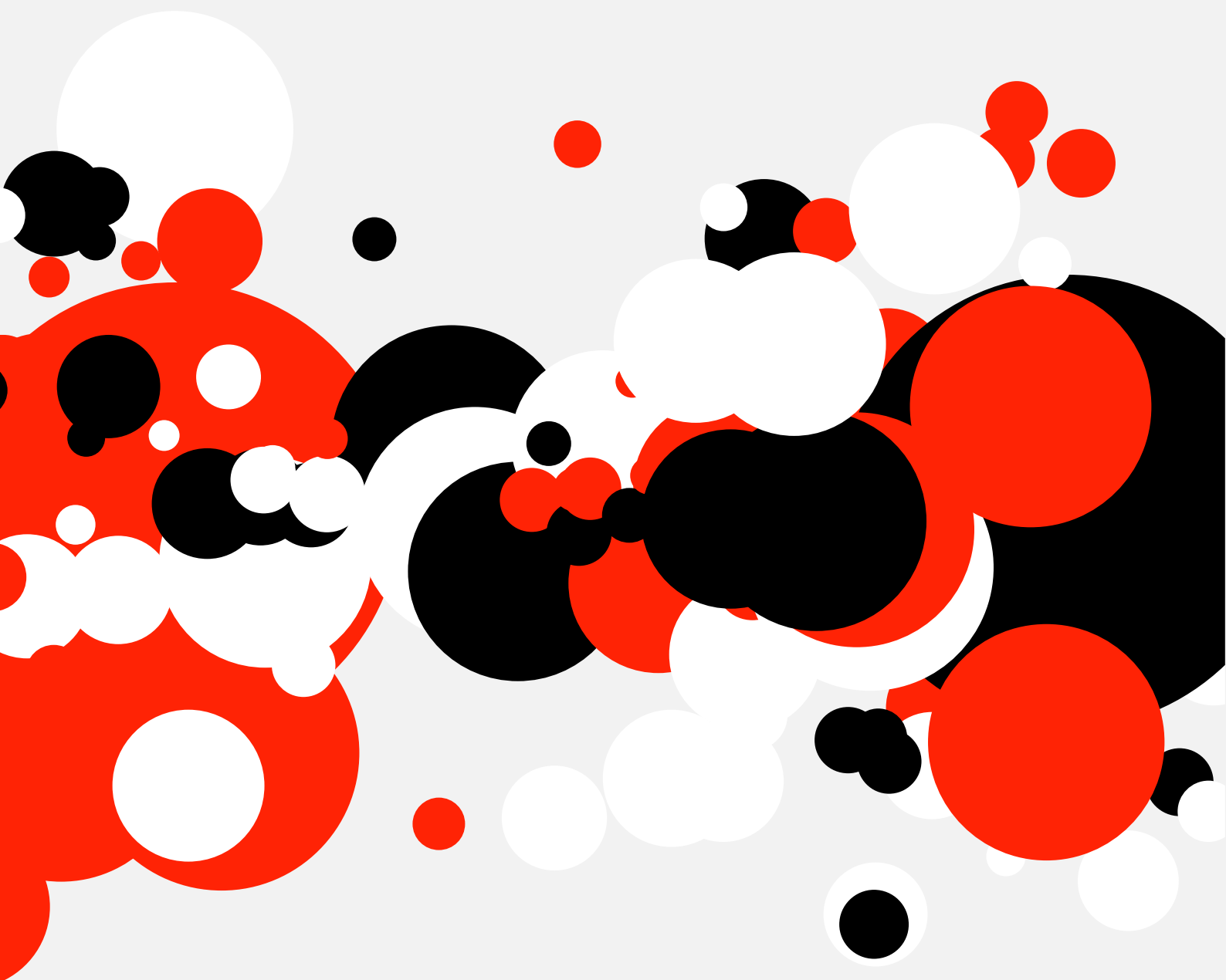




Social Access Solar Gardens: Market Research Phase 1 Report

Institute for Sustainable Futures



About the authors

The Institute for Sustainable Futures (ISF) is an interdisciplinary research and consulting organisation at the University of Technology Sydney setting global benchmarks since 1997 in helping governments, organisations, businesses and communities achieve change towards sustainable futures. We utilise a unique combination of skills and perspectives to offer long term sustainable solutions that protect and enhance the environment, human wellbeing and social equity.

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Executive Summary

Approximately 30% of Australian consumers are excluded from owning renewable energy. The Social Access Solar Gardens Project is investigating ways to enable solar gardens that will benefit those missing out due to renting, living in an apartment or having an unsuitable roof, and to ensure the inclusion of low-income customers.

The Solar Gardens Project is led by the Institute for Sustainable Futures (ISF), University of Technology Sydney and Community Power Agency. The research is funded by the Australian Renewable Energy Agency (ARENA) and NSW Government with further cash and in-kind contributions from the project partners. It is prototyping the first solar gardens in Australia in locations across Victoria, New South Wales and Queensland.

This report summarises the results of the first phase of the market research stream of the project. The aim was to investigate the level of interest in Solar Gardens from the target audiences, determine what aspects of solar gardens are important and ultimately help to design the Solar Gardens prototypes so that they align with customers' needs and expectations.

The research design was partly informed by behavioural economics and comprised both quantitative methods in order to gain statistically significant results and qualitative methods to gather rich data on opinions, perspectives and reactions on Solar Gardens from individuals. Specifically we ran five rounds of message testing through Facebook, using split test functions to conduct trials of different advertisements that framed Solar Gardens in different ways. This method was complemented by qualitative data collection in the form of eight focus groups in all prototype locations, seven face to face and phone interviews in Queensland and Swan Hill, and a small scale survey in Shoalhaven. Phase 1 of the market research collected data and insights from individuals on their electricity and solar power literacy, general reactions to Solar Gardens, preferences in the financial model, the interest in cross-subsidising, if location mattered, desired marketing and communication channels and trusted entities a Solar Garden offer should come from.

Overall the results demonstrate a great interest in the concept of Solar Gardens in Australia. The research participants universally applauded the concept for its social justice commitment and potential to offer personal benefits – face-to-face, they all claimed to be interested.

In line with the qualitative findings, the Facebook campaigns revealed that the most common motivation for interest in the concept was financial. The messages that emphasised saving on electricity bills drove the most traffic in the full-scale tests across all locations and appear to have most appeal for the target audience. Messages emphasising social inclusion – being part of the solar revolution – were not far behind. Environmental benefits were of less interest for most of the audience but did appeal to a higher income audience in Shoalhaven and Byron Bay, showing that messaging will need to be tailored for the precise audience for each prototype. All of these messages achieved some traction, showing that they are important for some parts of the audience.

Ultimately, the viability of a Solar Garden offer depends crucially on the financial model. In the focus groups and interviews the question about costs, benefits and details on what they would have to pay and what they would save dominated the conversations. While some of the expectations on payback time and savings were unrealistic, the evidence so far from the market research is that a Solar Garden model can work for the target audience as long as the rate of return is not radically different to a rooftop solar system. Further testing of prototypes with real figures will be essential in Phase 2 of the market research.

The focus group discussions and interviews provided insights into the target audience and the main questions influencing their decision making. From those conversations, a number of recommendations were derived to inform the Solar Garden prototype designs and specifically the financial models. The market research confirmed the target audience of the Solar garden, and that the Solar Gardens Teams should exclusively promote to consumers who are unable to have solar on their roofs. The solar garden should be targeted exclusively to tenants, apartment-dwellers and others with unsuitable roofs.

While there wasn't a stark variation noticed between the different research locations, household income did influence interest in the Solar Gardens concept. Buying a share is likely to suit wealthier apartment-dwellers and tenants. Subscribing is likely to be the only viable model for disadvantaged and low-income households, assuming the business model can be made to work. A hybrid model in between these two could be offered as an option for customers that want the benefits of ownership but cannot immediately afford it.



Addendum

The prototype design workshops undertaken after preparation of the draft of this report raised several questions, which teams would like to see addressed during Phase 2 of the research. As Phase 2 will focus specifically on testing prototypes or mock products, there is little scope to undertake additional focus groups or interviews to answer the questions that have been raised. However, we believe this report already addresses most of them. As such, responses to some of the key questions raised during the workshops are provided below.

Location

Some workshop participants had questions about where best to locate Solar Gardens. The market research findings clearly indicate that location is not of primary importance to participants and will not influence the decision to buy into a Solar Garden. See Section 6.6 for details.

Lead organisation

Market research participants generally expressed a preference for smaller, local organisations to be the lead organisation behind a Solar Garden, and preferred non-government organisations to government. See Section 6.5 (Messengers) for details.

Audience description

While not explicitly addressed by the market research, we would strongly recommend not referring to the audience as low-income in marketing materials as this is not a description that people welcome. Talking about audiences that are locked out or excluded from rooftop solar is a better strategy, alongside language that refers to affordability without putting households into categories. For example, marketing materials could ask: do you need assistance to afford Solar Garden access?

Attractiveness of built Solar Garden vs still to be built

Our assessment from the market research so far is that low-income households, to the extent that they can afford upfront payments, would have a preference for buying into a Solar Garden that is already built because they are looking for rapid savings on their bills and do not want to make a commitment with a long lead time. Households with a higher income may be more willing to invest in a Solar Garden that does not yet exist as long as there is clear communication and guarantees on when they will start to see a return on their investment. However, all households are likely to be cautious about making payments when the benefits are distant in time. This is a challenge for the business model.

Involvement of community organisations

Community organisations interviewed during the research expressed interest in helping to market Solar Gardens to their clients but this would need to be on a paid basis. The preferred model for these organisations would be to market Solar Gardens face-to-face to their clients as most are unlikely to seek out such offers without support.



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1 Background

A Solar Garden is a central solar array that customers can buy into when they are not otherwise able to access solar electricity on their own roof. These customers potentially include apartment dwellers that lack sufficient roof space, tenants that do not own the property they live in, owner-occupiers with shaded or poorly oriented roof space, and low-income households that cannot afford the upfront cost.¹

The Social Access Solar Gardens project is prototyping 4 to 5 of the first solar gardens projects in Australia in locations across Victoria, New South Wales and Queensland. This project aims to enable solar gardens that will benefit the 30% of Australian consumers currently excluded from owning renewable energy, and to ensure the inclusion of low-income customers.

The Social Access Solar Gardens project includes a market research stream to gauge the level of interest in Solar Gardens from the target audiences, determine what aspects of solar gardens are important, and target the design of the solar gardens prototypes so they do meet the needs of consumers. There are two phases to the market research:

- Phase 1: Exploratory research. The focus of Phase 1 is to explore audience reactions to the idea of Solar Gardens across the prototype locations and investigate which ways of framing an offer are most likely to appeal to the target audience. The results are intended to inform and support the development of Solar Garden models by the prototype teams.
- Phase 2: Prototype testing. The focus of Phase 2 is on testing the market reaction to the specific prototypes developed by each of the teams. The results are intended to support the prototype teams to decide whether to go on to implement the prototypes.

This report documents the Phase 1 research. Section 2 describes the design of the research. Section 3 reports on testing of alternative messaging about Solar Gardens through Facebook. Section 4 summarises the qualitative research, including focus groups and interviews. Section 5 reports on a survey of Repower Shoalhaven members. Finally, Section 6 discusses the overall findings and makes recommendations to the prototype teams.

2 Market research design

The design of the market research needed to take into account the following factors:

- The overall objectives (Section 2.1)
- The audience of interest and how best to reach them (Section 2.2)
- The locations in which the prototype teams are operating (Section 2.3)
- Likely methods for recruiting Solar Garden participants (Section 2.4)
- Suitable methods for engaging with the audience in these locations (Section 2.5).

2.1 Objectives

At a high level, the objective of the market research are to:

- Inform the design work of the prototype teams
- Test the Solar Gardens concept with the target audience segments to gauge level of interest
- Determine what is motivating the interest of different audience segments

¹ Buying into a Solar Garden may not always be the most appropriate solution for all of these customers. When the roof is suitable for solar installation, using financing and subsidy mechanisms to encourage rooftop installation may be more appropriate and deliver a better financial outcome for the customer.



- Identify the most promising ways to communicate the concept to the target audience
- Get input on the importance of specific design features.

To go from these high-level objectives to more detailed research topics, we engaged with each of the prototype teams through the Project Inception Workshop and follow up conversations. We asked what each of the teams would like to know to inform their prototype design. We also asked how each team anticipated recruiting customers for their Solar Gardens, so that our research could be designed to give insights into the viability of those channels. The following more detailed questions emerged from this process, focusing on the importance of specific design features:

- Does it matter who the offer of a Solar Garden comes from? Does the audience tend to trust offers from particular partner organisations more than others?
- What preference does the audience have for different financial models, such as upfront payment or subscription models? How much can the audience invest and what are their expectations for rate of return?
- Is the location of the Solar Garden important? Would the audience be more likely to sign up for a local Solar Garden than a distant one?
- What are the best communication channels to use to deliver a Solar Garden offer to the target audience?
- Is there any appetite from particular audience segments to cross-subsidise Solar Gardens to support the goal of social access?
- What types of questions do people ask about the concept? What information would they need to make a decision?
- Is the target audience more motivated by environmental, financial, social or other drivers?



2.2 Audience

Approximately 30% of Australian consumers are excluded from owning renewable energy, but there is a lot of diversity within this group. For scoping the market research, it was valuable to identify distinct market segments. Three sets of overlapping characteristics were used to identify audience segments.

