Large = $700+

Note that small customers were skewed towards those with solar as this variable was determined from their retail bill size, which is also influenced by the solar feed in tariff for solar customers. Further sample details and survey results from customer sizes with and without solar are presented in the appendix.

Vulnerable customers

To define vulnerable customers we used several variables that take into account self-reported financial hardship, objective metrics of financial vulnerability, and potential risk factors. Around one in five of the sample (22%) qualified for our definition of 'vulnerable customers' as shown on the right.

To be considered "vulnerable" participants indicated they are "Having a lot of difficulty paying bills and covering basic living expenses"

OR

- Are a single parent of a child aged under 18
- Receive the disability pension
- Receive the aged pension
- Have missed or been late in paying electricity bills in the last 12 months
- Speak a language other than English at home
- Identify as Aboriginal or Torres Strait Islander

AND

Describe the current financial situation of themselves and their immediate family they live with as:

- Doing ok and making ends meet; or
- Having some difficulty but just making ends meet

AND

- Have a household income from all sources before tax of less than $40,000.

INFORMATION PROVIDED AND RESULTS FROM CONTEXTUAL QUESTIONS

Overview of the staged approach to build participant's capacity to understand the potential options and their implications

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INTRODUCING THE SURVEY TO PARTICIPANTS

The survey introduction outlined the purpose of the study and how results would be used by SA Power Networks

The structure of the survey questionnaire was carefully designed to progressively build participants' understanding of the relevant issues, options, and implications of their choices.

The text on the right is from the first screen presented to survey participants. As shown, we:

1. Identified who the survey was being conducted for;
2. Introduced the broad topic area;
3. Emphasised the fact that the results will inform future service delivery and customer bills;
4. Emphasised the importance of them carefully considering the detailed information to follow; and
5. Recommended that they conduct the survey on a device with a larger screen (note that we also extensively tested the functionality on mobile devices to maximise the usability in that format).

This survey is being conducted for a company called SA Power Networks.

It will focus on options for how SA Power Networks could continue to support the increase in rooftop solar connections, home batteries and other technologies that many South Australian customers are using.

The results from this important survey (in combination with other information) will inform how SA Power Networks delivers its services and it will also influence all customer's electricity bills.

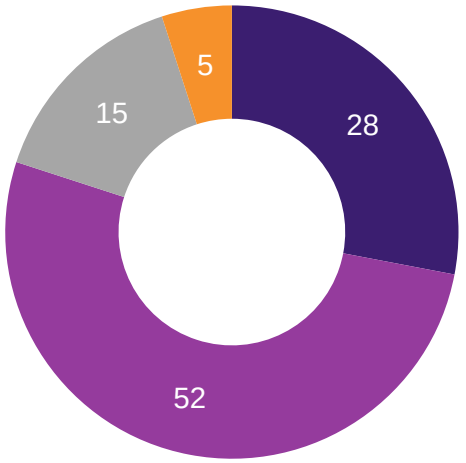
Unlike some other surveys we will show you a lot of detailed information about the future of the electricity network and you will need to read this information carefully, so you can meaningfully respond to the questions.

If you are viewing this survey on a mobile phone, we also strongly suggest that you exit now and restart the survey on a tablet or another device with a larger screen.
Otherwise, for some questions it may be useful for you to rotate your phone sideways to make it easier to answer some of the questions.

AWARENESS AND KNOWLEDGE OF SA POWER NETWORKS

Most participants were aware of SA Power Networks and had at least a basic understanding of what it does. All were subsequently informed of its role in the supply chain, the extent of network charges on their bills, and that prices are regulated by the AER

Unprompted awareness and knowledge of SA Power Networks (%)



After indicating their current level of knowledge, participants were then provided with the following information about SA Power Networks:

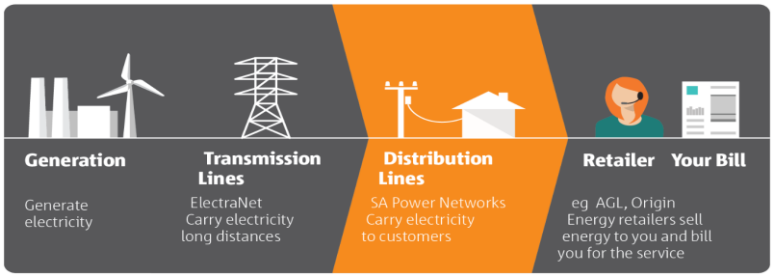
SA Power Networks is the electricity distribution company that connects and distributes electricity to and from homes and businesses in South Australia.

It owns, operates and maintains the electricity distribution network comprising local electricity poles, wires and substations, and repairs the network when there is a power outage.

The services SA Power Networks provides make up around 26% of customers' electricity bills (around $125 quarterly for an average household), although this cost is not usually shown separately on your bill.

The amount of money SA Power Networks bills consumers for running the network is set by the Australian Government's regulator (The Australian Energy Regulator) every 5 years.

The following figure shows where SA Power Networks fits within the 'electricity supply chain'.



Q1. To start, we would like to know how much you know about SA Power Networks and what it does?

Base: All respondents n=1,004

INFORMING PARTICIPANTS OF THE CONSULTATION TOPIC

Participants were provided with the following information on issues related to increased solar uptake and were informed that they would be consulted on three potential options to support the increase in solar energy, as follows:

You may be aware that over 30% of South Australian households have rooftop solar panels and that this percentage is continuing to grow.

The increase in home solar brings many benefits, by reducing customers' bills and reducing carbon pollution, but it also ***brings challenges for South Australia's electricity network****.*

In simple terms, the electricity network was originally designed to transport electricity only in one direction, from large generation plants to homes and businesses.

This has changed because customers with solar are now able to export their excess electricity back into the network.

However, as more and more people export their solar energy, it can increase the voltage in parts of the network that were not designed to handle it. This can cause:

- *Flickering lights or even damage to appliances.*
- *Rooftop solar systems shutting down.*
- *Local power outages or blackouts (if left unaddressed).*

SA Power Networks currently investigates and fixes these issues as they arise, but as they increase, it needs to consider the best approach to managing this in the future.

Next, we will ask your opinion of three options that SA Power Networks could take to support the increase in solar energy in South Australia.

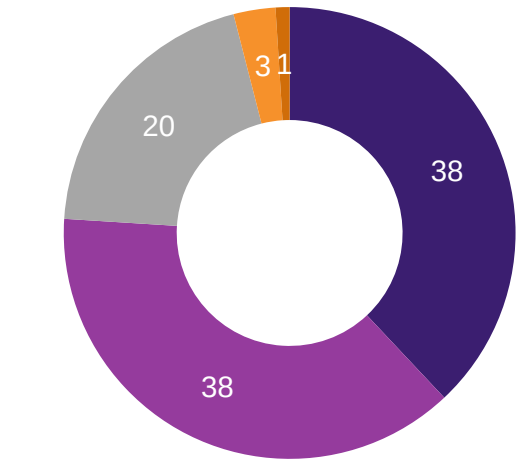
It is important to note that:

1. *These options affect how much SA Power Networks will spend in the 5-year period from 2020 to 2025.*
2. *These options are not intended to impact average reliability service levels to customers (i.e. the number of outages all customers experience on average).*
3. *They will be paid for by all customers (via their electricity bills).*
4. *The topic of solar connections is just one part of SA Power Networks' plans for 2020-2025.* ***Even though these "solar options" cost money there will still be an overall reduction in SA Power Networks' charges to customers due to other efficiency measures.*** *But, the extent of this reduction, (around $37 per year for an average customer) will depend on which "solar option" is chosen.*

GAUGING BROAD OPINIONS OF SA POWER NETWORKS POTENTIALLY SPENDING MONEY TO ENABLE MORE SOLAR

The large majority of customers (76%) felt positively about SA Power Networks spending money on its network to enable more solar in South Australia

Responses to SA Power Networks spending money to enable more solar (%)



Before presenting detailed options, we asked participants how they felt about SA Power Networks spending money on its network to enable more solar in South Australia. As shown on the left, most customers felt positively about this broad proposition although there were some slight differences amongst customer segments as noted below.

Customer segments more likely to be positive (% positive)
Financial situation as “doing well and feeling comfortable” (88%)
18 to 34 years old (84%)
Have a mortgage (82%) compared to full owners (70%) and renters (76%)
Already have solar (81%) compared to (74%) who don’t

Customer segments less likely to be positive (% negative or neutral)
Have issues paying bills and covering basic living expenses (36% compared to 12% who are feeling comfortable about their financial situation)
Own their home outright (30%) compared to 18% who have a mortgage
Aged 55+ (29%)
Don’t already have solar (26%) compared to 19% who have solar

Q2. We will shortly get your opinion on a range of specific options, but overall, how do you feel about SA Power Networks spending money on its network to enable more solar in South Australia? Base: All respondents n=1,004

INTRODUCING PARTICIPANTS TO THE THREE POTENTIAL OPTIONS

Participants were initially introduced to the three potential options via the following summary table. This provided context for subsequent detailed information about the options and ensured they increased their understanding of the alternatives in a staged way. The order in which they were presented was also randomised to ensure there was no order bias.

 "Comprehensive" upgrade	 "Dynamic" upgrade	 No upgrade
This option would involve a comprehensive upgrade of the distribution network. As sections of the network come under strain (from increased solar) they would be progressively upgraded with new infrastructure (transformers, poles and wires) that can handle more solar generation. Both existing and new solar customers would continue to be able to export solar energy and this will reduce carbon pollution. However, this is the highest cost option, and the costs to all customers would continue to increase in the future as more and more people install solar.	With this option, a new system would be developed to monitor and manage the flow of energy in the distribution network. New solar customers would be able to export solar energy 97% of the time, although their export would be limited by the system on rare occasions when voltages become too high. There will be no change for existing solar customers. This "dynamic management" would mean that extensive infrastructure upgrades are not needed and that carbon pollution is still reduced. This is a mid-priced option with network costs that would remain relatively stable in the long-term as more and more people install solar.	This option would involve ongoing maintenance, but no upgrade of the network to enable solar export for customers. New solar customers would be prevented from exporting any solar energy if they live in areas where the network can't handle the higher amount of electricity on the network. There will be no change for existing solar customers. This "wasted" solar energy would mean more reliance on gas and coal generation and more carbon emissions than other options. The network costs would be the lowest of the three options although generation costs are predicted to be higher (due to greater reliance on gas and coal generation).

CONTEXTUALISING COST IMPLICATIONS OF EACH OPTION

An overview of the energy usage profiles for residential households was shown to participants to help them understand the implications for their own situation

As noted in the survey *"We will now show you some more detailed information about these same potential options including predicted bill impacts for the following types of typical customers. You may wish to have a look at a recent electricity bill to see which energy usage is closest to your household's – your average daily kilowatt (kWh) usage is usually on the back of your bill. Please review this information carefully before proceeding."*

	Household characteristics	Daily average energy use	Typical quarterly electricity bill
Small households		8 kWh	$340
Medium households		13 kWh	$480
Large households		20 kWh	$710
Very large customer		30 kWh	$1030
Typical solar customer		13kWh	$480

FURTHER COST IMPLICATIONS AND OTHER IMPORTANT DETAILS THAT WERE SUBSEQUENTLY PROVIDED TO PARTICIPANTS

	"Comprehensive" upgrade	"Dynamic" upgrade	No upgrade
The type of network upgrade being proposed?	A comprehensive upgrade of the network. As sections of the network come under strain (from increased solar) they would be progressively upgraded with new infrastructure that can handle more solar generation.	A new system would be developed to monitor, predict and manage the flow of energy in the low-voltage distribution network. This "dynamic management" would mean that extensive infrastructure upgrades are not needed to resolve this issue.	No additional upgrade of the network for solar customers – routine maintenance only.
How and when solar customers will be able to export energy?	Both existing and new solar customers would continue to be able to export as much solar energy as they want to (up to 5 kW).	There will be no change for existing solar customers. New solar customers would be able to export solar energy 97% of the time, although their export level would be limited on rare occasions when voltages rise too high. These new customers may also be able to export higher levels of energy than the current 5kW limit at times when the system can handle it.	There will be no change for existing solar customers. Increasingly, new solar customers will be prevented from exporting any solar energy at all if they live in areas where the network can't handle the amount of electricity.
What it means for energy generation in South Australia and carbon emissions?	Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.	Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.	Wasted solar energy will mean a greater reliance on other forms of generation (such as gas, coal or wind) and will result in an estimated 1.2 million tonnes of extra carbon pollution over the next 15 years.
Cost of the proposed network upgrade/option.	$119 million (over 5 years) (equivalent to $7.00 per year for an average customer).	$37 million (over 5 years) (equivalent to $2.20 per year for an average customer).	No additional cost.
Cost of the proposed network upgrade/option for typical Small, Medium, Large, Very large and Solar residential customers (per year) over 5 years from 2020.	Small = +$4.30, Medium = +$7.00, Large = +$10.80, Very Large = +$16.30, Solar = +$7.00	Small = + $1.40, Medium = +$2.20, Large = +$3.40, Very Large = $5.10, Solar = +$2.20	$0
What it means for the cost of electricity generation in South Australia and long-term energy prices?	Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $104m over 15 years. SA Power Networks' modelling predicts that this will lead to the most expensive long-term energy (of the 3 options) for South Australia (when all factors are considered).	Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $84m over 15 years. which will flow through to lower energy bills for all customers SA Power Networks' modelling predicts that this will lead to the cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).	Additional gas generation (needed to replace wasted solar energy) means that generation savings will not be made. SA Power Networks' modelling predicts that this will lead to the second cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).

