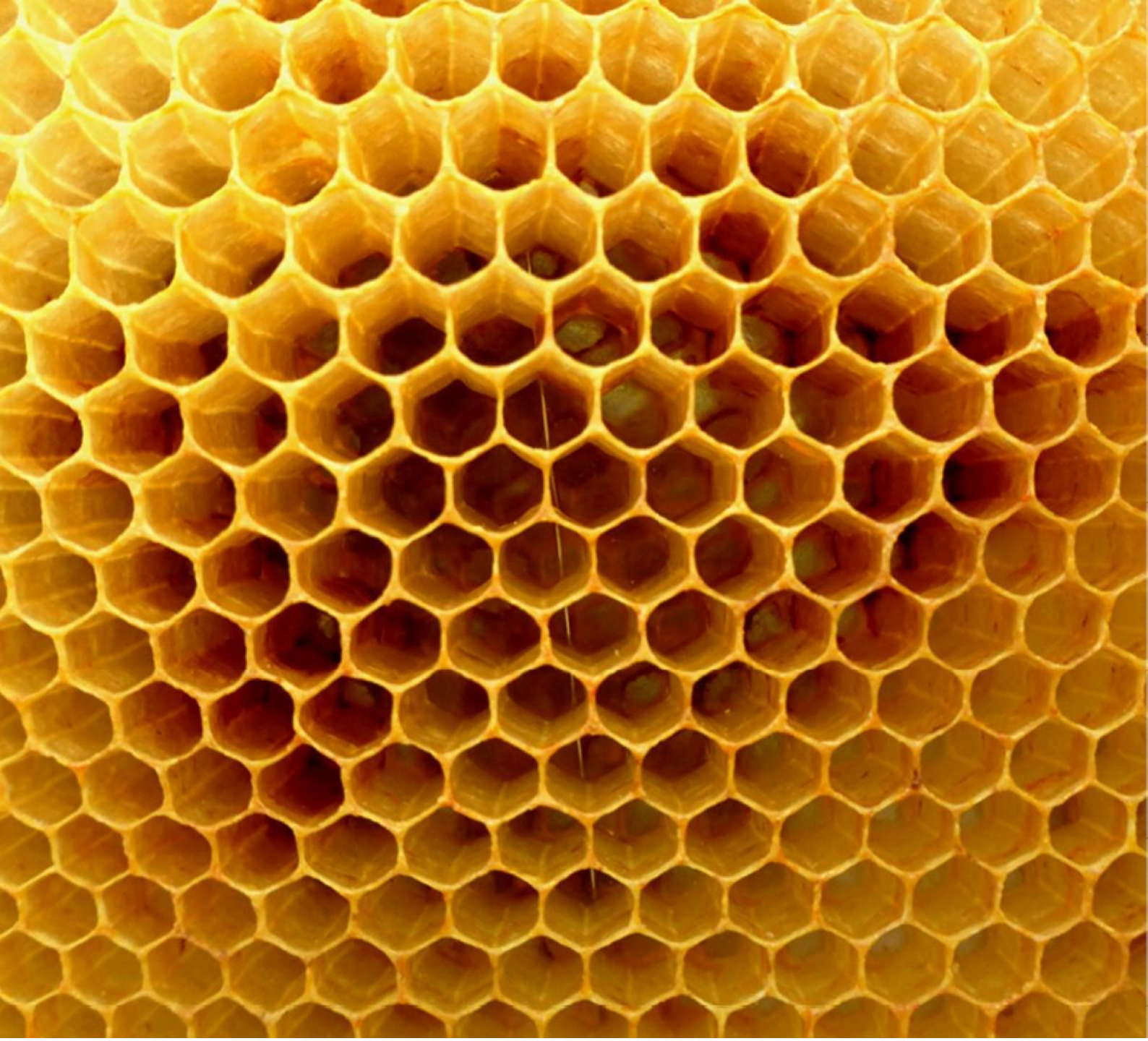

Social Access Solar Gardens for Australia

November 2018

UTS Institute for Sustainable Futures

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community power agency

About the authors

The Institute for Sustainable Futures (ISF) is an interdisciplinary research and consulting organisation at the University of Technology Sydney. ISF has been 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.