Socio-economic status	Low-income	Disadvantaged	Higher income
	Energy bill as a higher proportion of total spending, so greater motivation to save on energy; may not be able to cover upfront costs	May find complex offers confusing or struggle with English and avoid engaging	Able to buy into an investment with a good payback period; may be more willing and able to act for ethical rather than financial reasons; possibility of providing cross-subsidies

Occupancy	Tenant	Owner-occupier
	Unable to access solar due to lack of secure tenure over the property (locked out), considerable potential audience	Whether or not owner-occupiers can install solar is mainly dependent on their socio-economic status, dwelling type and availability of subsidies or leasing arrangements to pay for initial installation

Dwelling type	Multi-unit dwelling	Detached dwelling
	Physical and title constraints make installation of solar in multi-unit dwellings difficult (locked out) but many may be interested in investing in solar	Rooftop solar will be an option for a large majority of this group, with a minority prevented from taking it up due to roof shading, orientation, heritage listing or a structurally unsound roof

The overlap between these groupings is clear. For example, many low-income and disadvantaged households will also be tenants. The market research aimed to reach all of these market segments, but the priority for reaching them varied:

- Low-income and disadvantaged tenants were a high priority as the project is motivated by social access and this market stands to benefit the most from Solar Gardens
- Higher income households, particularly in multi-unit dwellings, were also a relatively high priority as they are a significant market with potential to cross-subsidise other households
- Owner-occupiers in detached dwellings are a lower priority as many have existing rooftop options available to them.



2.3 Location

Four prototype teams are part of the core project and a fifth team is developing its own model. The five locations have different demographic characteristics, as noted below.

Location	Demographics
Blacktown	<ul style="list-style-type: none">• Blacktown has a majority of owner-occupiers (61.8%), and 31% renting with 7.7% in social housing• 78% of households are in detached dwellings, 22% in medium or high density apartments• About 18,000 low-income households• A higher proportion of households (13.5%) households experience housing stress, in particular a number of 29.3% of Blacktown City's renting households were experiencing rental stress.• Lower and higher education levels are on a par with the Australian average• Blacktown is fairly representative of NSW and Australia – not surprising given that it has 350,000 people.
Swan Hill	<ul style="list-style-type: none">• More detached dwellings, less apartments• 66.7% of households are purchasing or fully own their home, while 28.8% are renting (no data on social housing available)• Higher than average proportion of Aboriginal and Torres Strait Islander people• The data shows a smaller numbers of younger (between 20 and 49) and higher numbers of older people (50 to 85 and over) in the local population compared to the Australian average.• The higher educational levels (tertiary education) in Swan Hill are below average in Australia while the lower educational levels are on or above average.• The data on housing and rental stress indicates that Swan Hill residents are slightly better placed than the Australian average.



Location	Demographics
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Regional Queensland	<ul style="list-style-type: none"> More than half of Queensland's population lives outside the greater metropolitan area of Brisbane—a large proportion compared with the rest of highly urbanised Australia. <p><i>Townsville is a particular location that could be appropriate for a Solar Garden for network reasons.</i></p> <p>Townsville LGA:</p> <ul style="list-style-type: none"> High share of separated houses (81%), while significant lower numbers of semi-detached houses (10.3%), and apartments (7.4%) High percentage of renters with 38%, total occupied private dwellings fully owned was 22.9%, dwellings that are being purchased were 35.2% The median total family income is \$88,660 per year Share of 9.2% low income families and 28.9% medium income families (\$33,800 to \$77,999) The percentage of Aboriginal and/or Torres Strait Islander peoples in Townsville LGA was 7.0% in 2016 High rate of moving house with 46.2% people having a different address than 5 years ago
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Shoalhaven	<ul style="list-style-type: none"> 87.6% of all dwellings in Shoalhaven City area were separate houses; 9.1% were medium density dwellings, and 0.2% were in high density dwellings 67% of households were purchasing or fully owned their home, 19.3% were renting privately, and 3.8% were in social housing in 2016 Housing tenure of the population of Shoalhaven City in 2016 compared to Australian average shows that there was a larger proportion of households who owned their dwelling; a smaller proportion purchasing their dwelling; and a smaller proportion who were renters. 4.3% of households were paying high rental payments, and 34.0% were paying low payments, indicating a higher percentage of public housing Analysis of household income levels in Shoalhaven City in 2016 compared to Australia shows that there was a smaller proportion of high income households (those earning \$2,500 per week or more) and a higher proportion of low income households (those earning less than \$650 per week). 24.9% were low income households, being above the average in Australia (18%). More older people (65+) live in Shoalhaven City compared to Australia Little ethnical mix with very few recent overseas arrivals while high proportion of people who speak English only, and a lower proportion of people who spoke another language and English not well or not at all
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Location	Demographics
Byron Bay	<ul style="list-style-type: none"> • High number of detached dwellings, less apartments • In Byron Shire, 57% of households were purchasing or fully owned their home, 24.5% were renting privately, and 1.7% were in social housing in 2016. • Slightly older population with above average numbers of people above 50 years. • Higher than average tertiary qualifications • Smaller proportion of high income households (those earning \$2,500 per week or more) and a higher proportion of medium (<\$2,500 per week) to lower income households (< \$650 per week). • 3,337 low income households (32.5% of all households) • Above average number of households experience housing and rental stress

2.4 Recruitment strategies

Each of the prototype teams had different ideas about how they would recruit participants into an eventual Solar Garden. These variations were important as we wanted the market research to closely reflect and test the proposed recruitment strategy.

Blacktown

Blacktown Council has strong channels into the community through social media, newsletters, rates bulletins and events. The opportunity to participate in a Solar Garden would most likely be advertised through Facebook and newsletters, as well as stalls at local community events.

Swan Hill

The Swan Hill team anticipated working with a community group to roll out Solar Gardens – either a purpose-built group or an existing group such as a church, sporting club, Rotary club or school. The invitation to participate in a Solar Garden would come from a community group that the audience was already part of, or referral from someone in that group. This meant that it would be appropriate for the research to work with and through local community groups to engage participants.

Regional Queensland

Essentially all customers in regional Queensland (outside south-east Queensland) are with Ergon Energy, which means that Ergon Energy has a large customer database through which they can directly market. A key question for Queensland was whether there is sufficient trust in the Ergon Energy brand for this approach to work. Ergon Energy sits under the umbrella of Energy Queensland, along with Yurika, so these are other possible marketing channels. An alternative would be to establish a new community energy cooperative. The Queensland Council of Social Services (QCROSS) is also a partner in the prototype team and has an extensive network of social welfare organisation and community centres through which recruitment could happen.

Shoalhaven

The Shoalhaven team joined the project part-way through Stage 1 of this project, and as such did not participate in the Inception Workshop. However, Repower Shoalhaven have an existing database of people interested in renewable energy that could be approached about a Solar Garden offer.



Byron Bay

Enova has developed a behind-the-meter Solar Garden model where solar panels would be installed on the roof of a local business and households could subscribe, delivering benefits to both the business and the households. Enova is directly approaching local businesses and holding events to advertise the Solar Gardens offer to households. As a result, there is already a list of people interested in the Solar Garden offer.

2.5 Methodology

Behavioural economics

The final market research design for Phase 1 was partly informed by behavioural economics. The field of behavioural economics turns to psychological insights such as message framing as a way to induce ideal policy outcomes. The method of choice for behavioural economics is the RCT (Randomised Controlled Trial), which allows practitioners to test the impact of behavioural economics inspired interventions.

Behavioural economics typically uses large-scale randomised controlled trials to understand how a particular audience actually behaves in response to variations of a product or service. Large-scale quantitative analysis allows for identification of statistically significant differences between audiences or offers. Random assignment to research groups ensures there is no bias towards particular audience characteristics in the sample. Control groups ensure that real differences are identified.

In this case, to the extent possible, we wanted the market research to mimic the way that customers would be recruited into a Solar Garden in practice. The intention was to get a more realistic picture of how customers might react to a real offer, rather than setting up an artificial research situation using focus groups or interviews. Section 2.4 outlines anticipated recruitment strategies.

However, as the prototypes are under development, the actual recruitment channels and the Solar Gardens offer were still unclear. Further, it was not possible to accurately mimic all recruitment channels with the available time and resources. Thus, we recruited research participants in the following way:

- We used Facebook's split test function to conduct several trials of different advertisements that framed Solar Gardens in different ways. The split test assigns different advertisements to random groups, allowing large-scale quantitative comparison of results, and conclusions about preferred messaging. As several prototype teams anticipated use of social media to recruit customers, this approach also gave insights into a potential recruitment strategy.
- In Blacktown and Swan Hill, we used the respective Councils' strong links into the community to recruit focus group participants through local community centres. This ensured that the participants were from the target audience and recruited in a way that was similar to how customers might eventually be recruited into Solar Gardens – through community centres.
- In Queensland, we focused our market research on Townsville, a location identified by the prototype team as a suitable location for a Solar Garden to address electricity network needs. We also worked with the Queensland Council of Social Services to recruit interview participants from local welfare organisations that work with low-income households. Again, the latter are a possible recruitment pathway for Solar Gardens customers.
- In Shoalhaven and Byron Bay, a likely recruitment strategy for Solar Gardens customers would be to use existing databases of interested people. We used these databases to run a survey (Shoalhaven) and to recruit a focus group (Byron Bay).

Focus groups

Focus groups can complement the large-scale quantitative analysis of a behavioural economics approach by going deeper into the language used by the potential audience and gathering rich data on opinions, perspectives and reactions to Solar Gardens. While the rich insights into how people think about Solar Gardens are valuable, focus groups also have limitations.

First, the small number of people involved makes it impossible to claim that the group is representative. While groups are designed to have similar demographic characteristics to the wider population (e.g. gender balance, a range of ages and education), they can be unusual in other ways. For example, the type of person that agrees to participate in a focus group is often someone with more time available than most, and possibly more interest in the topic. Where possible, we sought support from the prototype teams to recruit participants that were genuine members of the target audience, e.g. either through existing contacts (database of interested people in Byron Bay) or local community centres. However, three focus groups



were recruited by a subcontractor (Taverner Research) to meet our demographic requirements. Taverner used telephone recruitment through commercially-available databases.

Second, the focus group is an artificial situation, unlike the actual context in which the customer needs to make a decision about participating in a Solar Garden. It creates time and space to think more deeply about a topic than people are usually able to. A Solar Garden offer is more likely to come when people are busy with other things and to be given less attention as a result. Our experience is that focus group participants are more likely to be positive about an idea during the focus group than they might be when it comes to making a real decision.

Third, people do not necessarily understand their own motivations very well. A behavioural economics approach studies how people actually behave in a particular setting and therefore provides a truer indication of actual audience behaviour. A focus group asks people about that setting and relies on them accurately anticipating their response. Social psychological research indicates that there are many ways in which people can be wrong when predicting their own behaviour, as they fail to take into account contextual factors, competing demands, and so on. These last two limitations can be addressed to some extent by taking the participants through an approximation of a real process of responding to a Solar Garden offer, or using probing questions to dig a bit deeper into initial responses.

Fourth, the group can be dominated by particular participants and move towards a consensus that does not necessarily reflect how individuals will act in practice.

Bearing in mind these limitations, focus groups do offer valuable insights into audience responses to an opportunity. They provide a rich picture of peoples' opinions, perspective and interest. This approach allowed us to learn from our specific target group and probe deeper into their feelings and opinions on a Solar Garden offer. In addition, the feedback from the focus group discussions offered insights that helped to design the Facebook approach, triangulate results and delivered a useful broader range of information that we would not have been able to obtain through the other approaches only. We ran eight focus groups, covering the five locations.

Interviews

Qualitative interviews suffer from some of the same limitations as focus groups, in that they create an artificial situation where the participant is more likely to react positively towards an offer. They avoid the potential for dominance of the group and are able to go deeper into a topic with a single participant than is possible in a focus group. We used interviews to gather insights from people that work closely with the target audience, such as staff in social welfare organisations.

Survey

Surveys can capture both qualitative and quantitative data about a topic, potentially from a large sample. Our use of the Facebook split tests eliminated the need for a large-scale audience survey. However, we did run a small survey with members of Repower Shoalhaven to explore some specific questions about the potential for cross-subsidisation of Solar Gardens by wealthier households. This was an opportunistic inclusion in the research design, to take advantage of the existing database held by Repower Shoalhaven.

Summary

In summary, the market research included:

1. Five rounds of split testing of different messages through Facebook (see Section 3)
2. Eight focus groups covering all prototype team locations (see Section 4)
3. Seven interviews in Queensland and Swan Hill (see Section 4)
4. A survey of Repower Shoalhaven members (see Section 5).



3 Facebook message testing

3.1 Why use Facebook?

As discussed in Section 2.5, we used Facebook split tests to assess levels of audience interest in different ways of describing Solar Gardens. In the split test viewers are randomly assigned to receive one of (up to) five, alternative ads designed to promote a product. It reaches a very large audience, which can be constrained to match the target audience. This gives large-scale statistics on the relative level of interest that the audience has in different messaging in a real situation, i.e. a crowded social media landscape saturated with many different and competing messages.

The results tell us how many people actually clicked on an advertisement, as a proportion of those that saw the advertisement. This is one measure of the overall level of interest in Solar Gardens in the target audience. However, it is important not to read too much into these figures. Facebook may not be the best way to reach potential Solar Gardens customers and getting attention on a crowded Facebook feed is difficult. Face-to-face approaches or other recruitment channels may have a higher success rate.