** These options were randomised when presented to survey respondents to control for ordering effects*

PERCEPTIONS OF THE THREE POTENTIAL OPTIONS

Long-term customer interest, fairness and acceptability of each option

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PERCEIVED LONG-TERM CUSTOMER INTEREST OF THE OPTIONS

The Dynamic Upgrade option was seen as being most in the long-term interests of customers

Average rating (out of 10)	All customers	Have Solar	Don't have solar	Considering solar	Small customer	Medium customer	Large customer	Vulnerable
Dynamic	**7.2**	7.5	7.0	7.1	7.1	7.4	6.7	6.8
Comprehensive	**6.4**	6.5	6.3	6.8	6.5	6.4	6.0	5.9
No upgrade	**2.9**	2.4	3.2	3.3	3.0	3.0	2.8	3.0

Participants rated each option on an 11-point scale where 10 represented it being "completely in the long-term interests of customers" and 0 represented it being "not in the long-term interests of customers at all".

As shown above, the Dynamic Option was rated most highly with an average rating of 7.2 out of 10. Amongst all customers: 53% rated it from 8-10, 22% rated it from 6-7, 12% rated it 5, 6% rated it from 3-4 and 6% rated it from 0-2. These results are charted in Appendix 1.

Results were broadly consistent across all customer segments, with solar customers rating it most highly of all (at 7.5 out of 10).

Ratings were significantly higher than for the Comprehensive Option (6.4 on average) and much higher than the No Upgrade option (2.9).

Q3. To what extent do you think these options are in the long-term interests of SA Power Networks' customers?

Base: All respondents n=1,004

PERCEIVED FAIRNESS OF EACH OPTION

The Dynamic Upgrade option was also rated as the fairest of the three options

Average rating (out of 10)	All customers	Have Solar	Don't have solar	Considering solar	Small customer	Medium customer	Large customer	Vulnerable
Dynamic	**6.8**	7.1	6.7	7.0	6.8	7.1	6.3	6.3
Comprehensive	**6.0**	6.0	5.9	6.4	6.0	6.0	5.7	5.3
No upgrade	**3.7**	3.2	4.1	4.0	3.8	3.6	3.8	3.6

Participants rated each option on an 11-point scale where 10 represented "completely fair" and 0 represented "not fair at all".

As shown above, the Dynamic Option was rated most highly with an overall rating of 6.8 out of 10. Amongst all customers: 47% rated it from 8-10, 24% rated it from 6-7, 15% rated it 5, 6% rated it from 3-4 and 8% rated it from 0-2.

Results were broadly consistent across all customer segments.

Q4. To what extent do you think these options are fair?

Base: All respondents n=1,004

PERCEIVED ACCEPTABILITY OF EACH OPTION

The Dynamic Option was acceptable to most customers, while the Comprehensive Option had lower acceptability and the No Upgrade option was unacceptable to most

Average rating (out of 10)	All customers	Have Solar	Don't have solar (NET)	Considering solar (NET)	Small customer	Medium customer	Large customer	Vulnerable
Dynamic	**7.1**	7.4	6.9	7.2	7.1	7.2	6.8	6.6
Comprehensive	**6.1**	6.2	6.1	6.6	6.2	6.1	5.9	5.6
No upgrade	**3.4**	2.7	3.7	3.7	3.4	3.2	3.7	3.5

Participants rated each option on an 11-point scale where 10 represented "completely acceptable" and 0 represented "completely unacceptable".

The Dynamic Option was again rated most highly, with an overall rating of 7.1 out of 10. Amongst all customers: 53% rated it from 8-10, 21% rated it from 6-7, 14% rated it 5, 5% rated it from 3-4 and 8% rated it from 0-2.

Results were broadly consistent across all customer segments, with solar customers rating its most highly of all.

Q5. And, how acceptable would it be to you if SA Power Networks goes ahead with any of these options for 2020 to 2025?

Base: All respondents n=1,004

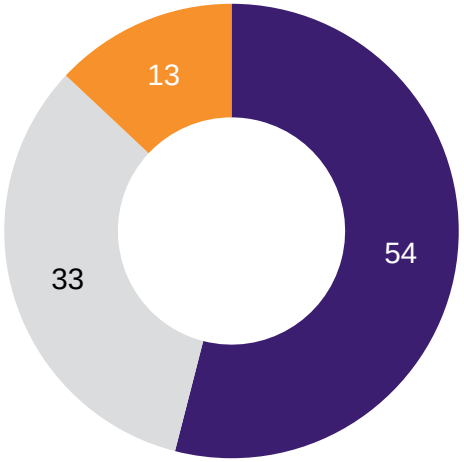
PREFERRED OPTION FOR SA POWER NETWORKS TO IMPLEMENT

Over half (54%) prefer SA Power Networks to proceed with the Dynamic Upgrade, which was also the most commonly selected as most in the long-term interest of customers

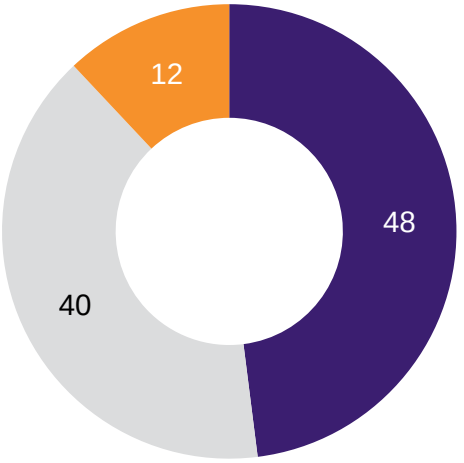
After rating each option, participants were then asked to select which one they preferred most and which one they felt was most in the "long-term interests of customers". We did this to confirm previous findings and because selection exercises such as this typically give greater discrimination between options than "rating-style" questions alone.

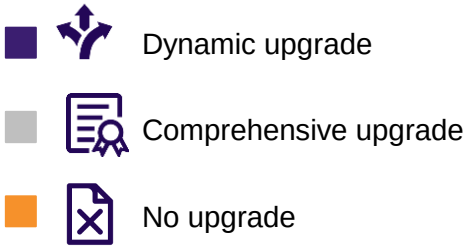
While the Dynamic Option was preferred by the largest proportion of customers on both counts it is interesting that a similarly large proportion felt that the Comprehensive Option would be in customers' greatest long-term interests. Reflecting some of the qualitative views heard earlier in SA Power Networks' engagement program and in the evaluative and open-ended questions in this survey (see subsequent sections), this is due to perceptions that it is an infrastructure upgrade which would be more robust in accommodating ongoing increases in solar over the long-term.

Most preferred option
(% selecting each as their top option)



Most in customers long-term interests
(% selecting each as their top option)

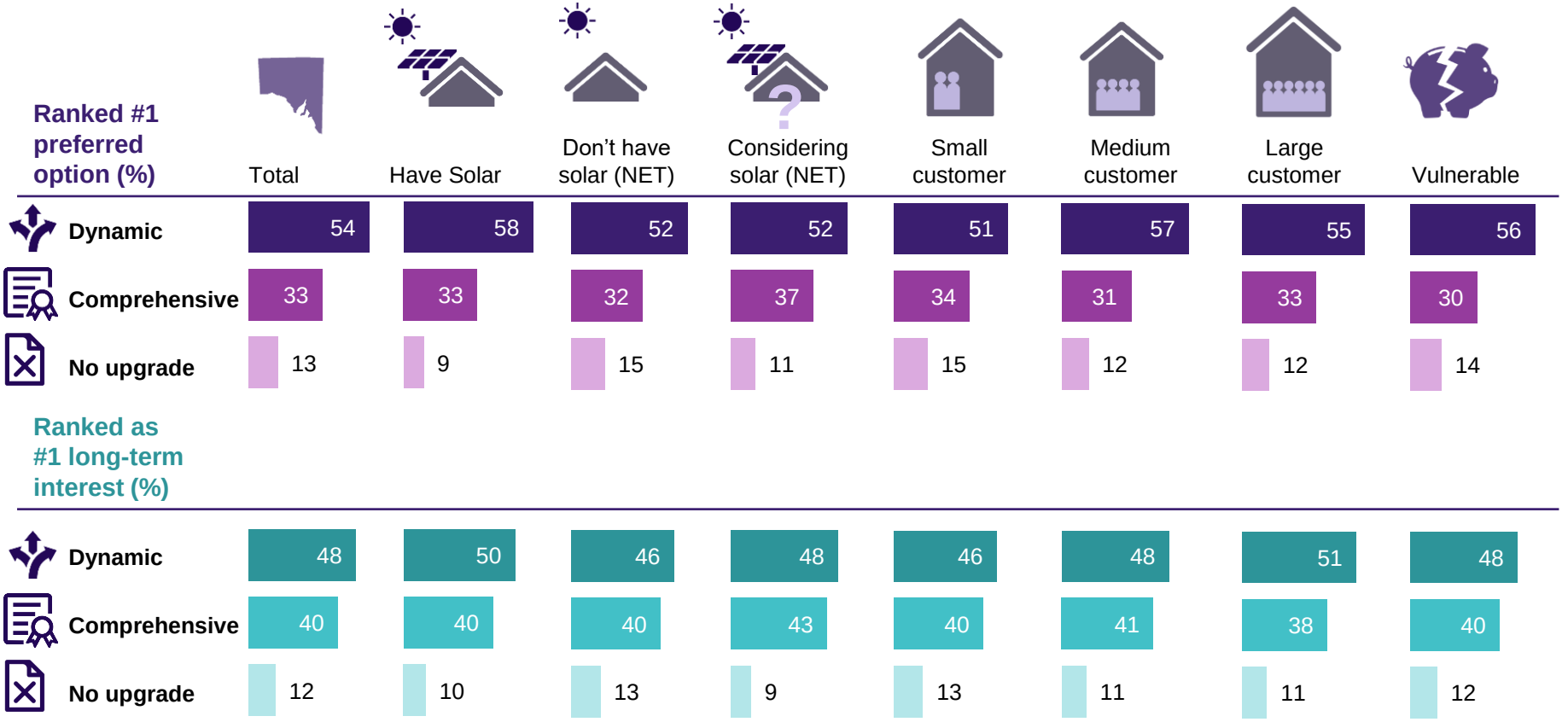




Q6. We would now like you to rank these options from 1 to 3 where: 1 is the option you personally most prefer SA Power Networks to go ahead with for 2020-2025; 2 is your second preferred option for SA Power Networks to go ahead with; 3 is the option you least prefer SA Power Networks to go ahead with for 2020 to 2025. / Q7. Please also rank these options from 1 to 3 where: 1 is the option you think is most in the long-term interests of customers; 2 is the option you think is second most in the long-term interests of customers; 3 is the option you think is least in the long-term interests of customers. Base: All respondents n=1,004

PREFERENCES BY KEY CUSTOMER SEGMENTS

The Dynamic Upgrade option was ranked as both the most preferred, and as most in the long-term interests of customers across all customer segments



Q6. We would now like you to rank these options from 1 to 3 where: 1 is the option you personally most prefer SA Power Networks to go ahead with for 2020-2025; 2 is your second preferred option for SA Power Networks to go ahead with; 3 is the option you least prefer SA Power Networks to go ahead with for 2020 to 2025. / Q7. Please also rank these options from 1 to 3 where: 1 is the option you think is most in the long-term interests of customers; 2 is the option you think is second most in the long-term interests of customers; 3 is the option you think is least in the long-term interests of customers. Base: All respondents n=1,004