For further information visit: **www.isf.uts.edu.au**

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Community Power Agency (CPA) is a leading not-for-profit organisation established to support communities to participate in the renewable energy transition. CPA's vision is for a fair and sustainable energy sector that provides real benefit for more Australians and our environment. CPA works with communities, corporates and governments to develop new business models, policies and practices to support the uptake of clean energy. CPA has worked directly with over 40 community energy groups and helped found the Coalition for Community Energy.

For further information visit: **www.cpagency.org.au**

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Disclaimer

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While many people have contributed to the project, the analysis and conclusions in the report are the responsibility of the authors alone.

Executive summary

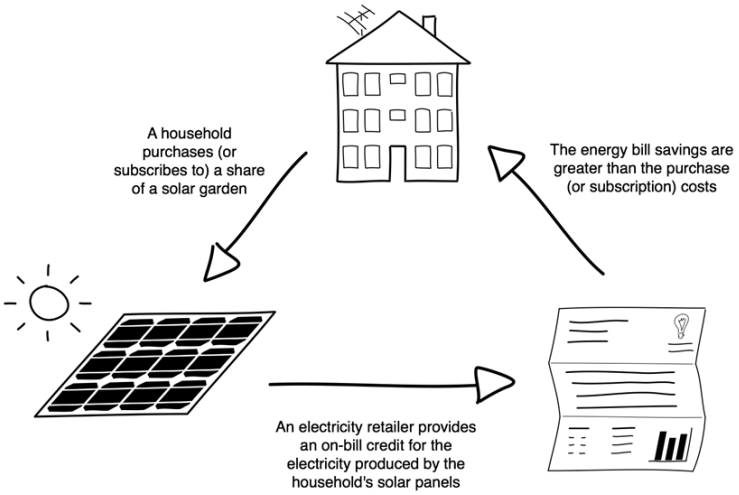
The Social Access Solar Gardens project was a multi-partner effort, with primary funding from the Australian Renewable Energy Agency (ARENA) and the NSW Government. The project objective was to take between one and four solar gardens projects to the point of implementation, or to identify the particular barriers that would prevent the social access solar garden model from working in Australia. The project specifically asked whether solar gardens are ***desirable*** to 'locked-out' energy users, ***feasible***, and ***viable***.[a]

The project had three research streams (market research, legal, and financial), and provided support to four prototype teams in five locations – Swan Hill in Victoria, Blacktown, Shoalhaven and Byron in NSW, and regional Queensland – to reach a decision on whether to proceed to implementation of a solar garden.

What is a solar garden?

Solar gardens work by installing a central solar array, generally near a population centre. Energy customers can purchase panels in the solar array. 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 renewable energy. The solar panels are located off-site, but the household receives a financial outcome on their bill, a bit like having solar on their own roof.

Social access solar gardens specifically seek to enable locked out and low-income energy users to participate in solar.



Are solar gardens desirable?

There were two phases of market research, with Phase 1 aimed at assisting the teams to design their solar garden model. This phase included both qualitative and quantitative research, and employed focus groups, interviews, a survey, and split testing using Facebook. Phase 2 was to assist teams in refining their messaging and determine the best way to promote the team's offer, and only used quantitative research via Facebook split testing.

The key lessons learnt from both market research phases are:

- Solar gardens are desirable to customers, but there are caveats – primarily that the return should be comparable to rooftop PV.

[a] Note this project did not aim to include implementation of a solar garden.

- Low income households can only consider a subscription or lease model (without initial capital cost), and would expect a reduction in their bills in the region of 20%.
- Higher income households would be interested in buying a share upfront.
- Solar garden siting was not of strong concern. The most common (almost universal) reaction was "*it doesn't matter where it is as long as it works*".
- There was little interest in 'standard' solar garden customers paying a little more to enable low income consumers to participate
- Keep things simple for all communications!

Are solar gardens feasible?

Norton Rose Fulbright (NRF) explored the legal issues associated with social access solar gardens models and found that there are no legal or regulatory barriers. Their Legal Report[b] provides a comprehensive assessment of the possible ways to structure social access solar gardens, and made the following recommendations:

- Establish a Membership Vehicle with overall control of the solar garden, and a subsidiary Special Purpose Vehicle (SPV) or Development Vehicle to undertake the physical development and management of the solar farm.
- A co-operative is likely to be the most advantageous legal form for the Membership Vehicle, although a public company may be more suitable for solar gardens developed by corporate entities.
- Having a separate Development Vehicle (wholly owned by the Membership Vehicle) helps to manage project-specific investment and debt arrangements, can ease the project management and development, and assist in risk and liability mitigation.
- A private company is most appropriate for the Special Purpose Vehicle (Development).