More importantly, the results tell us relative levels of interest in different messages. If many more people click on a message about saving on electricity bills than a message about environmental benefits, the large random sample allows us to be confident that those results would be reflected in the audience as a whole. This gives important insights into likely motivations for signing up to a Solar Garden that are statistically significant.

Finally, the cost of running a split test can be relatively low, and tests can be run in about a week. The “test and re-test methodology” allowed us to learn from each round of testing and iteratively fine-tune the message in subsequent rounds. Because each round built on what was learnt in the previous round, the discussion below is structured by round. Each sub-section covers both the method and results of that round and how that informed the next round.

3.2 Approach

The most important initial challenge was to work out what would be advertised. The Solar Gardens product does not yet exist, so we could not simply advertise its availability. We also wanted to avoid any deception by implying that a product existed when it did not, and may never, exist. Instead, we decided on a basic advertisement structure that made it clear we were still exploring the idea of a Solar Garden, and asked people to click through to find out more.

When they did click through, they landed at a website that explained the Solar Garden concept and asked them to fill out a short survey to go on a list to find out more information when it becomes available. The number of people actually completing this survey provided additional data on degree of interest in Solar Gardens. The website also included text about how the data would be used, to ensure informed consent. The landing page is shown in Appendix 1.

The next challenge was to design the Facebook advertisements. Facebook advertisements typically comprise a small amount of text and an image. Our overarching strategy was to start with a relatively neutral image of solar power and to vary the text accompanying it, to work out which text performed best. We then intended to take the best performing text and vary the images to find a combination that performed best.

To set up the Facebook split test, it is necessary to make the following decisions:

- What is the purpose of the campaign, e.g. is the goal to have people share and like the advertisement (engagement) or to actually click on it (traffic)?
- What is the audience for the campaign? Facebook provides many descriptors that can be used to constrain the audience. For all but the Byron Bay campaign, we set the audience to include tenants, apartment dwellers and people in Facebook’s lowest two income brackets, i.e. estimated household income between \$40,000 and \$79,999. The Byron campaign used higher income brackets, for reasons outlined below.
- Where should the campaign run? We varied the geographic locations of different rounds for reasons outlined below.



- How many advertisements to run at a time? Facebook allows for up to five advertisements. We used three in our initial tests and moved to five in later rounds.
- How long to run the campaign for? Facebook allows between 3 and 14 days. We found that most campaigns used their allocated budget in about a week.
- What budget to set? Facebook charges for ad placement and uses its algorithms to try and place the advertisements as cost-effectively as possible to achieve the purpose of the campaign. We varied budgets across the different rounds to achieve sufficient reach to draw conclusions.

It is possible to vary where the ads are placed on a page and what devices they are shown on. We left these settings at the defaults, leaving Facebook to determine how best to place the ads and including mobile and desktop devices. Each round is described in more detail below.

When interpreting the results of a Facebook campaign, the key indicator is cost per result. The Facebook split test ensures that the amount spent on each ad version is the same. Facebook does its best based on the ad content and constraints to place the ad in a way that maximises results achieved for that cost.

3.3 Round 1: Pilot engagement test

Round 1 was a pilot test to learn about the Facebook split test function (which is a new feature) and to gain experience with setting campaign budgets, duration and purpose. We made the following decisions:

- The campaign purpose was engagement, which is a measure of the degree to which people are sharing or liking a post. It does not measure whether people actually click on the post and was not a suitable goal for the remaining campaigns but did deliver some interesting findings.
- The location was centred on Blacktown. Blacktown is the most representative location of the Australian population as a whole, so was considered a good place to run a pilot.
- Three advertisements were run, as described below. The text varied but the image was constant.
- The campaign budget for the pilot was \$250. This budget was exhausted within a week.

Ad content

The three advertisements used the neutral image shown in Figure 1. This image was chosen because it shows a solar panel and the sunflower draws to mind a garden, but it does not specifically represent a financial, social or environmental motivation for signing up to a Solar Garden.





Figure 1: Neutral Solar Garden image used in Rounds 1 to 4.

There were three variations of the advertisement text, emphasising different possible motivations for signing up to a Solar Garden:

- **Social inclusion:** “Lots of people are enjoying solar power -- feel like you’re missing out? Maybe you can be part of it all, *without* putting panels on your roof! It’s called a Solar Garden – a new idea we think could work for your community. Find out more!”
- **Financial:** “You want to slash your energy bills, but can’t put solar panels on your roof? With a Solar Garden you might still get to enjoy those savings, like many other Australians! It’s a new idea that might just work for your wallet. Find out more!”
- **Environmental:** “Like many other Australians, you care for the environment... but can’t put solar panels on your roof? With a Solar Garden, you might still play your part! It’s a new idea we think could work for you and the environment. Find out more!”

Concentric Energy drew on behavioural economics to design the message text. All the ads seek to activate social norms with phrases like “lots of people are enjoying solar power” and “like many other Australians”. They all include an identical call for action – “find out more!” Further, they specifically aim to attract the attention of those that are unable to install solar power on their own roof.

Results

The results of Round 1 are shown in Table 1. As the goal of this campaign was engagement, the results indicate that participants were most likely to share or like a social inclusion message and least likely to share or like a financial message. About 16% of people who received the ad in their feed were sufficiently interested to engage with it by sharing or liking.

However, sharing or liking an ad did not translate to actually clicking on it. Only three people completed the online form, indicating that engagement was shallow. People may have been sharing with friends they thought would be interested, or liking the ad as a way of saving it for later.



Ad	Impressions	Reach	Results (shares, likes)	Cost per result
Social inclusion	1,852	1,293	192	\$0.43
Environmental	1,745	1,180	179	\$0.47
Financial	1,359	940	158	\$0.53
Total	4,956	3,413	529	\$0.47

Table 1: Results of Round 1 Facebook testing.

The large discrepancy between engagement with the ads and actually clicking on the ads helped us to see that engagement was the wrong campaign objective and we needed to focus instead on traffic – actual clicks on the ad. This became the focus of Round 2.

3.4 Round 2: Pilot traffic test

In Round 2, we made no changes to the advertisements or budget but changed the objective to traffic (clicks on the ad) and changed the location to the Shoalhaven (centred on Nowra) to avoid over-saturating ads in Blacktown. Results are summarised in Table 2.

Ad	Impressions	Reach	Results (clicks)	Cost per result
Social inclusion	6,274	2,381	57	\$1.46
Financial	6,773	2,308	49	\$1.70
Environmental	7,385	2,490	44	\$1.89
Total	20,432	7,223	150	\$1.67

Table 2: Results of Round 2 Facebook testing.

Several observations can be made:

- Social inclusion continued to be the most effective framing
- Environmental messaging was less effective at getting traffic than engagement
- It is significantly harder to get traffic than engagement. Costs per result increased by more than 3.5 times and participants had to see an ad an average of 2.8 times to click on it once. Only 2% of people who saw the ad clicked on it.

Benchmarking performance of Facebook ads is difficult as there are variations across industries and locations that make comparison problematic. However, a 2% conversion rate is typical for the Australian not-for-profit sector, indicating that these ads did not perform particularly well or badly.

Web form results indicate that only 20 of the 150 people (13%) who clicked on the ad actually completed the web form to get more information. All 20 of these respondents indicated that they lived in a house, which means that the ads were not effective in reaching apartment dwellers, although it should be noted that apartments are relatively rare in the Shoalhaven. Three of the respondents were renting and seventeen owned their home, indicating that the ads also had trouble reaching tenants. It would seem that, at least in the Shoalhaven, the ads were most effective at reaching low-income house owners.

Given the relatively poor performance of the environmental message and related findings from the qualitative research that environmental benefits were not a strong motivation for the target audience, we decided to do further testing of only the social inclusion and financial messages in the next round. Drawing on the qualitative research, we also sought to test some variations of these messages that had emerged as being of possible interest to the audience.



3.5 Round 3: Full scale test of social and financial variations

The Round 3 test had the following characteristics:

- Retained the focus on traffic
- Expanded the locations to cover all prototype locations
- Increased the number of ads to five and varied the text, as outlined below
- Kept the same neutral image
- Increased the budget to \$500 to increase overall reach.

Ad content

In this full-scale test, we tested the following five messages:

- **Social inclusion:** Lots of people are enjoying solar power -- feel like you're missing out? You can be part of it all, without putting panels on your roof! It's called a Solar Garden – a new idea that could work for your community. Find out more!
- **Financial:** You want to slash your electricity bills, but can't put solar panels on your roof? With a Solar Garden you can still enjoy those savings, like many other Australians! It's a new idea that might just work for your wallet. Find out more!
- **Blended social financial:** Lots of people are slashing their electricity bills with solar power -- feel like you're missing out? You can be part of it all, without putting panels on your roof! It's called a Solar Garden – a new idea that could work for you and your community. Find out more!
- **Social inclusion and jobs:** Solar power is booming in Australia. Is your community missing out? You can be part of it all, without putting panels on your roof! It's called a Solar Garden. It's a new idea that can save you money, and also bring new jobs to your community. Find out more!
- **Financial with no upfront cost:** You want to slash your electricity bills, but feel like you can't afford to put solar panels on your roof? With a new idea called a Solar Garden you can still get the savings enjoyed by many other Australians, but without having to find the money upfront! Find out more!

Some small wording changes were made to the original social inclusion and financial messages to make the language more direct and certain. Given that both the social inclusion and financial messages had performed well, we decided to test a message that included elements of both. We then tested a variation of the social inclusion and financial messages. One drew attention to the potential for Solar Gardens to deliver jobs for the community, as this had been identified as a possibly important benefit in some interviews. The other made it clearer that a Solar Garden could have no upfront cost, as this was an important consideration for many in our focus groups.



Results

Results are summarised in Table 3.

Ad	Impressions	Reach	Results (clicks)	Cost per result
Financial	7,667	4,685	94	\$1.06
Blended social and financial	7,714	4,691	78	\$1.28
Social inclusion	9,141	5,434	71	\$1.41
Social inclusion and jobs	11,028	5,768	70	\$1.43
Financial with no upfront cost	11,320	6,192	63	\$1.59
Total	46,870	26,920	376	\$1.33

Table 3: Results of Round 3 Facebook testing.

We can observe the following:

- The financial message replaced social inclusion as the winner in a full-scale test across all locations. This may be because the tweaks to the wording of the message created a greater sense of certainty in the savings, or because this message is more important across the audience as a whole.
- The cost per result is significantly lower, which could be due to the improved message wording but also due to the larger audience available. The audience in the Shoalhaven may be more difficult to reach.
- The conversion rate was only 1.4% for each person served an ad, but it only took an average of 1.7 views of the ad to get a conversion. Combined with the lower cost per click, this indicates that the Shoalhaven is a relatively expensive location to advertise compared to the other prototype locations.
- The blended social and financial message performed quite well and out-performed the social inclusion message alone. This further reinforces the importance of the financial message for this audience.
- The ad stressing no upfront cost performed the worst. This is surprising given the importance of this feature in our qualitative research. The use of the phrase “can’t afford” may have turned people off as many may not want to admit that as a motivation.

Of the 376 people that clicked on the ad, 32 went on to fill out the web form. They included:

- Six renters and 26 home-owners
- Eight apartment-dwellers, 23 house-dwellers and one unknown.

These ads performed slightly better in reaching beyond low-income house-owners.

Based on these results, we took the top two ads from this round through into a final round of testing to identify images that might increase the performance of each ad.

3.6 Round 4: Full scale image testing

In Round 4, we ran two separate tests using the same location settings as Round 3.. Each participant in this test round received the financial message, accompanied by one of the five alternative images. The other test did the same with the social inclusion and financial wording. A budget of \$400 was set for each test – slightly less than the previous test, as a slight reduction in reach would not prevent meaningful results.

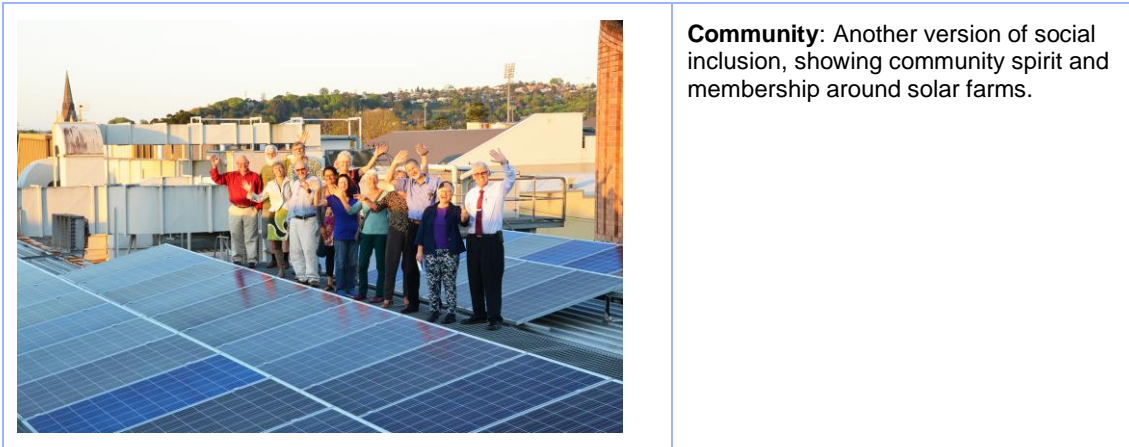


Ad content

The intent in this round was to vary imagery to see if the ads could be more effective if imagery was used that reinforced the message. We retained the neutral image, but added four more images, as shown in Table 4.