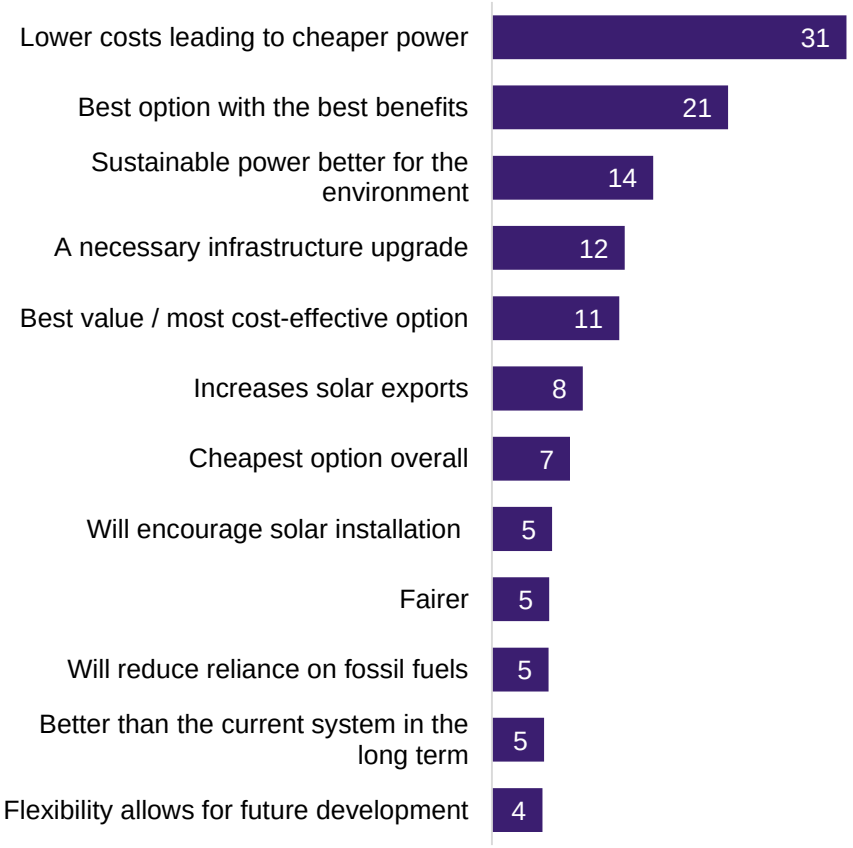
REASONS FOR CUSTOMER PREFERENCES

NEWGATE RESEARCH

POSITIVES ASSOCIATED WITH THE DYNAMIC UPGRADE

Predictions for cheaper overall power costs and environmental benefits were amongst the reason participants felt it was most in customer's long-term interests

Top reasons for positive opinions - unprompted (% mentioning each reason)



Participants who felt that the Dynamic Upgrade Option was most in the long-term interests of customers were asked to give a reason for their choice, in their own words. Their responses were coded into themes and are presented on this chart.

They were also asked to select the specific aspects of the Dynamic Option that were most appealing. The most commonly selected items were:

1. The cost to customers (which was presumably considered reasonable); and that
2. SA Power Networks' modelling predicts that this will lead to the cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered);
3. Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions; and
4. This "dynamic management" would mean that extensive infrastructure upgrades are not needed to resolve this issue.

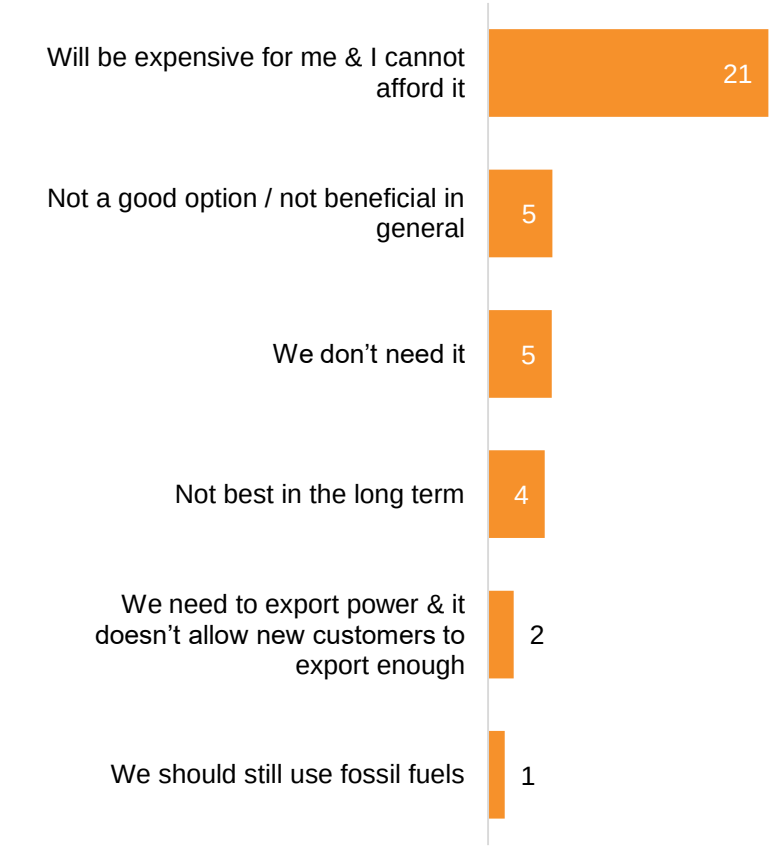
The full list of attributes and the proportion of customers who selected each one as appealing is presented in Appendix 1.

Q8. Why do you think that the Dynamic upgrade option is the option that is most in the long-term interests of customers? / Q9. Which aspects of the Dynamic upgrade option are most appealing to you? Base: n=482. Typed responses subsequently coded to measure response themes.

NEGATIVES ASSOCIATED WITH THE DYNAMIC UPGRADE

Cost concerns and uncertainty about the “dynamic management” approach were amongst reasons participants felt it was not in customer’s long-term interest

Top reasons for negative opinions - unprompted (% mentioning each reason)



The main reason cited by participants who felt the Dynamic Upgrade option was least in the long-term interests of customers was that it would be too expensive for them (21%), with several unwilling to pay more for a service they perceive to be already too expensive.

When asked to select aspects of the plan that were least appealing to these participants, they most commonly selected the specific price impacts on customer bills.

Others were sceptical of the “dynamic approach”, with other unappealing aspects of the plan including:

1. The development of a new system to monitor, predict and manage the flow of energy (29%); that
2. The “dynamic management” approach would mean extensive infrastructure upgrades are not needed (20%); and that
3. There would be no change for existing solar customers (20%), with a number of respondents questioning the fairness of this given solar installations are a key reason for the issue.

The full list of attributes and the proportion of customers who selected them as unappealing is presented in Appendix 1 of this report.

Q10. Now we’d like to know why you think that the Dynamic upgrade option is the option that is least in the long-term interests of customers? / Q11. Which aspects of the Dynamic upgrade option are least appealing to you? Base: n=97. Typed responses subsequently coded to measure response themes.

FEEDBACK ON THE DYNAMIC UPGRADE OPTION

In their words

"It is the most acceptable option as it is cheaper for the consumer, and extensive and expensive upgrades are not required."

Small customer, Doesn't have solar

"Simple. It is the most economically sound - it is the cheaper of the two options that require money to implement and will lead to the cheapest power solution. It also has a positive impact on the environment."

Medium customer, Doesn't have solar

"It won't cost an arm and a leg. The system will be more reliable. Everyone wins."

Small customer, Has solar

"Most cost effective and affordable without being a huge change."

Large customer, Doesn't have solar

"This option, while not the cheapest, would be most acceptable in price to most consumers in SA. The comprehensive upgrade will impact more households negatively."

Medium customer, Has solar

"I am willing to pay over a period of time to have the power network upgraded to cope with the influx of solar power generation. A comprehensive upgrade might be a little too much for a lot of customers, and to do nothing would be a real problem in the future."

Small customer, Has solar

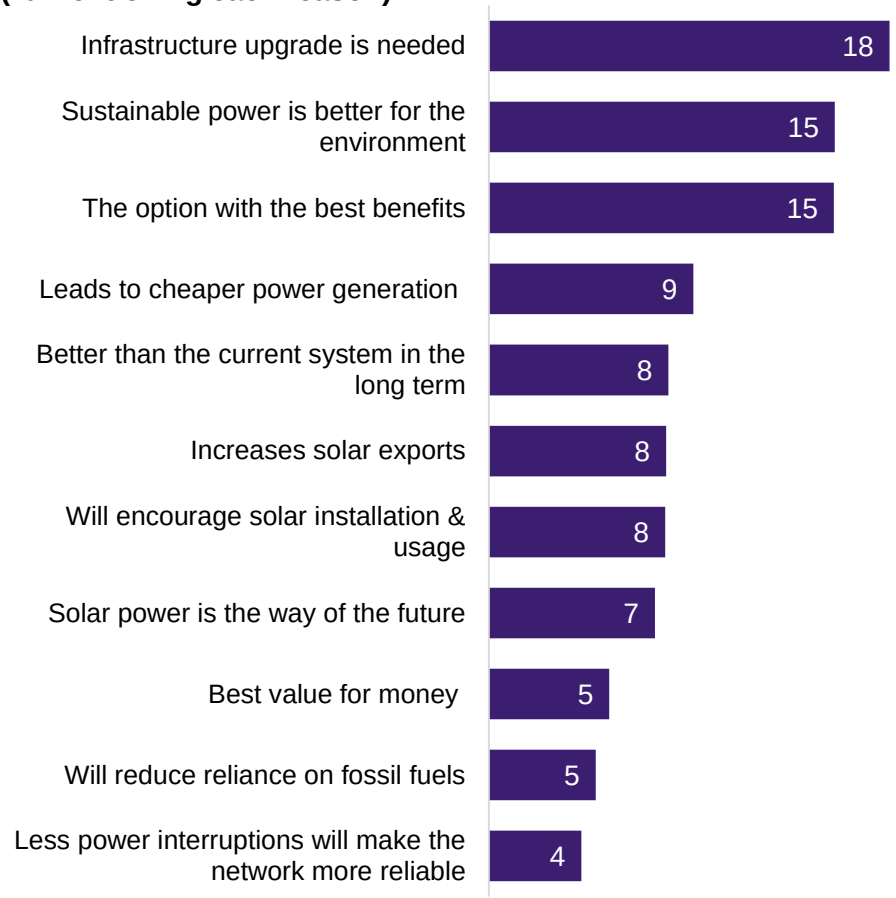
"There's no need for it. Development of batteries is a much better idea, it might even lead to cutting out electricity companies altogether."

Medium customer, Doesn't have solar

PERCEIVED POSITIVES OF THE COMPREHENSIVE UPGRADE

Those seeing the Comprehensive Upgrade as most in customers' long-term interests felt it was a necessary infrastructure upgrade with the best environmental outcomes

Top reasons for positive opinions - unprompted (% mentioning each reason)



The main reasons cited by participants who felt the Comprehensive Upgrade option was most in the long-term interests of customers were that the upgrade to network infrastructure is needed (18%) and that it is better for the environment (15%).

When asked to identify the specific elements of the Comprehensive Upgrade option that were most appealing, these respondents most commonly selected that:

1. Both existing and new solar customers would continue to be able to export as much solar energy as they want to (up to 5 kW);
2. Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $104m over 15 years;
3. Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions; and that
4. It will be a comprehensive upgrade of the network.