Other key legal and regulatory considerations include:

- A **generator licence** is not required for projects under 5MW.
- A **retail licence** is not required, as the participating retailer will have one.
- **Third line forcing** is no longer an obstacle for solar gardens.
- Requirement for an **Australian Financial Services Licence (AFSL**): the social enterprise nature of solar gardens (where the primary motivations are social, environmental as well as economic) mean the solar garden management entity will not require an AFSL in most cases. The project development vehicle is likely to require an AFSL exemption if it enters into more than one Power Purchase Agreement; such exemption would normally be obtained by engaging a third party AFSL licence holder as an intermediary.
- There is currently a regulatory impediment for regional Queensland, in that Ergon retail is prevented from offering discounted electricity products.

[b] Irwin, M. (2018) Social Access Solar Gardens: Legal Report. Norton Rose Fulbright, available from https://www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/our-research/energy-and-climate/social-solar-gardens

The project also considered the ability of solar gardClick or tap here to enter text.ens to be able to deliver credits on customers' bills for the solar garden output. All three participating retailers found this to be possible. Therefore there does not appear to be legal or technical obstacles to retailer participation in solar gardens other than in Queensland. Benefits may include customer engagement and "stickiness".

Are solar gardens viable?

The objectives of the financial research stream were twofold. The primary objective was to provide participating teams with a means to assess the viability of their Solar Garden projects and predict the outcomes for both customers and the management organisation. The secondary objective was to allow a more general assessment of the conditions for viability of social access solar gardens in Australia.

The prototype teams used a wide variety of inputs to match their particular circumstances. The inputs for the teams' and the generic financial assessments are shown in Table E1; assumptions for the generic assessment were informed by the learnings from team assessments.

Table E1 Key inputs to the financial assessment – teams and generic

	TEAM ASSUMPTIONS		GENERIC ASSESSMENTS
	Minimum	Maximum	
Solar Farm capacity (kW)	74 kW	4,000 kW	**1,000 kW**
Annual maintenance and overheads per kW	$19 (combined)	$108 (combined)	**$38 (0&M)[c] $20 (overhead)**
Cost per kW (net of STCs if applicable)	$955	$1,750	**$1,200**
Management company borrowing	$0	-$57,000	**$0**
Capital subsidy	0%	42%	**50% - 60%**
Total customers	41	800	**416**
Project life	10	25	**20 years**
% set aside for SG overhead	0%	33%	**0%**
Customer feed in tariff assumed on exports	0 c/kWh	16 c/kWh	**8.4 - 10 c/kWh**
Retailer charge on netted off energy	4 c/kWh	4 c/kWh	**4 c/kWh**
Interest rate	4%	8%	4%
Large-scale Generation Certificate	$0	$0	$0

Using the assumptions shown, the return on a full cost solar gardens share is unlikely to be sufficient to make the investment worthwhile for customers. A full cost share

[c] Derived from EPRI (2015), converted from USD using 1.4AUD/USD

delivers a simple payback of 10 – 16 years, compared to simple payback of approximately 5 years for rooftop solar. Once subsidy is included, upfront purchasers with a 50% subsidy receive an average simple payback of 7 years, while lease customers (with a 3kW stake) experience an average annual bill reduction of 16% ($290)[d]. Outcomes for upfront purchasers and for lease customers are shown for the team assessments and the generic assessments in Figures E1 and E2.

Subsidies in the range of $2,400 - $4,200 per household would be sufficient to deliver attractive returns and make solar gardens viable in Australia. While these are not trivial amounts, they are not greatly different in magnitude from subsidies delivered to those Australians who are able to install solar on their own roofs via direct capital payments, and via the STC[e] scheme[f].