Image	Rationale
	<p>Money: Stressing the money savings available by investing in solar power, using Australian money to make it relevant and tangible</p>
	<p>Bills: A more abstract focus on high cost of the electricity bill, bringing forward ideas of budgeting and financial management</p>
	<p>Aerial: We felt that this reinforced a social inclusion message by showing solar power as common and making it tangible. At the same time, it has a social equity implication – the wealthy beachside houses can afford solar power but those on the other side of the street largely cannot.</p> <p>(Note: Facebook cropped this image from the square format to a landscape format, which meant that the waterfront aspect was very hard to see in the image presented in the ads).</p>





Community: Another version of social inclusion, showing community spirit and membership around solar farms.

Table 4: Image variations for Round 4 Facebook testing.

Results

The results of the Round 4 image testing are summarised in Table 5 for the financial message and Table 6 for the financial and social inclusion message. We observe the following:

- The best performing image in both tests was the aerial image showing homes with solar panels. This image does several things. It emphasises a social norm of many people having solar power, which creates a desire to be part of that group. It also reinforces a message that there are people that have solar on one side of the street and people that are missing out on the other. Finally, it is less obviously a stock image and perhaps creates more visual interest.
- The new images drove more traffic than the neutral image in all cases, except when the image of an electricity bill was combined with the social inclusion / financial message. The image is not inconsistent with the message, but it does only reinforce part of the message. It is also very individual when the message has a social dimension.
- After the winning aerial image, the best performing images in each test were those that emphasised the message: money and bills for the financial message; community for the social inclusion message.
- The cost per result in these tests was higher than in Round 3. Comparisons should not be made between rounds, as the conditions for the rounds are different. The only factor of interest here is the relative performance.

Image	Impressions	Reach	Results (clicks)	Cost per result
Aerial	4,886	3,503	65	\$1.23
Money	5,389	3,484	61	\$1.31
Bills	6,662	4,235	57	\$1.40
Community	5,935	3,761	56	\$1.43
Neutral	8,262	4,693	50	\$1.60
Total	31,134	19,775	289	\$1.38

Table 5: Results of Round 4 Facebook testing for the financial message.



Image	Impressions	Reach	Results (clicks)	Cost per result
Aerial	5,811	4,181	57	\$1.40
Community	5,438	3,663	52	\$1.54
Money	9,493	5,491	49	\$1.63
Neutral	7,613	4,635	45	\$1.78
Bills	8,642	4,975	36	\$2.22
Total	36,997	23,981	239	\$1.67

Table 6: Results of Round 4 Facebook testing for the financial and social inclusion message.

Of the 528 people that clicked on one of these ads, 28 went on to fill out the web form. They included:

- Eight renters and 20 home-owners
- Seven apartment-dwellers and 21 house-dwellers.

Compared to Round 3, these ads performed slightly better at reaching renters and apartment-dwellers.

3.7 Round 5: Byron Bay traffic test

The final round of Facebook testing for Phase 1 used the same messages, images and budget as Round 2, but changed the location, audience and web link. This test was run in Byron Bay and used a higher income audience. The ads linked through to Enova's website describing their behind-the-meter Solar Garden model. The ads were sent out by Enova and associated with Enova's Facebook page. Results are summarised in Table 7.

Ad	Impressions	Reach	Results (clicks)	Cost per result
Environmental	9,321	3,290	51	\$1.63
Social inclusion	11,346	3,301	44	\$1.89
Financial	10,490	3,113	37	\$2.25
Total	31,157	9,902	132	\$1.89

Table 7: Results of Round 5 Facebook testing.

The most noteworthy change from the other rounds is the reversal in popularity of the environmental and financial messages. For wealthier Byron Bay households, environmental benefits were a stronger driver of clicks on the ad than financial benefits. This makes sense. Byron Bay is known as an area with a strong environmental consciousness, and for higher income households, the need to save on energy bills is far less acute.

This test shows that regional and demographic variations will be important when determining marketing strategies in each prototype location. Further location and model-specific testing will be appropriate during the Phase 2 market research.

3.8 Summary

All of the messages drove some traffic to the website. This means that there is an audience out there for all of the messages and none should be totally abandoned, except those where the image is poorly aligned with the text, wording is vague about benefits, or the image lacks interest (e.g. the bills image). The conversion rates across all the tests were normal for this type of offer on Facebook. About 1.5 to 2% of people who were served the ads were sufficiently interested to click on the ad. This is not a measure of



audience interest in Solar Gardens, as Facebook would not be the only marketing channel and is unlikely to be the best channel for this offer. It is only the relative level of interest in each ad that is important.

All of the ads used some principles from behavioural economics to attract attention, such as emphasising social norms and including a call to action. Along with using direct language about benefits, these principles helped to get attention for an ad that was in many ways a difficult sell – a non-existent offering, asking people to give their email address for more information in the future.

Some messages did perform better than others, fairly consistently. The messages that emphasised saving on electricity bills drove the most traffic in the full-scale tests across all locations and appear to have most appeal for the target audience. Messages emphasising social inclusion – being part of the solar revolution – were not far behind. Environmental benefits were of less interest for most of the audience but did appeal to a higher income audience in Byron Bay, showing that messaging will need to be tailored for the precise audience for each prototype.

The image testing showed that images that reinforce the message in the text improve performance over the use of a neutral image. The best performing image was also the most subtle at reinforcing the message in the text and is arguably a more novel image than the others, helping it to capture attention. Images that more obviously reinforced the message in the text still performed better than the neutral image.

In general, bringing bill savings to the fore but also mentioning social inclusion and environmental benefits in supporting material should be an effective marketing approach for this audience. Using images that subtly reinforce the message and are likely to capture attention is also a promising strategy.

4 Qualitative research: focus groups and interviews

The qualitative research approach comprised focus group discussions and interviews to investigate individual motivations, concerns and interests with regard to the concept of Solar Gardens and the promotion of a potential offer. Qualitative research is a valuable component of the overall research design because it allowed us to:

- Learn what kind of language the audience actually uses, “in their own words”
- Observe face-to-face reactions to the concept and different ways of framing it
- Dig deeper into specific elements of the Solar Gardens offer
- More precisely target the desired audience
- Have the flexibility to respond to questions and follow the conversation in different directions

4.1 Methods

Focus Groups

As summarised in Table 8, eight focus group discussions were held across all locations of the prototype teams, respectively Riverstone (Blacktown), Nowra (Shoalhaven), Swan Hill, Townsville (Queensland) and Byron Bay. The focus group participants were recruited through local community organisations, the prototype partner organisations and Taverner Research. Participants were selected based on their presumed income level, gender, age, dwelling type and tenure status with the recruitment aim to receive a good representation of all the classifications, across the focus groups as a whole.

A total of 73 people participated in the focus group with a gender split of 39 female and 34 male attendees. In the majority of groups a broad age range of 25 to 75 years was represented. One focus group was held with an older cohort with nine attendees beyond 65 years.

The focus groups ran for between 30 minutes and 2 hours and attendees received a \$20, \$40 or \$80 gift voucher dependent on the length of the conversations to compensate for their time. All focus groups took place in local community or cultural centres, or university facilities. Apart from the two focus groups in Blacktown where two researchers were present and involved in the discussion, a single researcher facilitated and recorded the other discussions.



The conversations were guided by a questionnaire (Appendix 2). It was adapted and changed after the discussion and information gathered at the first focus group session in Blacktown. Questions were also updated for specific focus groups to suit the audience and location. A difference between the one and two-hour focus groups was the time spent on questions. In the two-hour groups, we were able to hear from more of the participants on each question and spend more time digging into their answers.

Depending on the audience, we had three main foci tested: the general motivation, the affordability of Solar Garden offer and the potential to cross subsidise a Solar Garden subscription or investment. All focus groups explored motivation and all but one explored affordability. Four groups where participants were not exclusively from low-income households explored the potential for Solar Gardens participants to cross-subsidise participation by others for social access reasons.

More specifically, each focus groups covered all or most of the following themes:

- Electricity literacy and awareness of solar power benefits
- Reactions to Solar Gardens
- Main questions and concerns about the concept
- Financial model
- Cross subsidies
- Marketing and communications
- Trust
- Location
- Other themes.

These themes structure the discussion of results below.

The questionnaire can be found in Appendix 2.



Locations	Blacktown 1	Blacktown 2	Swan Hill 1	Swan Hill 2	Townsville	Nowra	Bryon Bay 1	Byron Bay 2	Total
Focus Groups									
Number of people	12	10	13	9	8	6	9	6	73
Duration	60 minutes	60 minutes	60 minutes	30 minutes	120 minutes	120 minutes	60 minutes	120 minutes	10.5 hrs
Gender split (f/m)	7/5	7/3	8/5	6/3	3/5	4/2	2/7	2/4	39/ 34
Age range	Mix	Mix	Mix	> 65	Mix	Mix	Mix	Between 40 and 55	
Other demographics	Low income households and renters	Low income households and renters	Low income households and renters	Low income households and renters	Low to middle income and renters/ apartment dwellers	Middle income and renters/ apartment dwellers	Middle to higher income and renters/ apartment dwellers More environmentally oriented	Higher income	
Main focus of testing	Motivation Affordability	Motivation Affordability	Motivation Affordability	Motivation Affordability	Motivation Affordability & Cross subsidising	Motivation, Affordability & Cross subsidising	Motivation, Affordability & Cross subsidising	Motivation, Cross subsidising	

Table 8: Summary of Focus Groups

Interviews

Some members of the target audience are difficult to reach in person. Disadvantaged households can be difficult to engage and may be unwilling or unable to participate in focus groups. To gain insights into the needs of disadvantaged households, we interviewed staff from social welfare organisations in Swan Hill and Queensland that work closely with these households.

Contact to the interview partners was established through QCOSS, Swan Hill Neighbourhood Centre and Swan Hill Rural City Council. The partner organisations introduced the researchers to selected individuals representing a local or state-wide operating social welfare organisation providing services to disadvantaged and very disadvantaged community members.

The interviews were guided by a questionnaire covering similar topics as the focus group discussions (Appendix 3). The representatives were asked about the interests and abilities of their clients to participate and take up the offer of a Solar Garden.

A total of seven interviews were conducted with 4 female and 3 male participants. The interviews were conducted face to face (Swan Hill and Townsville) or over the phone (Queensland) and took between 30 to 75 minutes.

The questionnaire is attached in Appendix 3.



Locations of interview partners	Swan Hill 1	Swan Hill 2	Swan Hill 3	Queensland 1	Queensland 2	Queensland 3	Queensland 4	Total
Interviews								
Organisation/ individual type	Council staff and Local Aboriginal Elder	Mallee Family Care	Rotary Club member and	NOTCH	Carers Queensland	Queenslanders with Disability Network Ltd (QDN)	Financial Counsellors Association of QLD	7
Female/ male	Female	Male	Male	Female	Female	Male	Female	4/3
Duration	20 minutes	30 minutes	30 minutes	40 minutes	75 minutes	60 minutes	60 minutes	5.5 hrs
Representing / serviced group of the community	Aboriginal community	Low income households in Swan Hill	Higher income, club members in Swan Hill	Mixed of low income households, disadvantaged and those better off	480,000 carers in QLD with 26% of them living in entrenched poverty	1,500 members, most renting, privately or public/ community housing	Lowest quantile of the income spectrum	
Focus of interview								

Table 9: Summary of Interviews

4.2 Results

Focus groups

Electricity and solar power literacy

The majority of participants had a good understanding of the problems and potential solutions associated with their electricity consumption. Most of them knew their electricity retailer. The vast majority, in particular those participants from low income households considered their electricity bills as too high, coming as a shock when they open the mail. One focus group made up of older people (>65) stood in contrast to that: they were quite content and said their electricity bills are manageable and electricity saving measures are not necessary.

Most participants had tried simple actions to reduce their electricity use but seen little bill impact due to electricity price rises happening over the same period. Some were quite frustrated at the high fixed cost component of their bill and the lack of options they have to manage their bill.

People receive their electricity bill either quarterly, monthly or have fortnightly payment plans set up through their retailer, Centrelink or on their own initiative to manage the costs.

The general benefits of solar power were well understood by the participants across all different income levels. The barriers for attendees from low-income households to obtain solar power were predominantly associated with the upfront costs (financial limitations) and their tenure status as renters or dwelling status in apartments. Attendees with slightly better financial situations mentioned the reduction of solar rebates, and being uncertain whether solar would still make economic sense as they were removed. Among the higher income earners, similar doubts about the financial return were mentioned, and issues with solar suppliers (companies disappearing) and the quality of their service were raised. Participants were also concerned about buying in at the wrong time when technology keeps improving and costs are going down.

Attendees from low-income households and/or renters were in agreement that they are missing out on solar. High-income households felt that they have many other options and are potentially considering going off grid with solar-battery systems.

Reactions to Solar Gardens

The Solar Garden idea was generally very well received:

“Great idea!”

“Sounds fantastic!”



“If you are renter you can’t put it on your roof but if you can still buy the panels and get the electricity, that’s great!”

Before or after this generally positive response, the first unprompted questions in all of the focus group discussions were about the potential financial benefits and what savings or returns the participants could expect. While they appreciated the concept, they were wary about the detail and whether it would actually stack up in practice, particularly as we were not able to provide concrete figures at this early stage.

Other responses were diverse. The focus group in Townsville focused briefly on costs and benefits but moved rapidly on to the integrity and transparency of the scheme, exploring details of how it would be governed and assured.