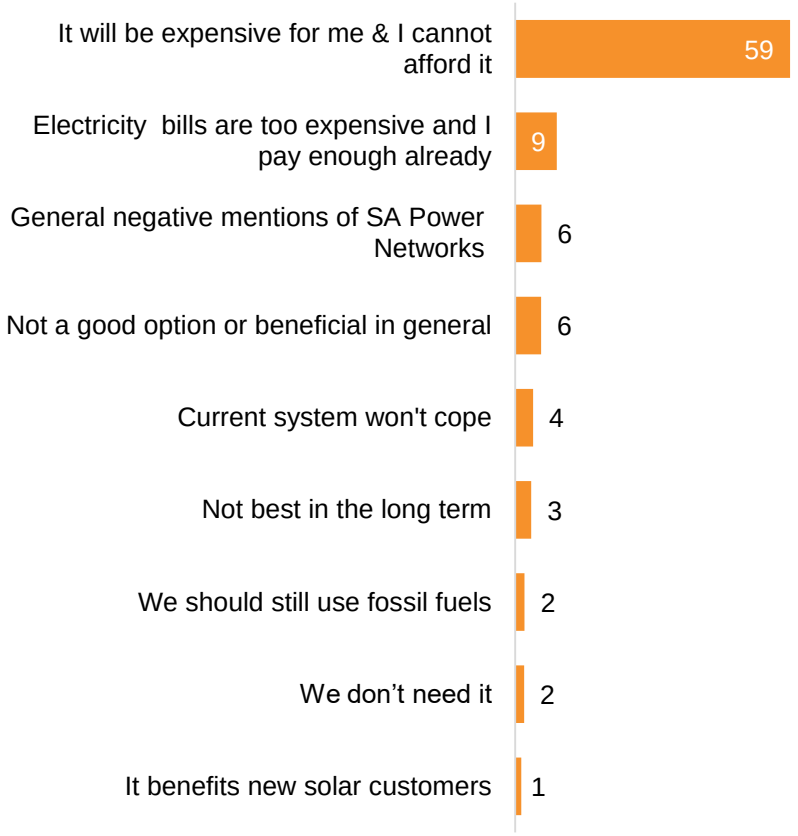
The full list of attributes and the proportion of customers who selected each one as appealing is presented in Appendix 1.

Q8. Why do you think that the Comprehensive upgrade option is the option that is most in the long-term interests of customers? / Q9. Which aspects of the Comprehensive upgrade option are most appealing to you? Base: n=403. Typed responses subsequently coded to measure response themes.

PERCEIVED NEGATIVES OF THE COMPREHENSIVE UPGRADE

Personal cost impacts were the dominant reason why the Comprehensive Upgrade was considered to be least in the long-term interests of customers

Top reasons for negative opinions – unprompted (% mentioning each reason)



Those who felt the Comprehensive Upgrade option was least in the long-term interests of customers were mostly concerned about how much it would cost, with most of them (59%) believing it would be too expensive.

The specific attributes of the plan which were least appealing included:

1. The estimated cost of $119m over 5 years (or $7.00 per year for an average customer);
2. The estimated annual costs for each customer type (i.e. Small, Medium, Large, Very Large and Solar); and that
3. SA Power Networks' modelling predicts that this will lead to the most expensive long-term energy (of the 3 options) for South Australia (when all factors are considered).

The full list of attributes and the proportion of customers who selected them as unappealing is presented in Appendix 1 of this report.

Q10. Now we'd like to know why you think that the Comprehensive upgrade option is the option that is least in the long-term interests of customers? / Q11. Which aspects of the Comprehensive upgrade option are least appealing to you? Base: n=155. Typed responses subsequently coded to measure response themes.

FEEDBACK ON THE COMPREHENSIVE UPGRADE MODEL

In their words

"Whilst being environmentally better it will hit the pockets of the consumer harder. Too expensive when we already pay too much. There'll only be a small benefit to new solar customers."

Medium customer, Doesn't have solar

"We should be decreasing costs for customers rather than increasing them. I don't trust that it will cost what they say it will, and most likely they will exceed the estimated budget, putting further strain on South Australians. We have other sources of energy like gas and coal which we should be utilising more. I don't have solar so this doesn't benefit me at all."

Small customer, Doesn't have solar

"Because we should focus on renewable energy for the future; meaning we should all try and get solar."

Large customer, Doesn't have solar

"We need to completely change our way of power use. This is the only long-term solution that addresses this."

Small customer, Has solar

"It'll cost more for now of course but the better infrastructure in time will reduce the cost of power bills and also make the electricity network more stable."

Large customer, Has solar

"I believe in doing a job once and doing it properly. Hopefully by comprehensive you actually mean that it will be to the advantage of the community down the track."

Medium customer, Doesn't have solar

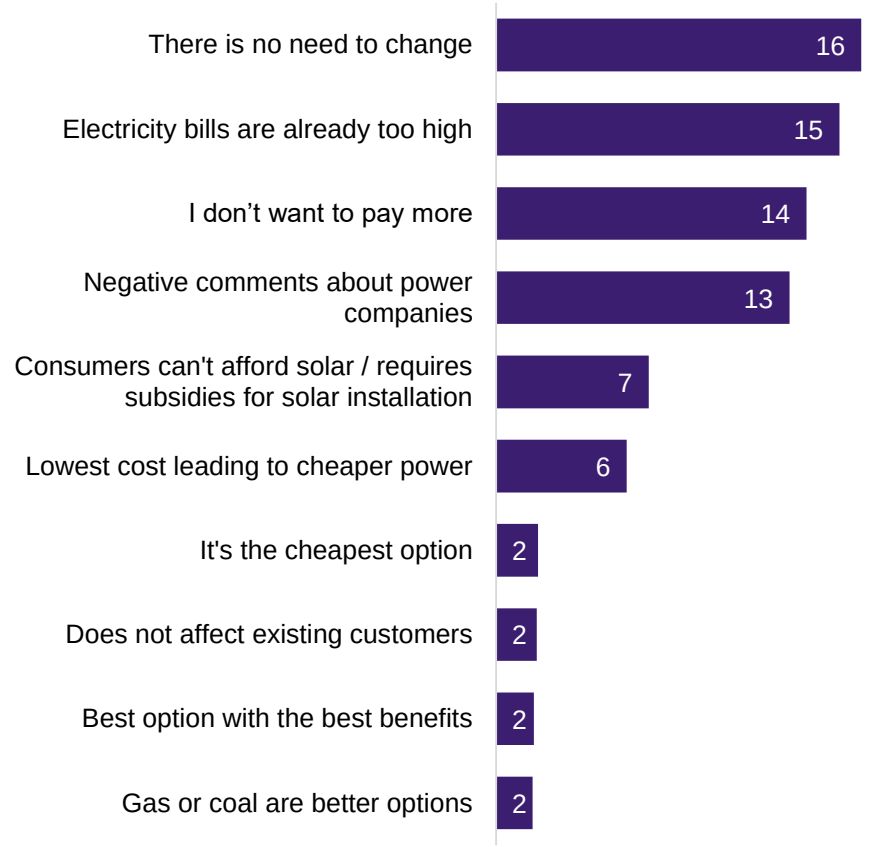
"It is the most expensive of the 3 options based on modelling, which is always uncertain with its assumptions. Also, the 5 KW limit upload concerns me."

Small customer, Has solar

PERCEIVED POSITIVES OF THE NO UPGRADE OPTION

Those who preferred No Upgrade to the network were typically sceptical of the need to invest more and felt that electricity prices were already too high

Top reasons for positive opinions – unprompted (% mentioning each reason)



Cost concerns, scepticism and dissatisfaction with power companies were amongst the main reasons for believing the No Upgrade option was most in the long-term interests of customers.

This was also reflected in the aspects of the option which were most appealing to these participants, including that:

1. The approach would involve no additional cost to customers or their bills;
2. That it would involve no additional upgrade of the network for solar customers, and just routine maintenance only; and
3. The fact that there would be no changes for existing solar customers.

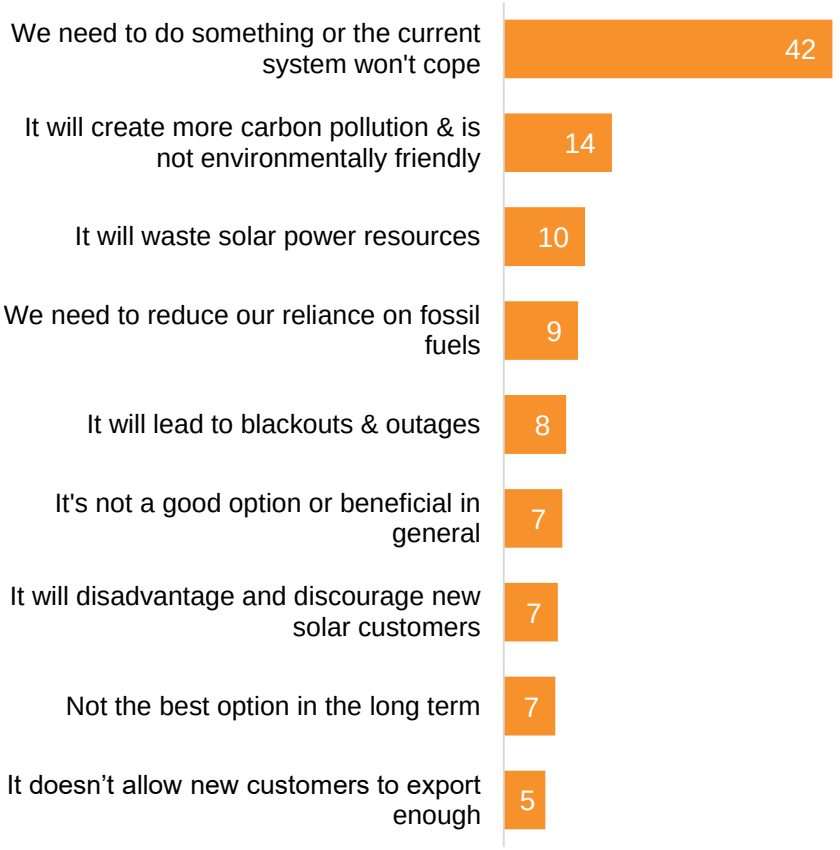
The full list of attributes and the proportion of customers who selected each one as appealing is presented in Appendix 1.

Q8. Why do you think that the "No upgrade" option is the option that is most in the long-term interests of customers? / Q9. Which aspects of the "No upgrade" option are most appealing to you? Base: n=118. Typed responses subsequently coded to measure response themes.

PERCEIVED NEGATIVES OF THE NO UPGRADE OPTION

The need to take some action and concerns about carbon pollution and solar wastage were key reasons why it was not considered to be in customers' long-term interests

Top reasons for negative opinions – unprompted (% mentioning each reason)



There was strong acknowledgement that something needs to be done to adress the issues facing the electricity network. Two in five (42%) of those who felt this option was the least in customers' long-term interests indicated without prompting that if something isn't done, the system won't cope with the growing demand for solar and energy in general.

Concerns about wasted energy and impacts on newer solar customers were also reflected in the following specific aspects of the No Upgrade option which were considered least appealing:

1. Wasted solar energy will mean a greater reliance on other forms of generation (such as gas, coal or wind) and will result in an estimated 1.2 million tonnes of extra carbon pollution over the next 15 years; that
2. Additional gas generation (needed to replace wasted solar energy) means that generation savings will not be made; and that
3. Increasingly, new solar customers will be prevented from exporting any solar energy at all if they live in areas where the network can't handle the amount of electricity.

The full list of attributes and the proportion of customers who selected them as unappealing is presented in Appendix 1.

Q10. Now we'd like to know why you think that the "No upgrade" option is the option that is least in the long-term interests of customers? / Q11. Which aspects of the "No upgrade" option are least appealing to you? Base: n=752. Typed responses subsequently coded to measure response themes.

FEEDBACK ON THE “NO UPGRADE” MODEL

In their words

“Increasing network costs will not have a positive effect on power prices and will in fact negate any decreases that are in the pipeline.”

Small customer, Has solar

“You can't continue with a system that can't handle the current load and we have an ever growing population that has an ever increasing demand for power.”

Medium customer, Has solar

“Because we should be focusing on energy savings for customers, rather than increasing bills. We should focus on coal and gas sources.”

Small customer, Doesn’t have solar

“No change means strain on current infrastructure and poor results for customers.”

Medium customer, Has solar

“Costs will only continue to rise by way of hidden costs if the "no upgrade" option is not adopted. I believe that another option is to trim costs in other areas prior to adopting the "Dynamic" upgrade if possible.”

Small customer, Has solar

“There is no additional cost to the customers. The State and Federal governments and solar energy customers should be the ones contributing to the costs.”

Medium customer, Doesn’t have solar

“No upgrade at all has a cost associated with it anyway through maintenance. It also could prevent or deter people from placing panels on their homes or businesses as there will be no option to export in some areas. Upgrades to other areas should also reduce maintenance costs.”