Figure E1: Upfront purchaser outcomes (average of generic assessments)

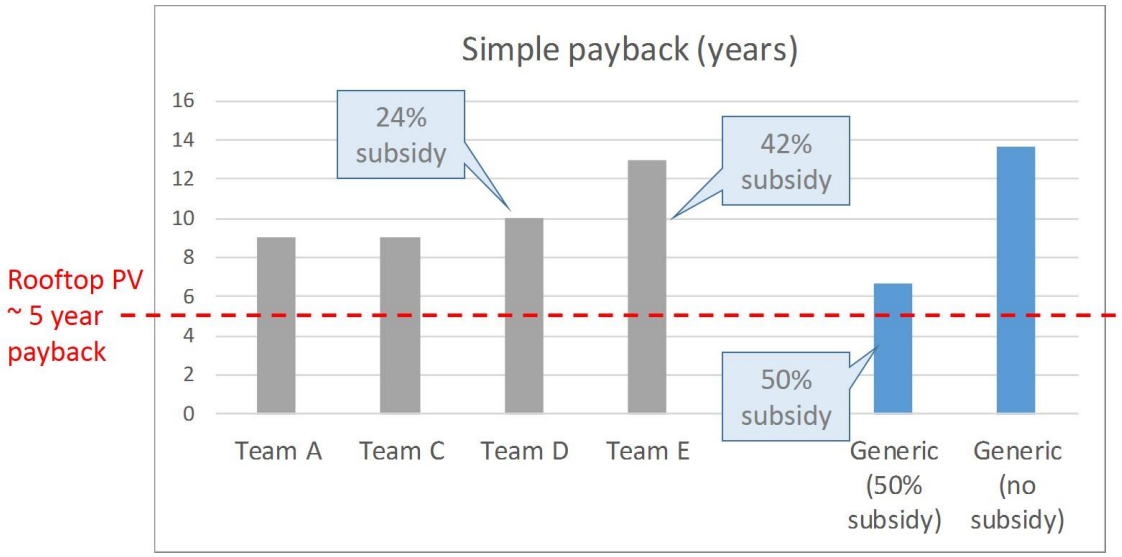
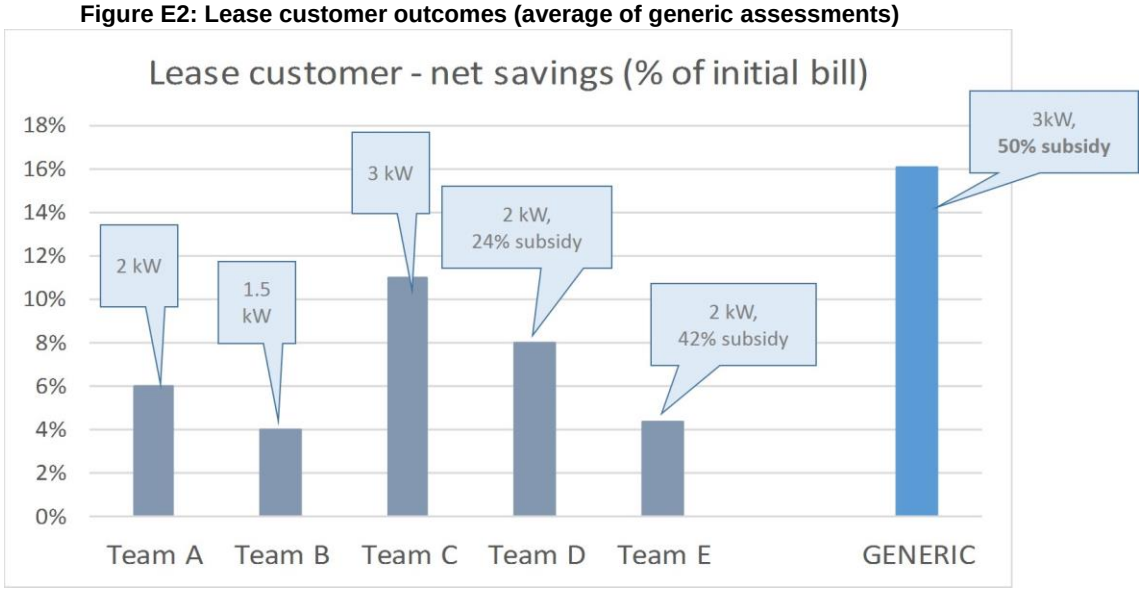


Figure E2: Lease customer outcomes (average of generic assessments)



[d] Projected savings with a 50% subsidy for upfront purchase and a 60% subsidy for lease customers varied by location, with a range of for simple payback from 5-8 years for upfront customers, while bills were reduced for lease customers by 13% - 21%.
[e] STCs may make a contribution of approximately $1,100 to a 2 kW solar system. The Victorian Government is currently offering $2,225 to houseowners installing solar.
[f] The generic schemes as modelled are not eligible for STCs, and LGCs have been assumed to have zero value.