Jobs and social inclusion was mentioned occasionally in the context of missing out on solar, or perceiving that there are “haves and have nots”.

Feedback from elderly people was positive but some said they wouldn’t consider it for themselves since they fear not to reap the benefits in their lifetime.

Attendees from high-income households in Byron Bay were rather wary, scrutinising the financial benefits, and were very sceptical about the desirability for themselves, since they would expect greater returns from installing solar directly and not going through a broker/ facilitator.

The environmental message and benefits of a Solar Garden were only discussed in the Byron Bay group without prompting. This group suggested that knowing how much CO₂ was saved through a Solar Garden membership/ panel performance (and tracking it) would be particularly attractive to some potential buyers. Yet, similarly to the other groups, the financial benefits were also subject of discussion and deemed as equally important as the environmental message. The other groups (with attendees mainly from low income households) recognised that there were environmental benefits only after being specifically asked about it. It became clear that environmental concerns are far removed from their daily reality and they can’t afford to think about it.

Question: *“Would anyone do it if it wouldn’t save you on your electricity bill?”* Answers in the room: *“No, no we wouldn’t do it! There will be people out there that would do it for environmental reasons. But I can’t be asked that.”* (Riverstone Group 1). One woman: *“Yes, the environment, but it comes out of your pocket. Some people just can’t afford it.”* (Riverstone Group 2)

Financial model

The subscription model received the greatest interest among low-income households, who wouldn’t be able to afford the upfront costs of buying a share in a Solar Garden. A monthly/ quarterly subscription with their electricity bill was a feasible scenario.

Due to the lack of concrete figures to present (except for Byron Bay), participants were asked about their expectations regarding the quarterly savings on their electricity bill. The feedback ranged widely from a few saying they would be hoping to see at least \$25 (quarterly), with others expecting up to \$180 reduction to make it interesting for them to change retailers. In Townsville, the group agreed that they would expect a 20% reduction of their electricity bill if they were going to sign up. The need to see a (good) financial benefit was particular emphasised in the discussion since a majority was aware of the competition in the electricity market and their option to shop around for better deals.

In Byron Bay, participants were introduced to Enova’s Behind the Meter Solar Garden Model which requires an upfront payment. The participants of the first focus group in Byron Bay were asked how much they could afford for the upfront cost. The answers ranged from the lower end \$300 to \$500 (3 answers), to \$1,500 to \$2,000 (5 answers) and one reply at the upper end with \$10,000. The question was reframed in the second group in Byron Bay, asking about how much they would expect to save on their bill with a “Solar Gardens membership”. The answers ranged from \$400 to \$1,200 annually, (with one outlier expecting \$6,000 per annum). When the figures were presented attendees of the first group were rather positive. The feedback from the second group was rather sceptical, almost in disbelief – saying “it’s too good to be true”.

A “Try-Evaluate-Continue or Stop” model was mentioned by one female as a potential way for her to engage with Solar Garden membership/ subscription. A “Rent-Try-Buy” model was also mentioned in two groups.

The expectations regarding the payback time varied across all focus groups. On average, a 5 years payback time was considered acceptable. Yet, contracts beyond a 5 years’ timeframe were seen as a “killer” for the model. In addition many participants expressed unrealistic expectations – seeking higher returns and shorter payback times than private rooftop solar power. There was some evidence that participant expectations on returns were “anchored” by figures that we shared on the return associated with rooftop systems, as they often mentioned similar figures. As such, the figures presented here should



be interpreted with caution. It will be important to gauge reactions to the figures associated with a real offer in due course.

Cross-subsidising

The concept of potential cross-subsidising was tested in Byron Bay, as well as briefly discussed in Nowra and Townsville.

The first group in Byron Bay was quite open to the idea and pointed out that it would be an option to help relatives or friends to reduce their environmental footprint. They highlighted that promoting the environmental message would be quite important in this context. In contrast, for the second group (attendees with higher income levels) the idea of supporting low income households with a slightly higher membership fee or through gift cards was not considered an option unless it was for close relatives (e.g. own children).

Attendees in Nowra would only consider it for close relatives, like their parents.

In Townsville, people were not keen on cross-subsidising but liked the idea of a gift subscription.

Main questions and concerns

The participants raised a number of questions and concerns after their first reactions on the concept.

- Succession: could the solar panels gifted to children?
- What happens when they move to another state beyond the borders of the retailer?
- Competition: what if there are more offers – does my subscription adapt to changing market conditions?
- What happens if you would move in with another person and the electricity bill is considered under the other person's name, can you change the recipient easily or can you get the credit in another form?
- What are the maintenance costs and will they be considered in the subscription/ upfront costs?
- How could you cancel your subscription, are their penalty clauses?
- Can you sell the panels back to the retailer – and would the retailer sell it then, potentially as a “second- hand panel”, because it doesn't have the full life span anymore?
- What happens if you are not getting consistent savings? What happens if you were at a loss over a 12 month period?
- What happens in case of damage to the panel – do you have to pay extra or is that covered by the standard costs? Do you have to pay for getting the panel replaced? What happens to your electricity costs? Will you go back on your previous tariff or will your tariff be raised?
- Who monitors how each of the panels performs, and that they work effectively and if the individual is getting what they should be getting?
- Who is doing the auditing and providing guarantees? How can we be sure of the integrity and transparency of the scheme? Some wanted long-term guarantees of 20 to 25 years.
- What is the length of contract period? While 5 years were considered acceptable (but still difficult for e.g. younger people), most participants saw everything beyond that as not feasible/ attractive.
- What would be the usual scale of a Solar Garden? How many households (from one city) will be able to participate? How small could the Solar Garden be? Could landlords be included as hosts in the Solar Garden model?
- When considering a Solar Garden membership as a gift, would it be possible to write it off as a charitable donation?
- Is there a lag time between buying the panel(s) and the return – will it come from existing farms or driving new build?

Location

The questions under the “location theme” were focused on getting a better understanding of the local place attachment in regard to a Solar Garden offer and if it had an impact if the offer came from a local or distant (in another state or region) project.



Except for the focus group participants in Byron Bay, attendees in the other locations emphasised that location doesn't matter as long as they receive the benefits. Some laughed it off as not important at all.

In Byron Bay, participants from both groups pointed out that the locality would be an(other) important selling point.

Nonetheless, some participants enjoyed the idea of being able to actually go to the Solar Garden and taking pride in seeing their 1 or 2 panels in the array.

In the discussions two related themes emerged:

- In the context of regional development, the attendees in Nowra discussed the opportunity to support struggling local farmers with a subscription. It was suggested that drought stricken farmers could turn their farm into a Solar Garden and could "continue to keep up their lives".
- In reference to a large solar farm being currently built outside of Swan Hill, the attendees emphasised that it would be important to them that local tradies were employed in the construction and installation of the Solar Garden. Local jobs were also important to one participant in Townsville.

Marketing and communications

Under the theme "marketing and communications", participants were asked about preferred channels through which they would like to hear about a Solar Garden offer and are most likely to respond to. A great variety of possible media were stated:

- Television ad
- Face to face in town hall events, community discussions and presentation at local library or community centre
- Retailer
- Newspaper
- Radio
- Facebook (for younger people)
- Mail coming from Council
- Council newsletter.

Some participants would hope to hear about it through multiple channels which would also increase the confidence to pursue the offer. It was emphasised that most of them like to pro-actively engage and take control in pursuing such an offer rather than being stopped (at a shopping mall), exposed to a door knocking situation or being called over the phone.

Trust

The element of trust was another theme discussed with the groups. The participants were asked which entity they would trust most with a Solar Garden offer. The answers varied across the locations to some extent.

Townsville participants expressed zero trust in Ergon Energy and little confidence in big institutions. They thought that local governments, NGOs and community organisations were more trustworthy.

In Swan Hill, participants expressed their trust in government bodies – some emphasised that they have less trust in retailers. The Local Council was identified as good communication channel and trusted entity.

In Nowra, environmental organisations and government (Federal/ State Department of Environment) were seen as trusted bodies, while lower level of trust were expressed towards bigger companies.

Some participants in the second focus group in Byron Bay (high income cohort) expressed their concerns about Enova being a social enterprise and community organisation posing potential risk associated with them being a relatively new market entrant (financial viability etc.). A majority in this group would predominately consider offers from the big retailers as trustworthy (AGL, Origin or Energy Australia).

Other themes: local champions and participation

When applicable (time and context), further questions were posed to investigate individuals' interest in becoming local champions for Solar Gardens, participating in events of a "Solar Garden community" or any



other form of engagement associated with their membership/ subscription, and willingness to support other community members to access Solar Gardens.

There was generally positive feedback on the idea of becoming a local champion for Solar Garden. However, participants (Nowra) would expect a financial compensation or free membership to get involved.

Dependent on the participating cohort, the responses regarding participation and engagement (e.g. joint events, community meetings, education events etc.) differed: while in Nowra participants didn't want to meet their neighbours and/or others as potential co-subscribers in Solar Garden event and are only interested in learning about the performance of the farm and their panels through e.g. newsletters, the idea was more positively received in Byron Bay (first focus group).

Interviews

Most of the interview partners were working with very disadvantaged community members. They considered their clients to have a low level of energy literacy and a lack of knowledge about the benefits of solar power. Two interviewees described some of their community members as energy savvy but lacking the financial means to get solar themselves. All of them described the costs of electricity as an increasing issue for those households.

All agreed that the Solar Gardens concept is a great way to help their community members with electricity bills. They noted that their clients wouldn't seek it out themselves, but would need guidance and specific facilitation to access a Solar Garden offer. Two interview participants suggested that a Solar Garden offer should be part of a hardship program or government program (Centrelink etc.).

One interviewee particularly highlighted additional barriers with regard to literacy and numeracy. She pointed to the fact that a fair amount of people in Australia (~30%) lack English literacy and numeracy and will not understand offers sent via mail or email. This group is very diverse in terms of ethnicity and background (capacities). Consequently, this will impact the communication and promotion of Solar Gardens.

The interviewee partners offered to promote Solar Gardens, and also emphasised the importance of face to face engagement with a trusted entity.

5 Survey

In order to gauge the appetite of members of a community energy organisation and their responsiveness regarding the potential for cross-subsidising other community members or low income households, a survey was sent to the contact list of Repower Shoalhaven. Based on discussions with Repower Shoalhaven, our expectation is that this audience would not be dominated by low-income households and should include a significant proportion of wealthier households. As such, this was an excellent opportunity to test willingness to provide cross-subsidies.

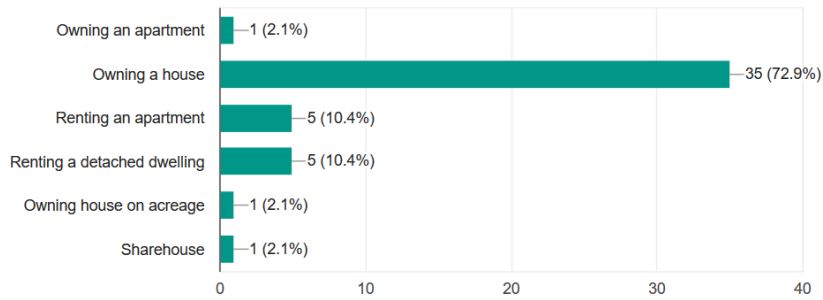
The questionnaire is provided in Appendix 4.

We received 48 responses and present key results below. The first two charts indicate that the respondents are indeed likely to be wealthier households, with most owning their own home and finding energy bills manageable.



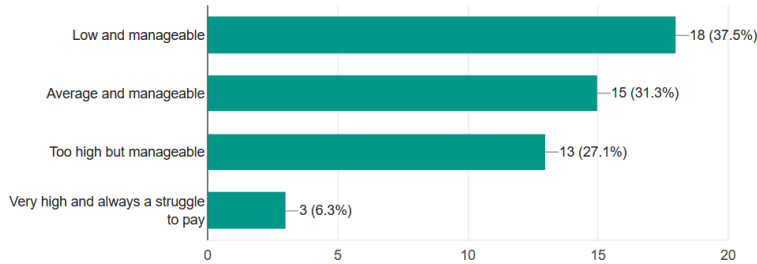
What is your housing situation?

48 responses



Do you think your electricity bill is: (Please tick)

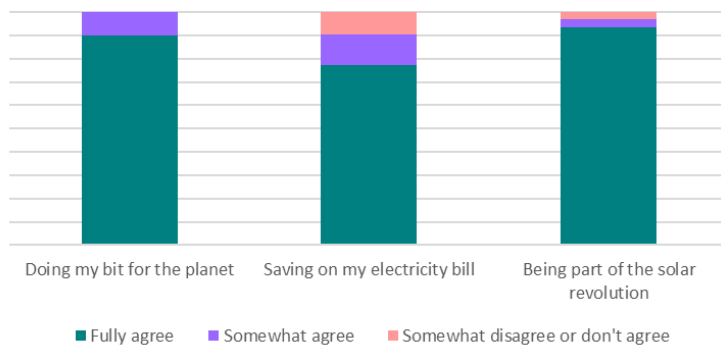
48 responses



The majority of respondents already have solar power: 64.6% stated they have solar, while 35.4% don't have solar.

The drivers for having solar are social and environmental motivations. The social driver ranks marginally above the environmental one while financial considerations received the least "fully agree" votes.