Medium customer, Has solar

ADOPTION OF NEW TECHNOLOGY AND CLOSING ADVICE TO SA POWER NETWORKS

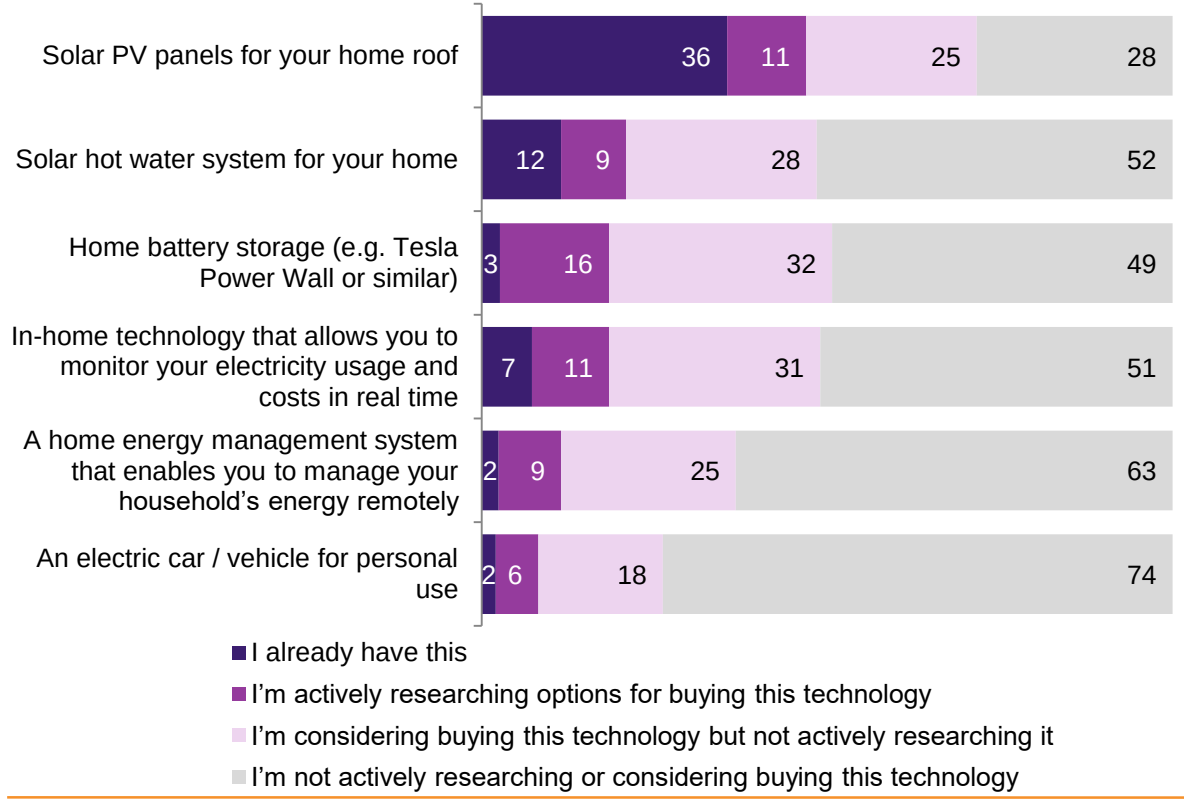
NEWGATE RESEARCH

OWNERSHIP AND CONSIDERATION OF NEW TECHNOLOGY

Around a third (36%) already have solar panels, another one in ten are actively looking into it, and 48% are considering or actively researching home battery storage

The growing trend towards new technologies and renewables is further evidence of why SAPN's increased investment in solar is so widely supported.

Consideration of electricity technologies (%)



Customer segments more likely to consider solar*
Own their home with a mortgage (75%)
Feel they're doing well and feeling comfortable (72%)
Have 3 or more people living in their household (69%)
Household income at least $60,000 pa (69%)
Working full-time (67%)
Aged 18 to 34 (64%) or 35 to 54 (63%)
Adelaide customers (58%)

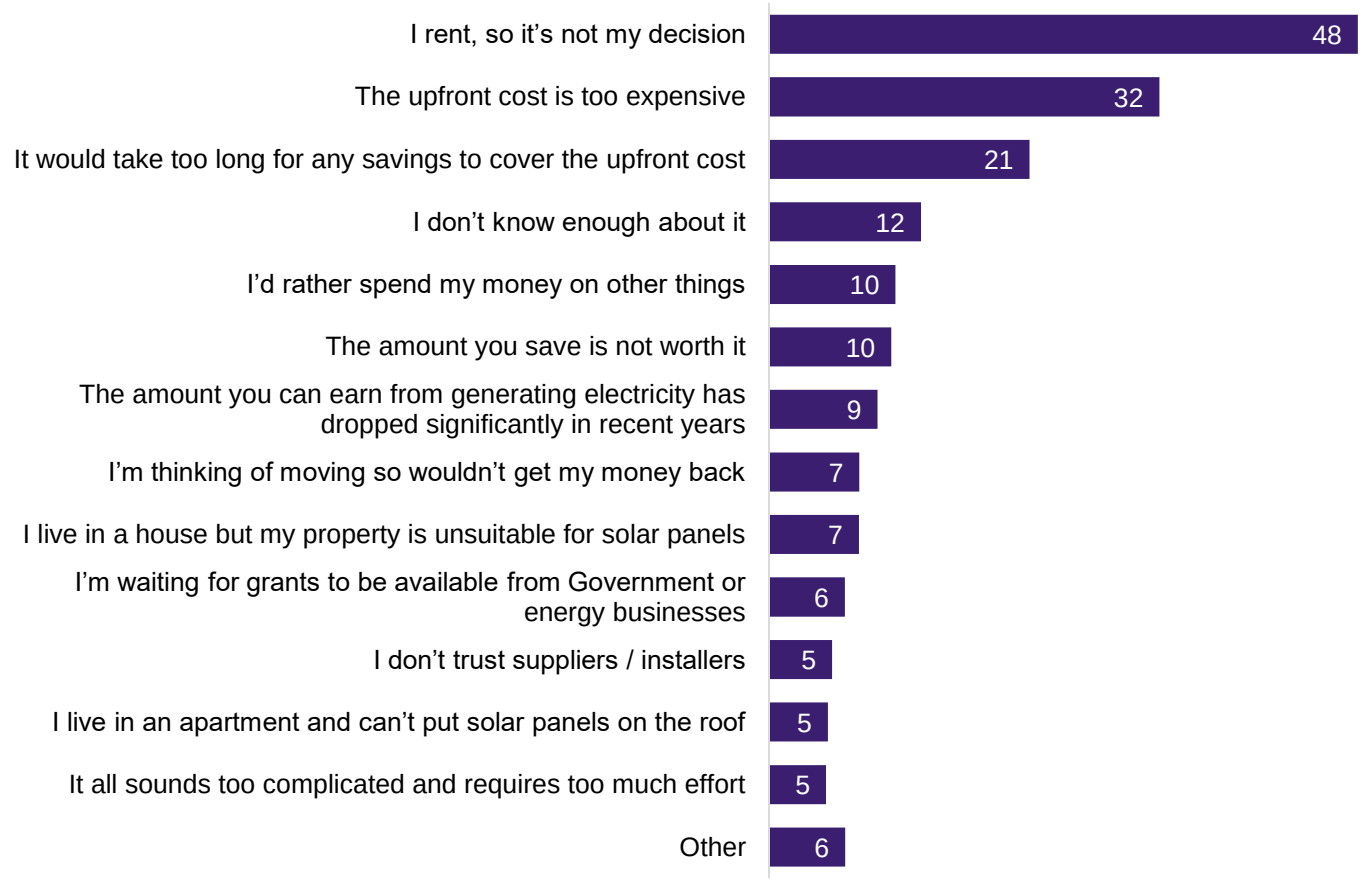
Q14. Next, we would like to know if you have, or are considering, any of the following electricity technologies?

*Base: All respondents (n=1,004). * Excluding those who already have solar (n=357)*

REASONS FOR NOT CONSIDERING SOLAR

Renting, upfront costs and long payback times are the main barriers to solar uptake

Reasons for not considering solar (% selecting each option)



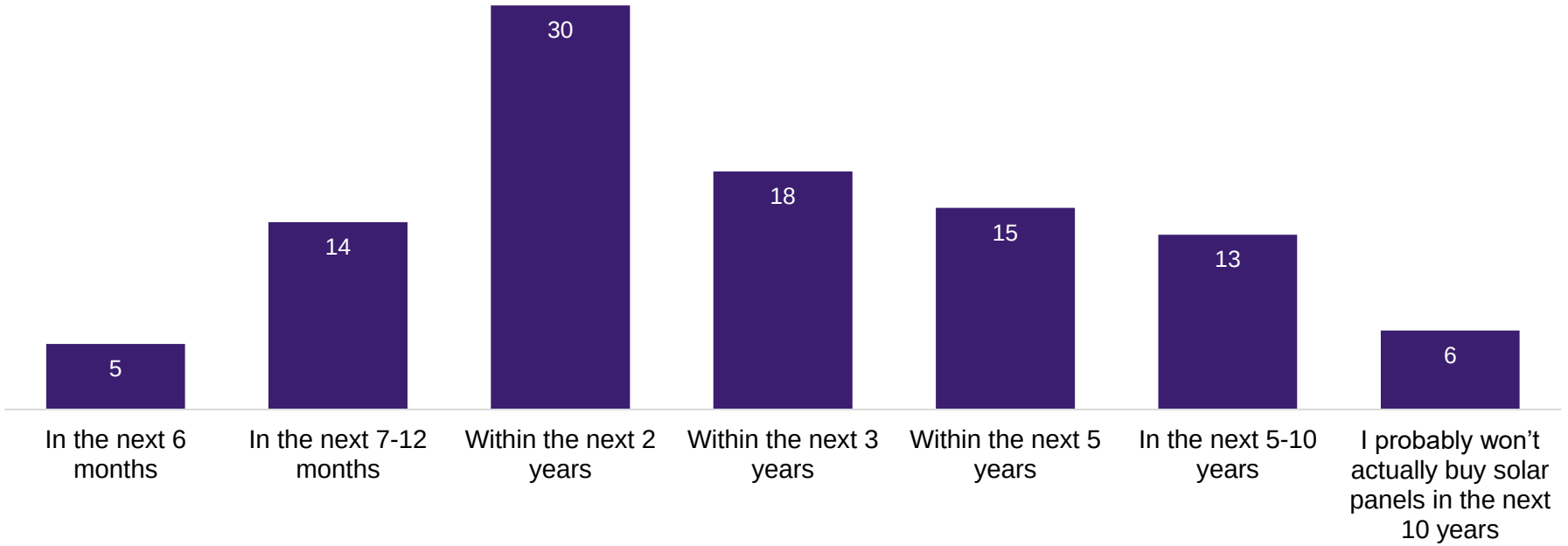
Q15. Which of the following reasons explain why you are not actively researching or considering buying solar panels for your home?

Base: Those who are not researching or considering buying solar (n=284)

LIKELIHOOD TO PURCHASE SOLAR PANELS

Reflecting the rapid solar trend and further supporting the desire for SA Power Networks to accommodate this, half (49%) of those researching or considering solar, plan to buy it within the next 2 years, with a total of 81% planning to do so within the next 5 years

Predicted timing for purchasing solar panels for their home (%)