Conclusion

The project found that social access solar gardens are both feasible and desirable for consumers, provided returns are comparable to rooftop solar. The research also identified that the financial benefit to customers is marginal without support. However, such support has been forthcoming for households who are able to install solar on their own roofs, and equity considerations may suggest the same benefits should be extended to consumers who are locked out from the traditional rooftop solar ownership model, particularly if those consumers are low income.

If current support programs for rooftop solar were expanded to include Solar Gardens, the model would become viable for all currently excluded consumers: renters, apartment dwellers and low income consumers. In fact, solar gardens may be the only model that can help all locked-out households side step their specific barrier to solar. However, we note that the return to the consumer is greater from rooftop solar, so where that is possible it should be a first choice.

Based on the research findings and the broader policy context, the recommended next steps to progress the implementation of Solar Gardens are to:

- Work with state governments to develop a Social Access Renewable Energy program that includes ongoing support for solar gardens. Establishing equitable support, particularly for low income consumers, should be a priority.
- Continue to work with those Prototype Teams in NSW and Victoria that wish to implement their solar garden in order to see the first pilot social access solar gardens established.
- Work to develop an aggregation co-operative model to enable solar gardens to extend to all communities. The Solar Garden business model has a degree of complexity that may be out of reach for smaller organisations, and the establishment of a ‘platform co-operative’ may greatly enhance the applicability of solar gardens. The platform co-operative would have local solar garden groups as its member’s, and would act as an administrative entity that manages the legal relationship with participating retailers, requirements for reporting and regulation, and would facilitate access to larger solar garden projects in order to achieve economies of scale.

Contents

Tables and Figures

Abbreviations

AFSL	Australian Financial Services Licence
ARENA	Australian Renewable Energy Agency
BCC	Blacktown City Council
BSC	Byron Shire Council
CAPEX	Capital expenditure
COREM	Community Owned Renewable Energy Mullumbimby
DEWLP	Department of Environment, Land, Water and Planning Victoria
DHHS	Department of Health and Human Services Victoria
DNRME	Department of Natural Resources, Mines and Energy Queensland
EOI	Expression of Interest
EPRI	Electric Power Research Institute
EQ/EQL	Energy Queensland Limited
LGA	Local Government Area
FIT	Feed in Tariff
IRR	Internal rate of return
ISF	Institute of Sustainable Futures
kW	Kilowatt
kWh	Kilowatt hour
MW	megawatt
NEM	National Electricity Market
NFP	Not-for-profit
NRF	Norton Rose Fulbright
O&M	Operation and maintenance
OPEX	Operational expenditure
PPA	Power Purchase Agreement
PV	Photovoltaic

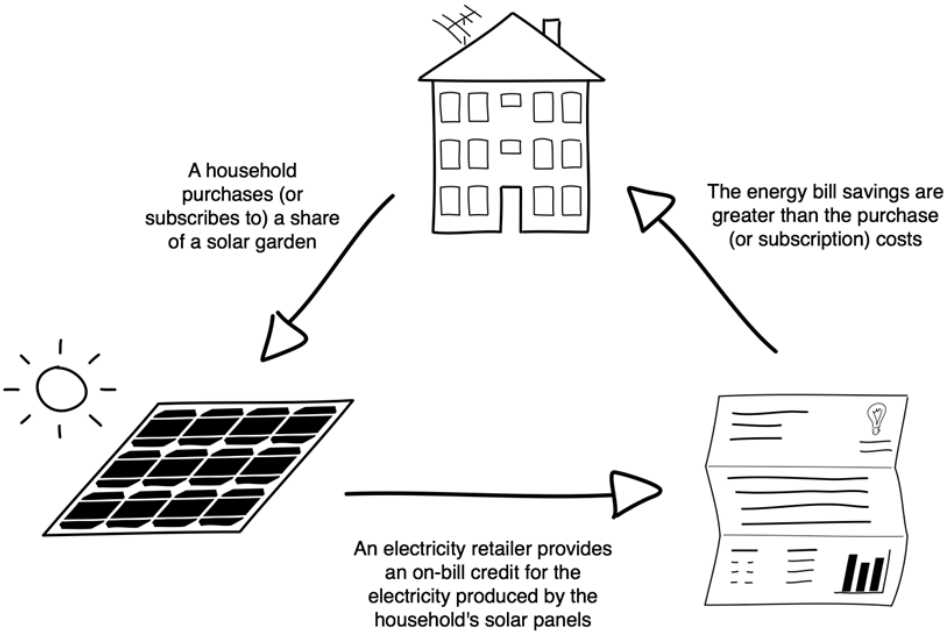
QCOSS	Queensland Council of Social Services
SASG	Social Access Solar Garden
SHCC	Shoalhaven City Council
SHRCC	Swan Hill Rural City Council
SPV	Special Purpose Vehicle
STC	Small-scale Technology Certificate
SV	Sustainability Victoria
TOU	Time of use
WSCF	Western Sydney Community Forum