If you have solar, what do you think is the greatest benefit? Please rank:

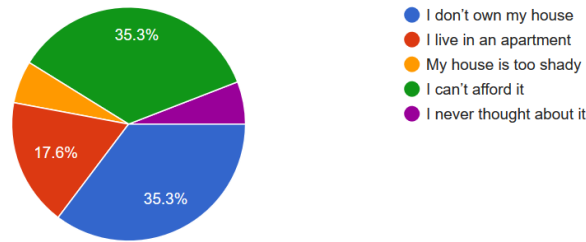


The main reasons for those not having solar is their housing situation not owning their house or living in an apartment and/or their can't afford it.



If you don't have solar, why don't you? (Tick as many as apply)

17 responses



The idea of a Solar Garden was well received among the majority of survey participants. 56.3% (#27) of the respondents would sign up for it, while 27.1% (13) were undecided and 16.7% (8) said no.

Some of the feedback included comments such as:

"Sounds excellent. Maybe hard to explain to people who aren't already familiar with domestic solar.

Sounds a good initiative.

We should have them too!

That's cool, I hope you can buy small ones because cost is a problem for me

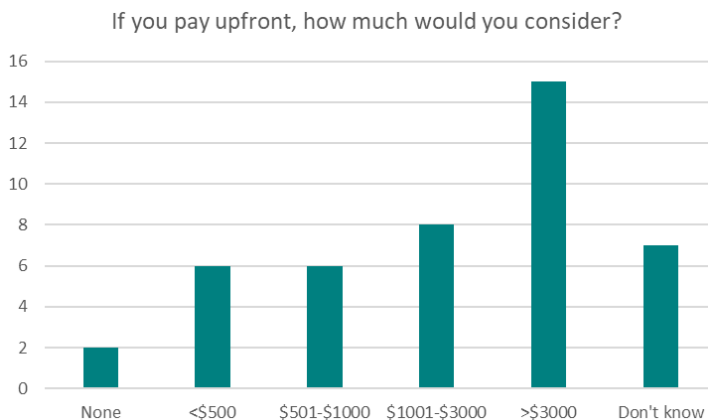
I have been looking for something like this for years, as our roof is not that well suited for PV solar. I can not fathom why this is not already available on a large scale. My only concern is that I do not live in the Shoalhaven area, but in Sydney. I would LOVE to invest in something like this and cover our household electricity consumption via an appropriately sized patch in the local Solar Garden - where I have a tangible connection to my "green power", instead of just a line entry on my electricity bill, which means I have to pay more to my electricity company when I do not trust them that they will actually invest my money into renewable energy generation.

I think it is a great option for people who can not do it themselves! Also every solar panel is a statement for more renewables, we can't get that message out there enough - showing it is possible!!

Great idea, willing to provide support in Southern Highlands."

There is a slight preference for the upfront cost model (34.9% or 15 respondents), while 25.6% stated that they prefer the subscription model (11). Yet, 1/3 of respondents (34.9% or 15 respondents) didn't have a clear answer for this question.

The majority of respondents are able to afford upfront costs beyond \$3000 to participate in a Solar Garden.

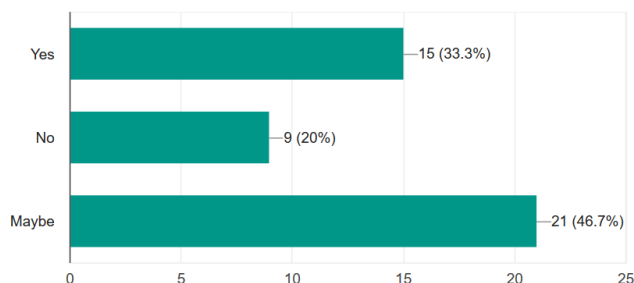


The majority of respondents considered approximately \$100 an attractive incentive for signing up to a subscription model.

The idea of supporting someone else with a Solar Garden membership or subscription was mixed. A majority would consider gifting a share to a family member (63.4% or 26 respondents) while 29.3% (12 respondents) would support a low income household with a gifted share. 46.7% didn't know if they would pay more to help a low income household to afford a Solar Garden membership.

Would you be willing to pay more so that a part of the Solar Garden could be for low-income households?

45 responses



1/3 would pay more to support a low income household while the majority of those (66.7% or 22 respondents) consider 10% as adequate cost increase. 6 respondents would consider paying 20% or more.

6 Discussion and recommendations

6.1 Can it work?

Overall the idea of a Solar Garden was very well received by all research participants. Participants universally applauded the concept for its social justice commitment and potential to offer personal benefits – face-to-face, they all claimed to be interested.

The Facebook split testing found that around 1.5 – 2% of people served an ad were interested enough to click on it. While this seems very low, it is a fairly typical conversion rate for an offer of this kind and could be seen as strong performance for an offer of something that does not yet exist and lacks detail. The Facebook performance should not be interpreted as lack of interest in the concept.

Ultimately, the viability of a Solar Garden offer depends crucially on the financial model. After the initial warmth towards the concept, participants always went on to question the costs and benefits and seek more details on what they would have to pay and what they would save. The market research found that participant expectations of rate of return were unrealistic and unlikely to be met by a real Solar Garden offer. These findings, too, need to be interpreted with caution. Participants were influenced by figures we presented on the payback of rooftop solar systems and also likely sought higher rates of return as a response to the uncertainty about the financial model. When a real offer is on the table, it is likely that more modest returns will be acceptable.

If the costs do stack up, then potential customers will start to scrutinise other aspects of the model and these need to be thought through and fully documented, as discussed below.

The evidence so far from the market research is that a Solar Garden model can work for the target audience as long as the rate of return is not radically different to a rooftop solar system. Further testing of prototypes with real figures will be essential in Phase 2 of the market research.



6.2 Essential elements to support customer decision-making

The focus group discussions and interviews provided insights into the main questions and concerns of potential Solar Garden customers. The list below documents frequently asked questions (FAQs) across the focus groups. The list of such questions and concerns was long, including many questions that were anticipated prior to the research and some that were unanticipated.

Focus group participants wanted a comprehensive, plain-English 'FAQ' for the Solar Garden offer that covers all of the details needed to inform a customer decision. If the prototype teams decide to proceed with a pilot, a detailed FAQ of this type would be essential. While it would be premature to develop this FAQ before deciding whether to proceed with a pilot, coming up with answers to the following list of FAQs should be an important part of prototype development:

- How purchase or subscription to a Solar Garden will connect with the solar farm development process, in particular whether there is a lag time between a customer committing to a Solar Garden and receiving their first returns
- Eligibility criteria for Solar Garden participation, to ensure that access is limited to those who cannot access rooftop solar and not bought up by those who have other options
- Estimated life cycle costs and benefits, expressed in easy to follow language. Upfront costs should be connected with estimated payback periods, and subscriptions should be connected with an estimate of net dollar or percentage savings per bill. Full life cycle costs, including costs of maintenance and repair, need to be documented.
- Potential risks, such as having a higher bill during the winter months in return for a lower bill in the summer months, and ways those risks can be managed. This should include what the customer's options are if the expected return is not delivered.
- Contractual details, such as duration and opt out arrangements. Contracts need to be simple and transparent, and should balance guaranteed returns with flexibility to opt out. To engender trust in the scheme, penalty clauses for cancellations should be avoided.
- Portability, including rights when transferring to another retailer or changing living arrangements and options if moving to an area where the Solar Garden offer is not valid (e.g. overseas).
- Sale and inheritance arrangements
- Arrangements for maintenance and repair of the Solar Garden and their impact on the customer's bill, including liability, warranty and insurance arrangements.
- Auditing and assurance to monitor performance of the panels, ensure correct allocation of generation to customers and identify faults or issues rapidly. Some customers will want to be able to monitor the power, financial and environmental performance of their investment in real time, or close to it, so the prospectus should discuss information portals as well.
- Gifts and tax deductibility
- Sign up and waiting list arrangements.

This is a lot to cover and it will be important to make an FAQ document clear, simple and succinct, with an information hierarchy that allows potential customers to dig deeper into particular issues if they so desire.

6.3 Financial models

The financial proposition presented by a Solar Garden model is arguably the most important factor determining whether the target audience will sign up. In the full-scale Facebook testing, financial messaging emerged as the most effective at motivating potential customers to click on the ads. In each of the focus groups, the initial questions after introduction of the Solar Garden concept always focused on what it will cost me and what it will save me. Support for the Solar Garden concept was strong but was always qualified by a requirement for it to make sense financially.

In the absence of information on actual costs and benefits, research participants held unrealistic expectations for the rate of return from a Solar Garden. Many expected it to save them more than a rooftop system, even after facilitators made it clear that this would not be possible. A payback period of five years was the maximum put forward by research participants as acceptable. We do not think that this necessarily undermines the feasibility of Solar Gardens. Seeking a greater rate of return is a typical human response



to uncertain situations. Expectations should become more realistic when there is an actual model to engage with.

Nevertheless, it is a reminder that customers will be comparing Solar Garden financial performance with other options available in the market. Many had seen offers from solar suppliers previously. The market research confirmed the target audience of the solar garden, and that the Solar Garden Teams should exclusively promote to consumers who are unable to have solar on their roofs. Low-income households that do own a suitable roof for solar power would be better off pursuing a solar leasing arrangement for their roof rather than a share in a Solar Garden. The model should be targeted more closely at tenants, apartment-dwellers and others with unsuitable roofs.

Three distinct financial models for a Solar Garden were discussed during the market research – two introduced by the facilitators (1 and 2 below) and one introduced by participants in several of the focus groups (3 below):

1. **Buy a share.** In this model, the customer pays an initial amount to purchase a share in the Solar Garden, which entitles them to some quantity of solar panels and the output from those panels. This mimics the standard model for purchasing a rooftop solar system. While likely to deliver the best rate of return, the upfront cost of this model ruled out disadvantaged and low-income households. It is better suited to middle or high-income households that are unable to do rooftop solar, e.g. due to renting, living in an apartment or unsuitable roof.
2. **Subscribe.** The customer signs up to a Solar Garden with no or nominal upfront cost. The cost of being part of a Solar Garden is paid for by savings and any remaining savings are received as a credit on the bill. This mimics rooftop solar leasing arrangements. This model would deliver a lower rate of return than buying a share but appealed to low-income households as there is no upfront cost. While there seems to be no downside to signing up for a lower electricity bill, participants indicated that savings in the order of 20% per bill would be necessary to motivate them to sign up. This is in the context of savings in the order of 10-15% that are often available by shopping around or asking for a discount.
3. **Rent to buy.** Focus group participants raised the possibility of a 'rent to buy' model, which blends the two models above. This would avoid the upfront cost but subscription payments would contribute towards eventual ownership of the solar panels. This could work by reducing the savings per bill and putting some savings towards purchasing the panel, which would make it very accessible to low-income households but it might be many years before the solar panels were owned. Alternatively, some households may be willing to pay instalments to own the solar panels more rapidly.

All of these models have potential and should be explored by the prototype teams. Buying a share is likely to suit wealthier apartment-dwellers and tenants. Subscribing is likely to be the only viable model for disadvantaged and low-income households, assuming the business model can be made to work. A hybrid model in between these two could be offered as an option for customers that want the benefits of ownership but cannot immediately afford it.

However, the prototype teams need to decide whether it is feasible to offer multiple models or to develop a single financial model, suited to a particular audience segment. If the social access and social equity objectives remain to the fore, the subscription model is clearly best suited to providing disadvantaged and low-income households that do not have a suitable roof with access to solar power. Of course, wealthier tenants and apartment-dwellers that can afford to buy a share in a Solar Garden do represent a potentially lucrative market.

Cross-subsidisation of access to Solar Gardens was unpopular with the focus groups and interview participants. These participants did not see a justification for paying more to help others to access a Solar Garden. Given that most of these participants were from or representing low-income households, this is not surprising. In the survey of Repower Shoalhaven members, where household incomes were presumably higher, there was greater support for cross-subsidies, although there was much uncertainty about supporting households that were not known to the participants.

Across all of the market research, there was greater support for the idea of gifting shares or subscriptions, particularly to family and friends. When raised in the context of a birthday gift to a family member or friend, focus group and survey participants were very willing to buy part of a solar panel for someone if they were sure it would help them out. While it may not be a priority for the initial prototype, making gifting options available is a promising strategy for a final business model, although unlikely to alter the overall financial feasibility.

It would be also useful to test the concept further with other audiences including higher income with specific social and community interests. The feedback from the interviews in Queensland suggested that there are individuals working in the community and social sector who are open to cross-subsidising and willing to give back to their community in this way.



6.4 Audience segmentation

The focus groups and interviews have helped to clarify the initial broad audience segments discussed in Section 2.2. As noted above, the main clarification is that Solar Gardens should only be marketed to those that are physically unable to put solar on their roof because they are renting, living in an apartment or otherwise have an unsuitable roof. Low-income households that own a house would be better served by a rooftop solar leasing model.

Within this broad audience, it was clear that there are distinct audience segments with distinct needs in relation to a Solar Garden model. While there are locational variations, it is household income level that emerged as the strongest demographic distinction. We identified four main audience groups with different needs and expectations, as outlined in Table 10.

Disadvantaged households will mostly not pursue a Solar Gardens offer proactively. There is little value in marketing directly to these households; they will be better served by direct facilitation models that support them to sign up to a subscription model. Other low-income households may be more proactive if they can see clear financial benefits, but will be limited to subscription models. As household income increases, the viability of buying a share upfront increases, providing access to a higher rate of return. Further, as household income increases, environmental benefits appear to become more important.