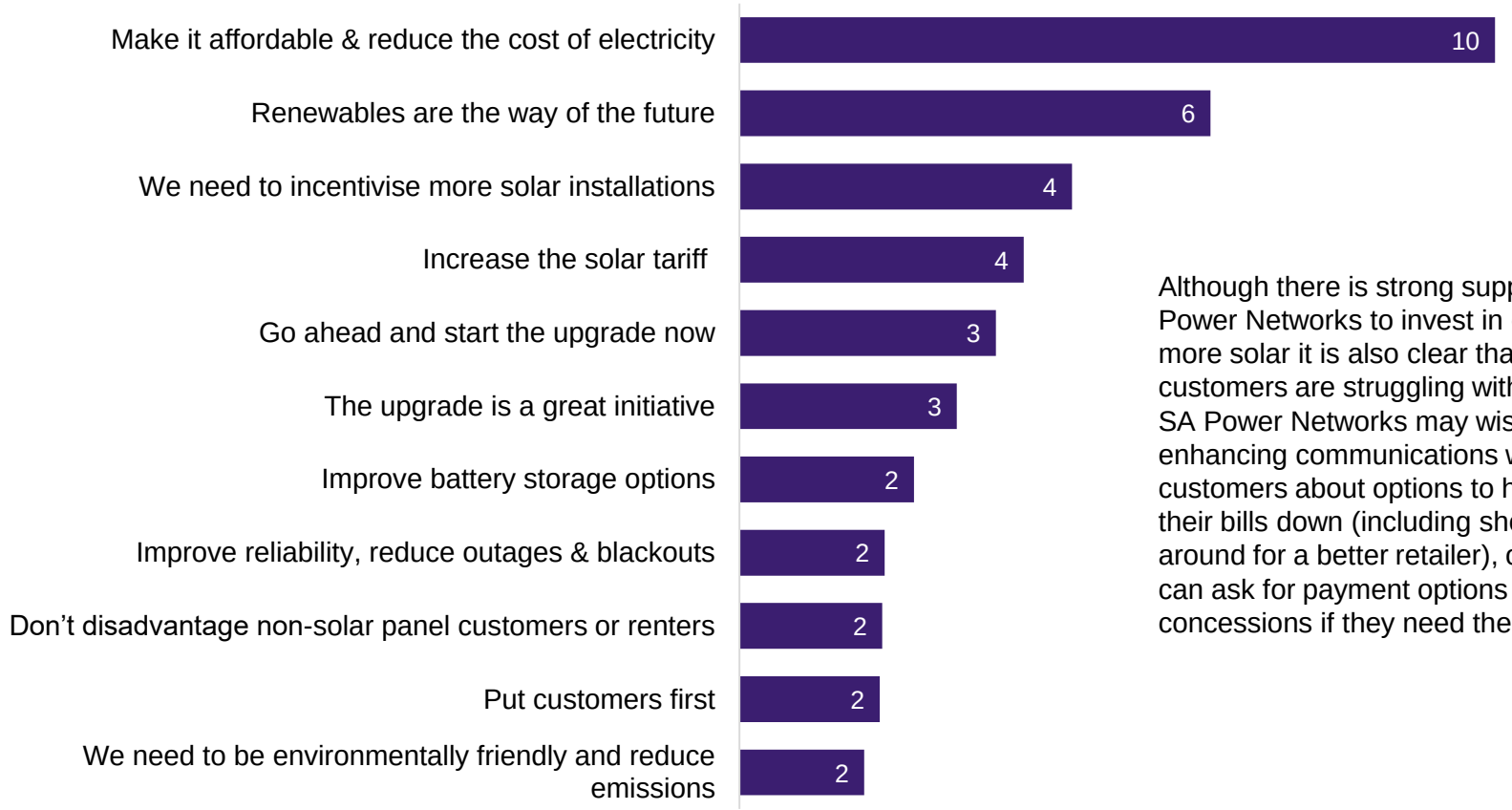
Q16. When do you think you will most likely purchase a home solar system?

Base: Those who are actively researching or considering buying solar panels for their home (n=363).

CLOSING ADVICE FOR SA POWER NETWORKS

Final advice focussed on the importance of keeping electricity affordable whilst incentivising and encouraging the shift to renewables

% mentioning each theme - unprompted



Although there is strong support for SA Power Networks to invest in enabling more solar it is also clear that some customers are struggling with rising bills. SA Power Networks may wish to consider enhancing communications with customers about options to help keep their bills down (including shopping around for a better retailer), or how they can ask for payment options or concessions if they need them.

Q17. Is there any other advice you would like to pass on to SA Power Networks about solar energy, the future of its network or the long-term interests of customers?
Base: All respondents (n=1,004).

CLOSING ADVICE FOR SA POWER NETWORKS

In their words

"Obviously for the future we need as much encouragement as possible to use renewables wherever and whenever, and so rebates and incentivisation should form the basis of any energy plan for our State."

Small customer, Has solar

"You're doing a great job and you make this state a great place to live in. Continue the great work and spend money on the well worth it Dynamic Upgrade. I would happily pay extra money on my bill to ensure we are doing the best we can at using more green energy and improving the state's power for many generations to come."

Medium customer, Doesn't have solar

"It is good to boost solar energy because we are facing a critical issue like climate change. Now is the time to switch the energy resources to solar energy."

Medium customer, Doesn't have solar

"Don't forget us non solar users. Why should I pay more for my power just because others have money?"

Small customer, Doesn't have solar

"My advice is to continue this method of survey and questioning, opening the public up to the debate. Allowing all views to be expressed and considered will benefit the final choices made by SA power and also allow the residents of the State a say in how they want their future to be handled by Government and Corporation alike."

Medium customer, Doesn't have solar

"Set a reasonable limit on solar generation so people don't make it a money making exercise, pure and simple. Allow for family size and system upkeep and the same for business cutting its overheads."

Small customer, Has solar

"I'm worried that non-solar customers will be faced with hefty bills, subsidising the needs of upgrading the networks AND the cost of solar increasing because of it - negating my ability to buy-in and becoming a solar customer."

Large customer, Doesn't have solar

Q17. Is there any other advice you would like to pass on to SA Power Networks about solar energy, the future of its network or the long-term interests of customers? Base: All respondents (n=1,004).

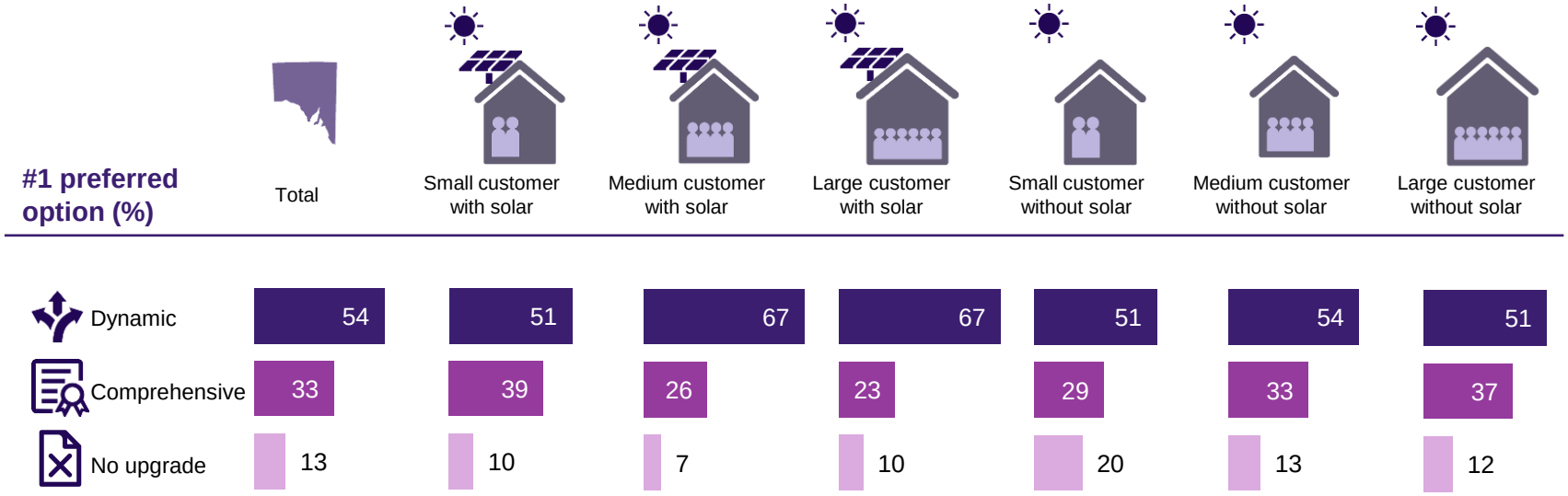
APPENDIX 1

Additional survey data

NEWGATE RESEARCH

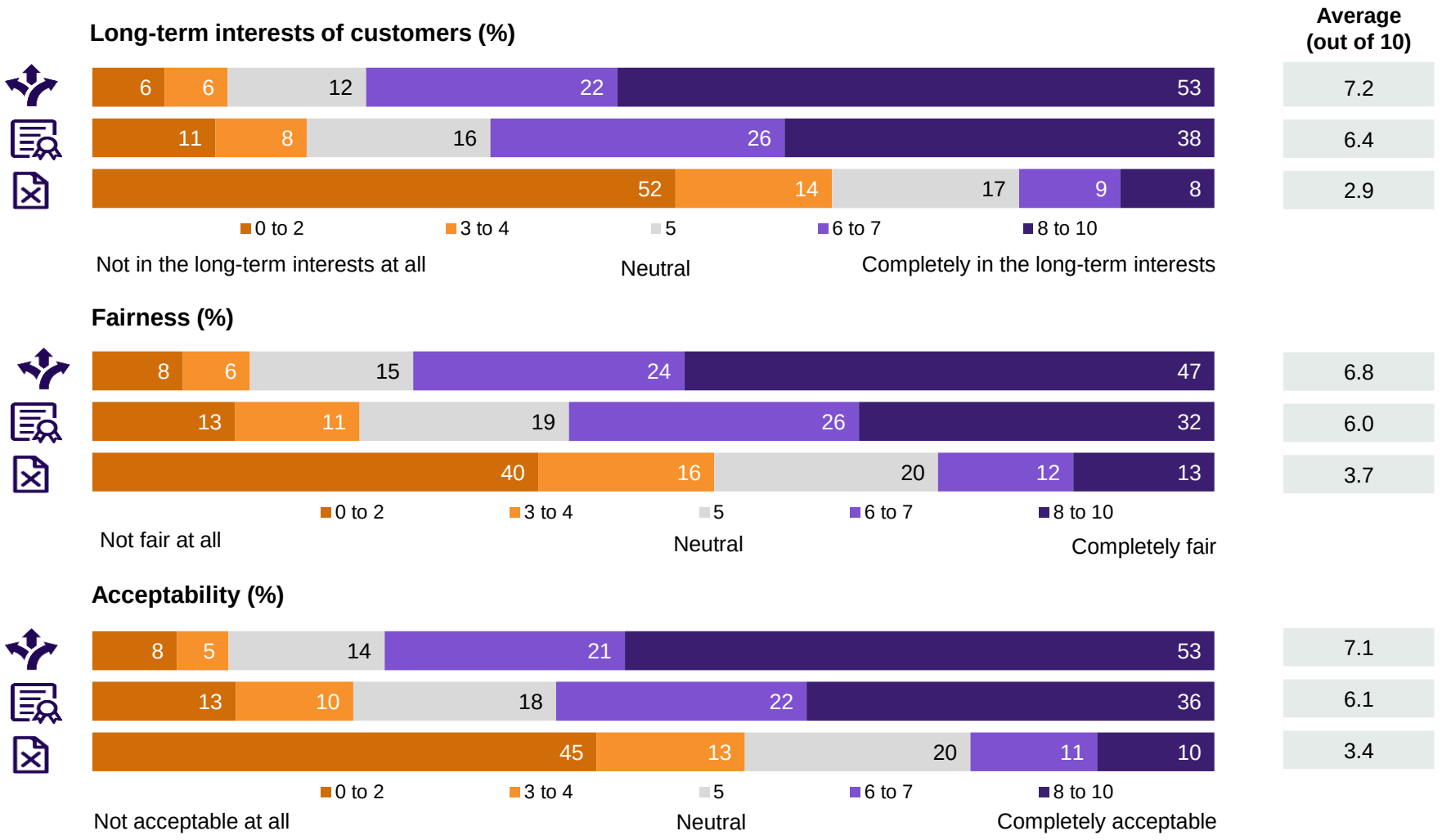
PREFERENCES OF THOSE WITH AND WITHOUT SOLAR

Those with solar were generally more positive about the Dynamic Upgrade model compared to those without it, particularly if they were medium or large customers



Q6. We would now like you to rank these options from 1 to 3 where: 1 is the option you personally most prefer SA Power Networks to go ahead with for 2020-2025; 2 is your second preferred option for SA Power Networks to go ahead with; 3 is the option you least prefer SA Power Networks to go ahead with for 2020 to 2025. / Q7. Please also rank these options from 1 to 3 where: 1 is the option you think is most in the long-term interests of customers; 2 is the option you think is second most in the long-term interests of customers; 3 is the option you think is least in the long-term interests of customers. Base: Small customer = 425, Medium customer = 415, Large customer = 164.

LONG TERM INTEREST, FAIRNESS & ACCEPTABILITY OF THE THREE OPTIONS – FULL RANGE OF RATED RESULTS



Q3. To what extent do you think these options are in the long-term interests of SA Power Networks' customers? / Q4. To what extent do you think these options are fair? / Q5. And, how acceptable would it be to you if SA Power Networks goes ahead with any of these options for 2020 to 2025? Base: All respondents (n=1,004).

EVALUATING SPECIFIC ASPECTS OF THE DYNAMIC UPGRADE OPTION

Participants who preferred the Dynamic Upgrade option most were asked to select the specific aspects of it that were most appealing to them (Data Column 1). Similarly, those who least preferred this option were asked to select the least appealing aspects (Column 2),.