As noted above, prototype teams will need to decide whether to develop options for all of these markets or to focus on particular audience segments, which will then influence the financial model, marketing and communications.

Position/ Categories	Disadvantaged	Low income – working poor	Middle income	High income
Position	No financial means requiring support from government or the retailer to participate	No to very little financial means, only interested in the subscription model	Small to medium disposable income, interested in the subscription and upfront cost model	Medium to high disposable income, (potentially) interested in upfront cost model
Possible approach	<p>Include Solar Garden offer in hardship programs of retailer</p> <p>Offer Solar Garden membership/ subscription to Centrelink payment recipients through local community and social welfare organisations</p> <p>Guided processes is crucial</p>	<p>Highlight the financial benefits in the promotion of an offer.</p> <p>Make it clear, transparent and easy to join.</p> <p>Consider face to face engagement in form of community discussions/ town hall events as a good way to enter this market segment</p>	<p>While financial benefits are an important motivator, social & environmental benefits should be promoted in addition</p> <p>Consider offers to cross-subsidising family and friends</p> <p>Consider using multiple communication platforms including council, social media and local community organisations</p>	<p>Place more emphasis on environmental and social aspects in addition to the financial message</p> <p>Consider offers to cross-subsidising family and friends</p> <p>Use multiple communication platforms including retailer, council and social media</p>

Table 10: Audience segments emerging from the market research.

Household income was not the sole source of audience variation observed during the research. In the focus group conversations it appeared that women, particular in the age between 25 and 55 years, were more open and interested in Solar Gardens than men. The opportunity to test and evaluate a membership/ subscription was popular.

Men tended to be more interested in the technical details of the Solar Garden (e.g. types and performance of panels). This observation is consistent with other research on a greater technology affinity of males (Edison and Geissler, 2003) and suggests to include technical specifications and performance measures in a Solar Garden offer.

A difference was also evident in the perception of Solar Gardens between elderly and younger people. Younger people thought they might be able to change their housing situation in the future. Consequently, they were more interested in “exit” options while considering that it might be financially more viable if they could put a solar system on their own roof and don’t have to pay for the fee/ maintenance cost of their



Solar Garden panel(s). Elderly were more reluctant in joining while expressing their concerns of not seeing the benefits in their lifetime. In this regard the question of inheritance and gifting becomes more important.

6.5 Marketing and communications

As well as insights into the audience, the market research has indicated what is most likely to motivate audience participation, who they trust to deliver a Solar Garden offer and what communication channels are preferred.

Messaging

The Facebook split testing demonstrated that the average audience member across the prototype locations is most attracted to marketing collateral that emphasises savings on electricity bills, uses direct language and activates social norms. Messaging about social inclusion – being part of the solar revolution, not missing out – was also popular. The qualitative research reinforced the focus on financial messaging. In most cases, marketing collateral should bring messages about saving on electricity bills to the fore, supported by social inclusion messages.

The Facebook testing did not indicate that the above messages were dominant; they were just relatively more effective on average. Environmental benefits and local jobs are important to some in the audience and should not be neglected in marketing. However, they should be secondary or supporting messages in a particular piece of marketing or used in a smaller proportion of collateral across a larger campaign. Motivations for investing in a Solar Garden are diverse and none of the tested messages were so ineffective that they should be totally abandoned, except those using bland images.

The Facebook image testing indicated that marketing can capture greater attention by using images that reinforce messages in the text, emphasise social norms and capture interest through novelty. The best performing image was an aerial shot of a group of homes with solar panels and a group of homes without, that subtly reinforces the idea that some are missing out on the solar revolution, while also showing solar panels as the social norm. This kind of image would be more novel and interesting to see in a Facebook feed than the stock imagery used in other ads, so it is more likely to capture attention. Aerial imagery that captures the solar divide even more starkly than the test image could be sourced and used as a key part of marketing for Solar Gardens.

Some regional variations were evident from tests undertaken only in one prototype location. Blacktown residents engaged more with social inclusion and environmental messages than financial messages, although engagement is different to traffic. Shoalhaven residents engaged more with social inclusion than financial messages on Facebook, although tentative wording of the financial message in early testing may have contributed to this. In the Shoalhaven survey, environmental and social inclusion messages were slightly more popular than saving on bills, although the audience for the survey was not exclusively low-income.

Most notably, Byron Bay residents favoured environmental messaging over social inclusion, which were both greatly preferred to financial. This last result is interesting because this Facebook test was done with a higher income audience, indicating that environmental messaging may be more effective for reaching higher-income households.

One focus for the Phase 2 market research could be to explore possible regional variations in messaging in more detail, working with the actual prototypes.

The other point to note about messaging is that participants want plain English explanations of the Solar Gardens model that clearly and transparently explain how it works and provide assurance that participants will not be ripped off. As noted above, participants have many questions about the model and these would need to be fully addressed in readily accessible materials, such as a prospectus.

Messengers

The extent to which the audience would trust an organisation making a Solar Garden offer appears to vary with the 'local-ness' of the organisation. State governments and retailers were least trusted; local governments and universities were more trusted; local community groups, NGOs and clubs were most trusted. This presents a bit of a dilemma, as retailer involvement is essential to make the model work, and state government support may be needed, but participants want to deal with their local government or community groups.

Partnership models are an appropriate response, in which local entities lead the Solar Garden and market to potential customers, with support from retailers and state governments operating more 'behind the



scenes'. Whether this model meets the needs of all parties in relation to brand exposure needs some consideration.

It is possible that smaller retailers may still be able to take the leadership role as they are seen as more innovative and have less 'baggage'. However, some participants raised concerns about their newness and long-term viability. Government participation in a partnership might provide some reassurance.

Channels

Research participants named many possible communication channels through which they might expect to hear about a Solar Garden and a pattern was difficult to discern. Television advertising was most frequently mentioned across the focus groups but may not be a practical strategy. Social media was less valued as a communication channel than anticipated. Some focus groups valued local media or direct communication from the parties offering Solar Gardens.

In keeping with the local focus discussed above, communication channels associated with the local lead organisation are likely to be most effective, including local newsletters, local media advertising, stalls at events, social media of the lead organisations and direct communications to customer databases. Promoting the offer through trusted local entities, ideally face-to-face, seems to have the greatest potential to ensure that the scheme is seen to have integrity and proponents can respond flexibly to the diverse concerns of potential customers.

6.6 Location

This research revealed that location is not (necessarily) a deciding factor for customers considering a Solar Garden offer. Instead, the financial benefits are paramount for most customers.

However, a localised Solar Garden can be a specific selling point to selected customer groups. For example research participants in Byron Bay strongly emphasised that they would expect a Solar Garden to be a local project. The Byron Bay groups were recruited from environmentally conscious, well educated and middle to high income households in a relative close knit community. When targeting this specific audience local jobs (local procurement), regional energy independency and control are additional sales arguments for a Solar Garden offer.

The local context might play also a role in communications. The knowledge about the (currently built) local solar farm in Swan Hill made people more aware and conscious about local jobs versus foreign workers brought in. To manage reputational risk the local job factor should be proactively communicated and potential jobs offered to the local community.

Another point of consideration is the communication about the host site – in particular the landlord of a Solar Garden placement – and its position in the community. Supporting potentially struggling farmers with a Solar Garden subscription could be an important selling point. Public or council owned land will be perceived more positively than private properties of large corporates.

6.7 Next steps

The next steps for the market research will need to be determined in dialogue with the prototype teams after consideration of this report and further development of the prototypes. Phase 2 will focus specifically on testing the prototypes or mock products developed by each team to assess overall level of interest and likely uptake. This testing could take several forms and each team will need to choose a suitable approach in consultation with the market research team. For example, Phase 2 could include:

- Additional Facebook split testing of prototype(s) in their target markets. This could take several forms. Alternative prototype options could be tested against each other to see which gains more traction. Single prototypes can be tested with different audience segments to see who they appeal to most. Regional variations in audience and messaging could be tested in more detail. Other possibilities may become apparent once the prototypes are clearer.
- A large-scale survey to test reactions to the prototypes and willingness to pay, using concrete figures from the financial modelling. This would require additional funding to undertake.
- Testing local marketing approaches using a draft prospectus, e.g. through stalls at an event.



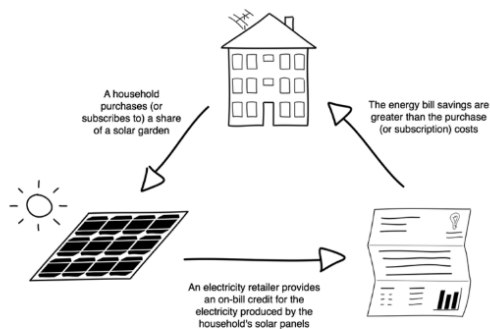
Appendix 1: Facebook campaign landing page

The Solar Gardens Project

The University of Technology Sydney is testing an idea that could help households to access the benefits of solar power without installing solar panels on their roof.

We're calling it a Solar Garden.

Solar Gardens work by installing a central solar farm, generally near a population centre. Energy customers can purchase panels in the solar farm. The electricity generated is then *credited on the customer's electricity bill*.



With a Solar Garden, any electricity customer can participate in and benefit from solar energy. The solar panels may be located off-site but the household receives a similar outcome as having solar on their own roof.

Right now, there are a lot of Solar Gardens overseas but they are not available in Australia.

We want to change that. To make them work in Australia, we are developing four prototypes in different locations and one is near you.

Would you like to go on a mailing list to hear more about this idea if it goes ahead?

[Access the mailing list here.](#)



Solar gardens mailing list information

If you proceed, we will ask you to respond to three very short questions and provide your email address. Your email address will only be used to send you more information about a Solar Garden in your area, if it goes ahead. Your email address will not be provided to any other party and you will be free to unsubscribe from future mail outs.

The data you provide will be used as part of the research to help develop the Solar Garden prototype. If you have any concerns or questions about how your data will be used you can contact Professor Chris Riedy at christopher.riedy@uts.edu.au.

[Register for the mailing list.](#)



Social access solar gardens

What suburb do you live in?

Do you...

- Rent your home?
- Own your home?
- Have an alternate living arrangement?

Do you...

- Live in a house?
- Live in an apartment, unit or townhouse?
- Other...

Please provide your email address.

Submit



Appendix 2: Focus Groups

Focus Group Discussion Guide

This is a general discussion guide that will need updating for specific focus groups to suit the audience and location. Planned focus groups are either one or two hours in length, so the range of questions that can be asked will vary depending on length. Questions that are only for two-hour sessions are marked accordingly. The other difference between the one and two-hour focus groups will be the time spent on questions. In the two-hour groups, we will be able to hear from more of the participants on each question and spend more time digging into their answers.

Introduction and ethics

- Personal introduction and welcome from the facilitator(s)
- Introductions from the participants – go around the group and ask them to say:
 - Their name
 - Where they live
 - Do you know who your electricity retailer is? / OR / What is your reaction when you open your electricity bill? (Better for Qld, given Ergon is monopoly).
- Go through the Information Sheet with the participants and record verbal consent to participate on the register

Warming up – general electricity bill questions

- What is your reaction when you open up your electricity bill?
- Show of hands:
 - Who thinks their electricity bill is higher than it should be?
 - Who thinks it is reasonable?
 - Does anyone think it should be higher?
- How often do you get your electricity bill? Monthly? Quarterly?
- Has anyone set up a payment plan to help manage electricity bill payments? On your own initiative, or with the retailer?
- Who looks after paying the bill in your household?
- Have you tried anything to reduce your energy bill?
 - What kind of things have you tried? (Go around the group for this one and give each person a chance to speak).

Introducing solar power

- Is everyone familiar with solar power? Have you seen buildings with solar panels on the roof? [Give a short explanation if anyone indicates they are not familiar with solar power]
- What do you see as the benefits of solar power?
- Have any of you looked into getting solar power for your own home?
 - If yes: Why were you interested? What stopped you doing it?



- If no: Is there any particular reason why you haven't investigated it?
- Do you feel like you are missing out on anything by not having solar power?
- Would you do it if you could?

Introducing the concept of Solar Gardens

We want to introduce a new concept for helping households to access the benefits of solar power without installing solar panels on their roof. Take and present handouts for this section.

Run through the handout with the participants.

[If we have access to a screen, it would be useful to put a copy of a bill up on screen showing how solar power appears on the bill, so that participants could get an idea of how it would look on their bill].

- What do you think about this idea?
 - Do you think there is a need for it?
 - What benefits do you think it has?
- What questions do you have about it?
- Would you personally be interested in signing up to a Solar Garden?
 - What attracts you to the idea?
 - What else would you need to know before making a decision?
 - What concerns you about the idea? What would stop you from signing up?
- Do you think other people, such as your friends and family, might be interested? Why?
- If needed, for prompting, a list of possible motivations that could be thrown into the conversation includes:
 - *Saving money on electricity bills - long term certainty of reducing your electricity costs*
 - *Greater control over your electricity bill/future/cost of living*
 - *Doing your bit for the planet*
 - *Supporting regional industry development*
 - *Feeling included in the solar revolution*
 - *Helping out others*
- Does it matter that the savings would appear on your electricity bill? Would you still be interested if you received a separate bill for your Solar Garden?

[The one-hour groups may not get much further than this. If there is time remaining, pick one of the topics below to dig into if it hasn't been covered already].

Communication channels

- Where would you expect to find out about a Solar Garden offer? If needed, prompt on:
 - In the mail with your electricity bill
 - By email
 - On social media



- From family or friends
- By phone
- Advertised in the newspaper or local newsletters.
- How would you prefer to find out about such an offer?