		% selecting statements as appealing	% selecting statements as unappealing
A new system would be developed to monitor, predict and manage the flow of energy in the low-voltage distribution network.		55	**29**
This "dynamic management" would mean that extensive infrastructure upgrades are not needed to resolve this issue.		**61**	20
There will be no change for existing solar customers.		44	20
New solar customers would be able to export solar energy 97% of the time, although their export level would be limited on rare occasions when voltages rise too high).		55	18
These new customers may also be able to export higher levels of energy than the current 5kW limit at times when the system can handle it.		36	8
Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.		**68**	12
$37 million (over 5 years) (equivalent to $2.20 per year for an average customer).		57	**22**
Cost of the proposed network upgrade/option for typical Small, Medium, Large, Very large and Solar residential customers (per year) over 5 years from 2020.	**Small = + $1.40**	33	19
	Medium = +$2.20	26	11
	Large = +$3.40	18	9
	Very Large = $5.10	11	11
	Solar = +$2.20	18	9
	Selected any price	**69**	**38**
Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $84m over 15 years. which will flow through to lower energy bills for all customers		56	17
Networks' modelling predicts that this will lead to the cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).		**68**	**18**

Q9. Which aspects of the Dynamic upgrade option are most appealing to you? / Q11. Which aspects of the Dynamic upgrade option are least appealing to you?
Base: Most appealing n=483, Least appealing n=97.

EVALUATING SPECIFIC ASPECTS OF THE COMPREHENSIVE UPGRADE OPTION

		% selecting statements as appealing	% selecting statements as unappealing
A comprehensive upgrade of the network.		**62**	31
As sections of the network come under strain (from increased solar) they would be progressively upgraded with new infrastructure that handle more solar generation.		50	25
Both existing and new solar customers would continue to be able to export as much solar energy as they want to (up to 5 kW).		**69**	27
Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.		**65**	21
$119 million (over 5 years) (equivalent to $7.00 per year for an average customer).		33	**57**
Cost of the proposed network upgrade/option for typical Small, Medium, Large, Very large and Solar residential customers (per year) over 5 years from 2020.	Small = +$4.30	23	33
	Medium = +$7.00	21	26
	Large = +$10.80	11	24
	Very Large = +$16.30	7	25
	Solar = +$7.00	16	21
	Selected any price	54	**56**
Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $104m over 15 years.		**67**	21
SA Power Networks' modelling predicts that this will lead to the most expensive long-term energy (of the 3 options) for South Australia (when all factors are considered).		16	**47**

Q9. Which aspects of the Comprehensive upgrade option are most appealing to you? / Q11. Which aspects of the Comprehensive upgrade option are least appealing to you?
Base: Most appealing n=403, Least appealing n=155.

EVALUATING SPECIFIC ASPECTS OF THE "NO UPGRADE" OPTION

	% selecting statements as appealing	% selecting statements as unappealing
No additional upgrade of the network for solar customers – routine maintenance only.	**54**	48
There will be no change for existing solar customers.	35	20
Increasingly, new solar customers will be prevented from exporting any solar energy at all if they live in areas where the network can't handle the amount of electricity.	17	**55**
Wasted solar energy will mean a greater reliance on other forms of generation (such as gas, coal or wind) and will result in an estimated 1.2 million tonnes of extra carbon pollution over the next 15 years	18	**65**
No additional cost.	**64**	16
Cost of the proposed network upgrade/option for typical Small, Medium, Large, Very large and Solar residential customers (per year) over 5 years from 2020. — $0	**54**	15
Additional gas generation (needed to replace wasted solar energy) means that generation savings will not be made.	14	**57**
SA Power Networks' modelling predicts that this will lead to the second cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).	22	15

Q9. Which aspects of the No upgrade option are most appealing to you? / Q11. Which aspects of the No upgrade option are least appealing to you?

Base: Most appealing n=118, Least appealing n=752.

APPENDIX 2

Questionnaire and survey sample

NEWGATE RESEARCH

QUESTIONNAIRE

NEWGATE RESEARCH

Future Networks Consultation Survey
Draft Questionnaire

Updated 21st November 2018

Introduction

Thank you for your interest in this survey about electricity. It may be helpful to have your most recent electricity bills handy, but this is not essential.

This survey is being conducted by Newgate Research and it should take you about 15-20 minutes to complete, depending on your responses.

Use your mouse to 'click' the relevant circles or boxes to mark your selections. Some questions require you to type your answers in the space provided.

Please remember:

- When you have completed all questions on the screen, click the '>>' button to proceed to the next page.
- None of your responses will be directly linked to you as an individual. They are used for statistical purposes only.
- To see the privacy statement, click the link at the bottom of the screen.
- To begin the survey, click on the '>>' button below.
- If you need to return to the survey later, click the '>>' button to save your responses and close the webpage. The next time you click on the invite link, it will automatically take you back to the question you were up to.

Qualifier questions

D1. Please indicate your gender

	Select 1
Male	☐
Female	☐
Other	☐

D2. Please indicate your age

	Select 1	
Under 18	☐	Terminate
18-24	☐	Continue
25-34	☐	Continue
35-44	☐	Continue
45-54	☐	Continue
55-64	☐	Continue
65 or over	☐	Continue

D3. Please enter the postcode where you live

D4. Who in your household is mainly responsible for paying your electricity bills and making decisions about which electricity company to go with?

	Select 1	
I am responsible for these things	☐	Continue
I share the responsibility with someone else	☐	Continue
Someone else is responsible for these things	☐	Terminate
Don't know	☐	Terminate

New Screen - **What this survey is about**

This survey is being conducted for a company called SA Power Networks.

It will focus on options for how SA Power Networks could continue to support the increase in rooftop solar connections, home batteries and other technologies that many South Australian customers are using.

The results from this important survey (in combination with other information) will inform how SA Power Networks delivers its services and it will also influence all customer's electricity bills.

Unlike some other surveys we will show you a lot of detailed information about the future of the electricity network and you will need to read this information carefully, so you can meaningfully respond to the questions.

If you are viewing this survey on a mobile phone, we also strongly suggest that you exit now and restart the survey on a tablet or another device with a larger screen. Otherwise, for some questions it may be useful for you to rate your phone sideways to make it easier to answer some of the questions.

Introduction to SA Power Networks

Q1. To start, we would like to know how much you know about SA Power Networks and what it does?

	Select 1
I have heard of it and have a good understanding of what it does	☐
I have heard of it and have a basic understanding of what it does	☐
I have heard of it but don't know anything about it	☐
I haven't heard of it before	☐

New Screen

Please read the following information about SA Power Networks before proceeding.

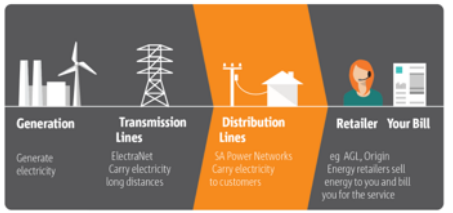
SA Power Networks is the electricity distribution company that connects and distributes electricity to and from homes and businesses in South Australia.

It owns, operates and maintains the electricity distribution network comprising local electricity poles, wires and substations, and repairs the network when there is a power outage.

The services SA Power Networks provides make up around 26% of customers' electricity bills (around $125 quarterly for an average household), although this cost is not usually shown separately on your bill.

The amount of money SA Power Networks bills consumers for running the network is set by the Australian Government's regulator (The Australian Energy Regulator) every 5 years.

The following figure shows where SA Power Networks fits within the 'electricity supply chain'.



QUESTIONNAIRE

Initial attitudes to future networks

New Screen – **Background to help you understand the issue and answer the questions**

Please read the following information carefully before proceeding.

You may be aware that over 30% of South Australian households have rooftop solar panels and that this percentage is continuing to grow.

The increase in home solar brings many benefits, by reducing customers' bills and reducing carbon pollution, but it also **brings challenges for South Australia's electricity network.**

In simple terms, the electricity network was originally designed to transport electricity **only in one direction**, from large generation plants to homes and businesses.

This has changed because customers with solar are now able to export their excess electricity back into the network.

However, as more and more people export their solar energy, it can increase the voltage in parts of the network that were not designed to handle it. This can cause:

- Flickering lights or even damage to appliances.
- Rooftop solar systems shutting down.
- Local power outages or blackouts (if left unaddressed).

SA Power Networks currently investigates and fixes these issues as they arise, but as they increase, it needs to consider the best approach to managing this in the future.

Q2. We will shortly get your opinion on a range of specific options, but overall, how do you feel about SA Power Networks spending money on its network to enable more solar in South Australia?

Very positive	Somewhat positive	Neither positive nor negative	Somewhat negative	Very negative	
☐	☐	☐	☐	☐	Select 1

New Screen

Overview of three options for supporting the increase in solar energy

Next, we will ask your opinion of three options that SA Power Networks could take to support the increase in solar energy in South Australia.

It is important to note that:

1. These options affect how much SA Power Networks will spend in the 5-year period from 2020 to 2025.
2. These options are not intended to impact average reliability service levels to customers (i.e. the number of outages all customers experience on average).
3. They will be paid for by all customers (via their electricity bills).
4. The topic of solar connections is just one part of SA Power Networks' plans for 2020-2025. **Even though these "solar options" cost money there will still be an overall reduction in SA Power Networks' charges to customers due to other efficiency measures.** But, the extent of this reduction, (around $37 per year for an average customer) will depend on which "solar option" is chosen.

The following table provides an initial broad overview of the three options and we will follow this with some more detailed information. Please review this information carefully before proceeding.

Randomise order of the options and maintain this order throughout the rest of the survey

"Comprehensive" upgrade	"Dynamic" upgrade	No upgrade
This option would involve a comprehensive upgrade of the distribution network. As sections of the network come under strain (from increased solar) they would be progressively upgraded with new infrastructure (transformers, poles and wires) that can handle more solar generation. Both existing and new solar customers would continue to be able to export solar energy and this will reduce carbon pollution. However, this is the highest cost option, and the costs to all customers would continue to increase in the future as more and more people install solar.	With this option, a new system would be developed to monitor and manage the flow of energy in the distribution network. New solar customers would be able to export solar energy 97% of the time, although their export would be limited by the system on rare occasions when voltages become too high. There will be no change for existing solar customers. This "dynamic management" would mean that extensive infrastructure upgrades are not needed and that carbon pollution is still reduced. This is a mid-priced option with network costs that would remain relatively stable in the long-term as more and more people install solar.	This option would involve ongoing maintenance, but no upgrade of the network to enable solar export for customers. New solar customers would be prevented from exporting any solar energy if they live in areas where the network can't handle the higher amount of electricity on the network. There will be no change for existing solar customers. This "wasted" solar energy would mean more reliance on gas and coal generation and more carbon emissions than other options. The network costs would be the lowest of the three options although generation costs are predicted to be higher (due to greater reliance on gas and coal generation).

New Screen

Detailed evaluation of three potential options for supporting the increase in solar energy

We will now show you some more detailed information about these same potential options including predicted bill impacts for the following types of typical customers. You may wish to have a look at a recent electricity bill to see which energy usage is closest to your household's – your average daily kilowatt (kWh) usage is usually on the back of your bill.

Please review this information carefully before proceeding.

	Household characteristics	Daily energy use	Typical quarterly electricity bill*
Small households		8 kWh	$340 per quarter
Medium households		13 kWh	$480 per quarter
Large households		20 kWh	$710 per quarter
Very large customer		30 kWh	$1030 per quarter
Typical solar customer		13kWh	$480 per quarter

* Average bills taken from the Federal Government's Energy Made Easy website

Here are the same options we showed you before, with additional detail about their costs and benefits.