Trust

- Who would you expect a Solar Garden offer to come from?
- Who would you trust with such an offer?
- For both questions, prompt on:
 - Your current electricity retailer
 - A different electricity retailer. And: Would you be willing to switch retailers to take up a Solar Garden offer?
 - Your local Council
 - A local community group
 - The state government.

[An idea here is to have websites loaded for these different options and to run through them one by one on screen – What if the offer came from this group? Or this group? Etc]

Location

- Would it matter to you if the solar garden was built near you, or could it be built somewhere else in Australia?
 - Why is this important, or why not?
 - Would you want to be able to visit 'your' solar panels?
 - How close would it need to be? In your suburb, in your LGA, in your region, in your state?
- Do you think the location would change your likelihood to sign up?
- Would you expect to be able to keep your solar garden if you moved house? Is that something that is important to you?
- Would it matter to you if the solar panels were spread across different locations instead of in one big solar farm?

Financial model and participation

Need to share some figures on how it works on your roof. A 3kW system costs about \$3-3.5k and will pay back in 5-7 years. Need to make it clear that a Solar Garden could not match this performance. Payback will be longer.

There are two ways a solar garden could work.

- You could pay a lump sum for your solar panels upfront and then you would make the money back over time through savings on your bill. If this was the way a solar garden worked, I want you to write down two numbers on the sticky note in front of you:



- If you had to sign up today, how much do you think you could afford as an upfront payment?
- How quickly would you expect to make that money back through savings on your electricity bill?
- Alternatively, a solar garden could work as a subscription, like Netflix. There would be no upfront cost. Instead, you would pay a monthly or annual amount to get access to the solar garden. The savings that you make each month should be enough to cover the subscription and save you a bit extra on your bill. The savings on your bill would be a bit less than they would be in the first option but you would avoid that extra upfront cost. On another sticky note:
 - What monthly saving on your bill would be enough to get you interested in signing up?
- Because solar power delivers more electricity in summer, it's possible that you would end up with a bigger bill in winter but a smaller bill in summer. Overall, you would be better off. How do you feel about this possibility?
- Out of these two options, which would you be more likely to sign up for?
- What form of participation would you like to have, e.g. in ownership, decision-making, energy education, socialising/ celebrations, etc.

Cross-subsidisation

Part of what makes an Inclusive Solar Garden different is that it is giving access to solar power to those who are currently missing out. One thing we're thinking about is whether households that are a bit better off could pay a bit extra to help other households to be part of a solar garden. For example, you might want to buy a share in a solar garden for a family member that can't afford it. Or you could choose to pay a bit extra for your subscription so that a household that was not so well off could pay a bit less.

- If you were to sign up to a Solar Garden, would you consider paying more to help someone else participate?
- Would you only do that for someone you know?
- Would you buy a gift card for someone that gave access to a Solar Garden? How much would you spend on a gift card like this?

Wrap up

- Now that we've discussed Solar Gardens in more detail, have any other questions occurred to you?
- Hands up who thinks they might be interested in a Solar Garden if we can get one up and running?

Many thanks for your attendance and feedback!

Hand out gift cards



Appendix 3: Interviews

Interview Guide/ Questionnaire

This document shall assist and guide the interviews with representatives of selected organisations working with the target audience. The discussion guide will need updating for specific interview partners to suit their background and context. The planned interviews will take 30 to 45 minutes for each of the participants, so the range of questions that can be asked will vary depending on length. They will take place over the phone or face to face at a venue agreed with the participant, such as their workplace or local café. All participants will be asked to give informed consent for the use of data they provide.

Introduction and ethics

- Personal introduction and thanking for the willingness to participate
- Go through the Information Sheet and record verbal consent to participate in the interview
- Ask the interviewee to introduce themselves, their role and the organisation she/he works for

Audience

- Can you tell us a bit about the types of people you work with in your role? How do you interact with them?
- What sort of issues are they experiencing?
- Do electricity bills ever come up as something that is a challenge for your clients / customers / community members?
- Do you think your clients / customers / community members have a good understanding of solar power and its benefits?
- What do you think would prevent your clients / customers / community members from getting solar power for their own home? Have you heard anyone talk about 'missing out' on solar power because of their situation?

Introducing the concept

We want to introduce a new concept for helping households to access the benefits of solar power without installing solar panels on their roof.

The more detailed information sheet on Solar Gardens will have been sent to them beforehand.

- Take them briefly through the concept again and highlight our main target group.
- Do you have any further questions on the model?

Motivations to participate in a concept of Solar Gardens

- What do you think about this idea?
- Do you think there is a need for it?
- Do you think that your clients/ customers/ community members would be interested? Why, why not?
- What do you think would encourage them to participate? What might be the main motivation?



- What would they need to know before making a decision?
- What would prevent them from participating?

If needed, for prompting, a list of possible motivations that could be thrown into the conversation includes:

- *Saving money on electricity bills - long term certainty of reducing your electricity costs*
- *Greater control over your electricity bill/future/cost of living*
- *Doing your bit for the planet*
- *Supporting regional industry development*
- *Feeling included in the solar revolution*
- *Helping out others*

Communication channels

- What would be a good way to communicate a Solar Garden offer to your clients/ customers/ community members?

If needed, prompt on:

- *In the mail with your electricity bill*
- *By email*
- *On social media*
- *From family or friends*
- *By phone*
- *Advertised in the newspaper or local newsletters.*

Trust

- Who would your clients/ customers/ community members' trust with a Solar Garden offer?

For both questions, prompt on:

- *Your organisation*
- *Your current electricity retailer*
- *A different electricity retailer. And: Would you be willing to switch retailers to take up a Solar Garden offer?*
- *Your local Council*
- *A local community group*
- *The state government.*

Location and regional development

- How strong is the place attachment of your clients/ customers/ community members? Do you think it would matter if the solar garden was built near you, or could it be built somewhere else in Australia?



- Why is this important, or why not?
- Do you think they want to be able to visit 'your' solar panels?
- How close would it need to be? In your suburb, in your LGA, in your region, in your state?
- Do you think the location would change the likelihood of them signing up?

Financial model

There are two ways a solar garden could work financially.

- You could pay a lump sum for your solar panels upfront and then you would make the money back over time through savings on your bill.
 - Do you think your clients/ customers/ community members would have the means to afford an upfront payment and if so how much would that be?
- Alternatively, a solar garden could work as a subscription, like Netflix. There would be no upfront cost. Instead, you would pay a monthly or annual amount to get access to the solar garden. The savings that you make each month should be enough to cover the subscription and save you a bit extra on your bill. The savings on your bill would be a bit less than they would be in the first option but you would avoid that extra upfront cost.
 - Is that a more realistic/ attractive way for getting people signed up?
 - How much should/ could the subscription be? Do you have any indication how much people would expect to save to make the offer attractive enough?
- Out of these two options, which would your clients/ customers/ community members be more likely to sign up for?

Cross-subsidisation

Part of what makes an Inclusive Solar Garden different is that it is giving access to solar power to those who are currently missing out. One thing we're thinking about is whether households that are a bit better off could pay a bit extra to help other households to be part of a solar garden. For example, you might want to buy a share in a solar garden for a family member that can't afford it. Or you could choose to pay a bit extra for your subscription so that a household that was not so well off could pay a bit less.

- Could you think of a way/ mechanism how to select/ identify people to benefit from cross subsidisation? How could that look like?

Wrap up

- Do you have any further comments or feedback for us on Solar Gardens? Anything that you like us to consider or specifically address in the development of the projects regarding social inclusion?

Many thanks for your attendance and feedback!



Appendix 4: Repower Shoalhaven survey

Dear Repower Shoalhaven member,

We would like to invite you to participate in this survey to inform the development of a Social Access Solar Garden in the Shoalhaven area. The purpose of the research is to test an idea for helping all Australian households to access the benefits of solar energy.

The Solar Gardens Project is led by the Institute for Sustainable Futures (ISF), University of Technology Sydney and Community Power Agency. The research is funded by the Australian Renewable Energy Agency (ARENA) and NSW Government with further cash and in-kind contributions from the project partners.

If you agree to participate we would like you to complete the following survey, which will take about 5 to 10 minutes. You are under no obligation to participate.

What will we do with the data?

We will use the data to help develop the idea for saving on energy bills. A summary report will be shared with the research partners listed above in May 2018. Data will also inform a full project report later in 2018 and may be used in media and academic publications. None of these publications will identify you in any way.

What if I have more questions or concerns?

If you have any concerns or questions about the research you can contact Professor Chris Riedy at the Institute for Sustainable Futures on christopher.riedy@uts.edu.au or 0402 043 386.

Studies undertaken by the Institute for Sustainable Futures have been approved in principle by the UTS Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the ISF Ethics Coordinator, Dr Keren Winterford (Keren.Winterford@uts.edu.au, 02 9514 4972) or the ISF Deputy Director, Professor Cynthia Mitchell (Cynthia.Mitchell@uts.edu.au, 02 9514 4953).

You may also contact the UTS Ethics Committee through the Research Ethics Officer (02 9514 9772, Research.Ethics@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Section 1

- Where do you live? Please state your town or suburb: *Small text box*
- What is your housing situation?
 - Owning an apartment
 - Owning a house
 - Renting an apartment
 - Renting a detached dwelling
- Do you think your electricity bill is: *Check boxes*
 - Low and manageable
 - Average and manageable
 - Too high but manageable
 - Very high and always a struggle to pay
- Do you have solar power on your own roof? *Yes/No*



Section 1.1

- If you have solar power, what do you think is the greatest benefit? *Please rank 3 point scale*
 - Doing my bit for the environment
 - Saving on my electricity bill
 - Being part of the energy transition/ revolution

Section 1.2

- If you don't have solar, why don't you (tick as many as apply)?
 - I don't own my house
 - I live in an apartment
 - My house is too shady
 - I can't afford it
 - I never thought about it
- Do you feel like you are missing out by not having solar? *Yes/ No*
- Why do you think you are missing out? *Text box*

Section 2

The University of Technology Sydney is testing an idea that could help households to access the benefits of solar power without installing solar panels on their roof. We're calling it a Solar Garden.

Solar Gardens work by installing a solar farm, generally in your local area. You can purchase panels in the solar farm, and the electricity generated by your panels is then *credited on your electricity bill*.

With a Solar Garden, any electricity consumer can participate in and benefit from solar energy. The solar panels are not located on your roof, but you receive a benefit in the same way (ie a reduced electricity bill).

There are a lot of Solar Gardens overseas but they are not yet available in Australia.

- What do you think about it? *Small text box*
- Would you be interested in signing up? *Small text box*
 - Yes
 - No
 - Why (text box)
- What would most interest you about a Solar Garden?
Please rank the following aspects *3 point scale 1=don't agree; 3=fully agree*
 - Opportunity to reduce carbon emissions
 - Accelerate the energy transition
 - Reduce your electricity bill
 - Make solar accessible for everyone, including renters and people who don't have suitable roofs
 - Support your local economy

Section 2.1

There are two ways a solar garden could work financially.

Option 1: purchase: you buy a share in the solar garden - you pay a lump sum for your solar panels and then you would make the money back over time through savings on your bill.

Option 2: subscription: no upfront cost, instead you pay a quarterly amount for your panel (also on your electricity bill). The savings that you make each month will be enough to cover the subscription and save you a little bit extra on your bill. The savings overall will be less than if you bought a share (Option 1), but you don't have to pay out at the beginning.

- If you pay upfront, how much would consider? Please state a figure (\$): *Small text box*
- How quickly would you expect to get your money back?
Please state how many years: *Small text box*



- For the subscription model, what saving on your quarterly electricity bill would be enough to you sign up? Please state a figure: *Small text box*
- Which of these would you prefer? *Check boxes*
 - Purchase
 - Subscription
 - Neither

Section 3

In Australia, over 1.6 million solar households enjoy the benefits of clean, cheap energy produced from their roofs. However, over 30% of Australian households are excluded from this energy revolution. These customers are 'locked out' because they live in apartments, they rent, they don't have suitable roofs, or they simply can't afford the investment. Overwhelmingly, the most vulnerable, low-income electricity users in our society fall into this category.

Social Access Solar Gardens is a business model for renewable energy development that extends the solar revolution to all households in Australia.

- Would you consider gifting a Solar Garden share to someone else who can't get solar on their own roof? *Yes/ No*
- Choose any that you would be likely to consider gifting a share to: *Multiple choice, tick box*
 - Family
 - Friends
 - Low income households who can't afford it
 - Neighbours whose roof is not suitable but would love solar
 - Neighbours who live in apartments

There is another way to help everyone benefit from solar. If you become a Solar Garden member, you could pay a bit more for your share, so that a portion of the Solar Garden can be given to low income households.

- Would you be willing to pay more so that a part of the Solar Garden could be for low-income households? *Yes/No*
- If yes, how much do you think you would pay? (*suggest tick box 10% more, 20% more, 30% more, 50% more, Other amount text box*)
- Would you have any concerns about this? *Text box*

If the following organisations approached you with a Solar Garden offer, who would you be most willing to sign up with? Please rank the following selection: *3-point scale – 1= least willing; 3=most willing*

- Repower Shoalhaven
- Local Council
- Your electricity retailer
- State government
- Community organisation
- Environmental organisation like Greenpeace
- Local community centre

Is it important for the Solar Garden to be built in the Shoalhaven area? *Yes/ No*

Many thanks for your participation and feedback!