Option	"Comprehensive" upgrade	"Dynamic" upgrade	No upgrade
The type of network upgrade being proposed?	A comprehensive upgrade of the network. As sections of the network come under strain (from increased solar) they would be progressively upgraded with new infrastructure that handle more solar generation.	A new system would be developed to monitor, predict and manage the flow of energy in the low-voltage distribution network. This "dynamic management" would mean that extensive infrastructure upgrades are not needed to resolve this issue.	No additional upgrade of the network for solar customers – routine maintenance only.
How and when solar customers will be able to export energy?	Both existing and new solar customers would continue to be able to export as much solar energy as they want to (up to 5 kW).	There will be no change for existing solar customers. New solar customers would be able to export solar energy 97% of the	There will be no change for existing solar customers. Increasingly, new solar customers will be prevented from exporting

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		time, although their export level would be limited on rare occasions when voltages rise too high). These new customers may also be able to export higher levels of energy than the current 5kW limit at times when the system can handle it.	any solar energy at all if they live in areas where the network can't handle the amount of electricity.
What it means for energy generation in South Australia and carbon emissions?	Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.	Enabling solar exports will reduce the need for other forms of generation (such as gas, coal or wind) and will minimise carbon emissions.	Wasted solar energy will mean a greater reliance on other forms of generation (such as gas, coal or wind) and will result in an estimated 1.2 million tonnes of extra carbon pollution over the next 15 years.
Cost of the proposed network upgrade/option.	$119 million (over 5 years) (equivalent to $7.00 per year for an average customer).	$37 million (over 5 years) (equivalent to $2.20 per year for an average customer).	No additional cost.
Cost of the proposed network upgrade/option for typical small (Sm), medium(M), large (L), Very large (VL) and solar(So) residential customers (per year) over 5 years from 2020.	Sm = +$4.30 M = +$7.00 L = +$10.80 VL = +$16.30 So = +$7.00	Sm = + $1.40 M = +$2.20 L = +$3.40 VL = $5.10 So = +$2.20	$0
What it means for the cost of electricity generation in South Australia and long-term energy prices?	Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $104m over 15 years. SA Power Networks' modelling predicts that this will lead to the most expensive long-term energy (of the 3 options) for South Australia (when all factors are considered).	Enabling more solar exports will reduce the need for more expensive gas generation, resulting in reduced generation costs of $84m over 15 years. which will flow through to lower energy bills for all customers SA Power Networks' modelling predicts that this will lead to the cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).	Additional gas generation (needed to replace wasted solar energy) means that generation savings will not be made. SA Power Networks' modelling predicts that this will lead to the second cheapest long-term energy (of the 3 options) for South Australia (when all factors are considered).

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Q3. To what extent do you think these options are in the long-term interests of SA Power Networks' customers? (see reference table below)

Show detailed table under questions

	Not in the long-term interests of customers at all									Completely in the long-term interests of customers		
	0	1	2	3	4	5	6	7	8	9	10	
Comprehensive upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
Dynamic upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
No upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1

Q4. To what extent do you think these options are fair? (see reference table below)

Show detailed table under questions

	Not fair at all									Completely fair		
	0	1	2	3	4	5	6	7	8	9	10	
Comprehensive upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
Dynamic upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
No upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1

Q5. And, how acceptable would it be to you if SA Power Networks goes ahead with any of these options for 2020 to 2025? (see reference table below)

Show detailed table under questions

	Completely unacceptable									Completely acceptable		
	0	1	2	3	4	5	6	7	8	9	10	
Comprehensive upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
Dynamic upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1
No upgrade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Select 1

Q6. We would now like you to rank these options from 1 to 3 where:

1 is the option you personally most prefer SA Power Networks to go ahead with for 2020-2025

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2 is your second preferred option for SA Power Networks to go ahead with

3 is the option you least prefer SA Power Networks to go ahead with for 2020 to 2025

(see reference table below)

Show detailed table under question

Comprehensive upgrade	Dynamic upgrade	No upgrade	
☐	☐	☐	Rank 1-3

Q7. Please also rank these options from 1 to 3 where:

1 is the option you think is **most in the long-term interests of customers**

2 is the option you think is **second most in the long-term interests of customers**

3 is the option you think is **least in the long-term interests of customers**

(see reference table below)

Show detailed table under question

Comprehensive upgrade	Dynamic upgrade	No upgrade	
☐	☐	☐	Rank 1-3

Q8. Why do you think that the (insert #1 from Q7) option is the option that is **most in the long-term interests of customers? (see reference table below)** *Please be as detailed as possible in your response.*

Insert detailed table under question with their preferred option highlighted.

Q9. Which aspects of the (insert #1 fromQ7) option **are most appealing to you?** (You can click on as many or as few features as you want)

Insert itemised checkbox list from #1 from Q7

Q10. Now we'd like to know why you think that the (insert #3 from Q7) option is the option that is **least in the long-term interests of customers? (see reference table below)** *Please be as detailed as possible in your response.*

Insert detailed table under question with their least preferred option highlighted

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Q11. Which aspects of the (insert #3 from Q7) are the **least appealing to you?** (you can click on as many or as few features as you want)

Insert itemised checkbox list from #3 from Q7

Communications and new technology

Q12. In earlier customer research, conducted by SA Power Networks, results showed a preference to spend money on the "Dynamic upgrade" option to enable more solar in South Australia. Do you agree or disagree that the following statements (based on customer feedback) **are good reasons for SA Power Networks to proceed with this option?**

Randomise options

Split into batteries of 5 items per page

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	
It will accelerate the transition from gas to renewables, reduce carbon pollution and help address climate change.	☐	☐	☐	☐	☐	Select 1
It will give every solar customer the opportunity to export solar energy regardless of where they live and whether their local network can currently handle it.	☐	☐	☐	☐	☐	Select 1
The upgrade will only cost $2.20 per year for a typical customer and this is a price worth paying for the benefits of increased solar energy.	☐	☐	☐	☐	☐	Select 1
It's a modest investment in network technology that will set us up for the future while not locking us in to a more expensive solution that could become obsolete.	☐	☐	☐	☐	☐	Select 1
It will let solar customers join together as "Virtual Power Plants" to maximise earnings from the solar power they export.	☐	☐	☐	☐	☐	Select 1
It will mean that excess solar energy is rarely wasted and will minimise our dependence on gas-fired power plants.	☐	☐	☐	☐	☐	Select 1
It will double the amount of solar that customers with high-capacity systems can export at times of peak demand.	☐	☐	☐	☐	☐	Select 1
Even with this dynamic upgrade, SA Power Networks' distribution costs to customers	☐	☐	☐	☐	☐	Select 1

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still will fall by an average of $37 per customer.						
When you factor in all the benefits and all the costs it's the option that will lead to the lowest total bills for customers in the long term.	☐	☐	☐	☐	☐	Select 1
Solar is now cheaper than gas so the more you encourage it the cheaper that energy generation becomes for everyone.	☐	☐	☐	☐	☐	Select 1

Q13. **Now that you have heard more about the issue, we would again like to know how you feel overall about SA Power Networks spending money on its network to enable more solar in South Australia?**

Very positive	Somewhat positive	Neither positive nor negative	Somewhat negative	Very negative	
☐	☐	☐	☐	☐	Select 1

Q14. **Next, we would like to know if you have, or are considering, any of the following electricity technologies?**

Randomise options

	I already have this	I'm actively researching options for buying this technology	I'm considering buying this technology but not actively researching it	I'm not actively researching or considering buying this technology	
Solar PV panels for your home roof	☐	☐	☐	☐	Select 1
Solar hot water system for your home	☐	☐	☐	☐	Select 1
Home battery storage (e.g. Tesla Power Wall or similar)	☐	☐	☐	☐	Select 1
An electric car / vehicle for personal use	☐	☐	☐	☐	Select 1
In-home technology that allows you to monitor your electricity usage and costs in real time	☐	☐	☐	☐	Select 1
A home energy management system that enables you to manage your household's energy remotely	☐	☐	☐	☐	Select 1

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Q15. **Which of the following reasons explain why you are not actively researching or considering buying solar panels for your home?**

Only ask respondents who are not actively researching or considering buying solar panels for their home (from Q14)

Randomise options – except for "Another reason"

	Select all that apply
I rent, so it's not my decision	☐
I live in an apartment and can't put solar panels on the roof	☐
I live in a house but my property is unsuitable for solar panels	☐
The upfront cost is too expensive	☐
The amount you save is not worth it	☐
The amount you can earn from generating electricity has dropped significantly in recent years	☐
It would take too long for any savings to cover the upfront cost	☐
I'm waiting for grants to be available from Government or energy businesses	☐
I'd rather spend my money on other things	☐
It all sounds too complicated and requires too much effort	☐
I don't trust suppliers / installers	☐
I don't know enough about it	☐
I'm thinking of moving so wouldn't get my money back	☐
Another reason (please specify)	☐

Q16. **When do you think you will most likely purchase a home solar system?**

Only ask respondents who are actively researching or considering buying solar panels for their home (from Q14)

	Select one
In the next 6 months	☐
In the next 7-12 months	☐
Within the next 2 years	☐
Within the next 3 years	☐
Within the next 5 years	☐
In the next 5-10 years	☐
I probably won't actually buy solar panels in the next 10 years	☐

Q17. **Is there any other advice you would like to pass on to SA Power Networks about solar energy, the future of its network or the long-term interests of customers?**

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QUESTIONNAIRE

Demographics

Thank you for your participation in this survey so far, we just have a few final questions about your personal or household circumstances. These will be aggregated with other responses and will not be linked to you personally

D1. How many people (including you) usually live in your household?

	Select 1
1	
2	
3	
4	
5	
More than 5	

D2. Which of the following best describes the home where you live?

	Select 1
A freestanding detached house	☐
A semi-detached house, terrace house or town house	☐
A low-rise apartment building (up to 4 levels)	☐
A high-rise apartment building (more than 4 levels)	☐
Other (please specify)	☐

D3. Do you rent or own the home where you live?

	Select 1
Rent	☐
Own outright	☐
Own with a mortgage	☐
Other	☐

D4. How much was your most recent quarterly electricity bill? Please check your latest bill if it is handy, or otherwise, your best estimate is fine?

$.....last quarterly bill

D5. What is your current employment status?

	Select all that apply
Working full time	☐
Working part time	☐
Working casually	☐
Unemployed	☐
Retired	☐
Student	☐
Home duties	☐
Other (please specify)	☐

D6. Do any of the following apply to you?

	Yes	No	
A single parent of a child aged 18 or under	☐	☐	Select 1
Receive a disability pension	☐	☐	Select 1
Receive an aged pension	☐	☐	Select 1
Have missed or been late in paying any electricity bills in the last 12 months	☐	☐	Select 1

D7. What is your household's annual income from all sources before tax?

	Select 1
Less than $20,000	☐
$20,000 - $39,999	☐
$40,000 - $59,999	☐
$60,000 - $79,999	☐
$80,000 - $99,999	☐
$100,000 - $119,999	☐
$120,000 - $149,999	☐
$150,000 - $249,999	☐
$250,000 or more	☐
I'd prefer not to say	☐

D8. How would you describe the current financial situation of yourself and any immediate family you live with?

	Select 1
Doing well and feeling comfortable	☐
Doing OK and making ends meet	☐
Having some difficulty but just making ends meet	☐
Having a lot of difficulty paying bills and covering basic living expenses	☐

D9. And, do any of the following apply to you?

	Yes	No	
I prefer to speak a language other than English at home or with close family members	☐	☐	Select 1
I identify as Aboriginal or Torres Strait Islander	☐	☐	Select 1

Closing Screen

Thank you for participating in this survey. We really appreciate your time and contribution to this important part of SA Power Networks' engagement program with its customers.

SURVEY SAMPLE COMPOSITION

	Weighted %	Actual n
Region		
Metro	77	822
Regional	23	182
Gender		
Male	48	469
Female	52	535
Age		
18-34	28	263
35-44	16	165
45-54	17	171
55-64	21	213
65+	18	192
Quarterly bill size (reported by participants)*		
Small ($0-$349)	42	425
Medium ($350-$699)	41	415
Large ($700+)	17	164
Employment status		
Working full time	34	340
Working part time / casually	20	199
Retired	23	244
Student	4	42
Unemployed	8	79
Home duties	10	105

Bill size ($)	Have solar %	Don't have solar %
0-349	59	33
349-699	31	47
700+	11	20

	Weighted %	Actual n
Household income		
Less than $20,000	6	60
$20,000 to $59,999	39	390
$60,000 to $99,999	24	236
$100,000 to $149,999	15	150
Over $150,000	7	68
Number of people in household		
1	17	170
2	41	416
3	16	163
4	17	170
5	6	58
More than 5	3	27
Home ownership		
Renting	33	325
Own outright	30	306
Own with a mortgage	34	346
House type		
A freestanding detached house	81	806
A semi-detached house, terrace house or town house	13	133
A low rise apartment building	4	39
A high rise apartment building (over 4 levels)	1	8
Other	2	18
Vulnerability		
Categorised as highly vulnerable	22	220
Non vulnerable	78	784

* Small customers were naturally skewed towards those with solar as this variable was calculated from each respondent's stated retail bill size, which is also influenced by the solar feed-in tariff for solar customers.

THANK YOU

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