1 Background and project description

What is a solar garden?

Solar Gardens work by installing a central solar array, generally near a population centre. Energy customers can purchase panels in the solar array. 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 financial outcome on their bill, a bit like having solar on their own roof..



Why solar gardens?

In Australia, 1.9 million solar households now enjoy the benefits of clean, cheap energy produced from solar panels installed on their roofs.

Unfortunately, not every household has a sunny roof suitable for solar. These 'locked out' customers might live in apartments, be renters or have no solar access. Overwhelmingly, the most vulnerable, low-income electricity users in our society fall into this category.

Social access solar gardens are a type of solar gardens that specifically seek to enable locked out and the most vulnerable and low-income energy users to participate in solar7

About this project

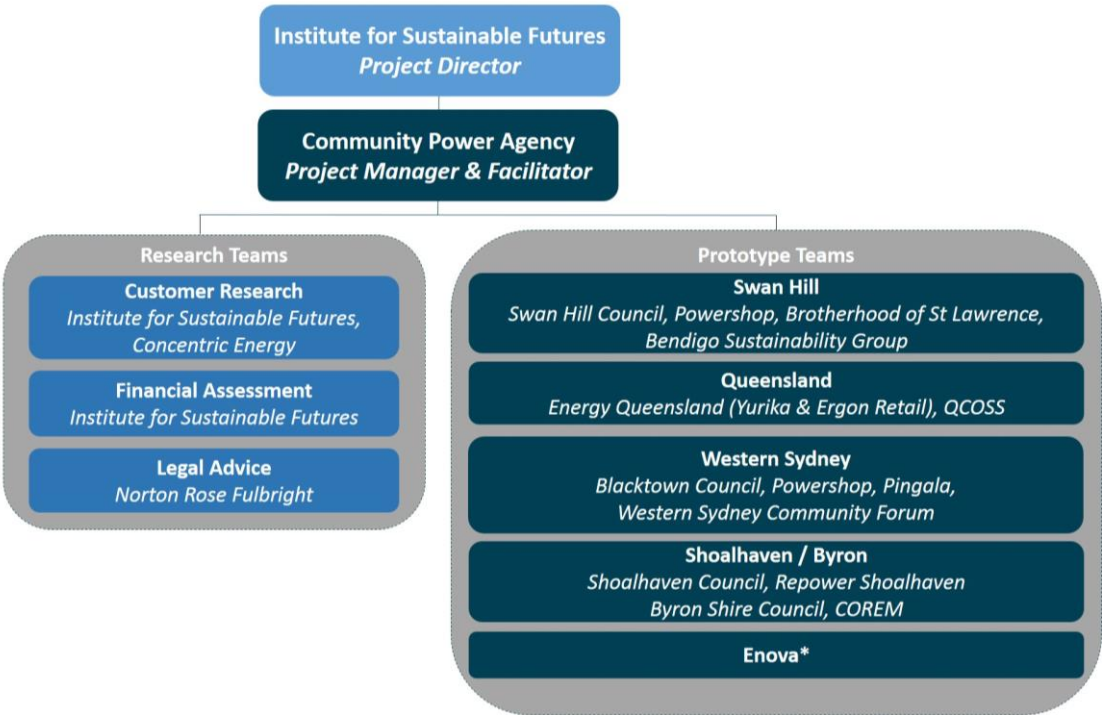
The Social Access Solar Gardens project was made possible with funding support from ARENA and the NSW Government, as well a number of project partner organisations. The project had three research streams, including legal research, market research, and financial assessment of the solar gardens model, and a prototype development stream, in which five teams around eastern Australia worked through the development of prototype social access solar garden business models, with a view to taking their project to the point of implementation.

The aim of the project was to either:

1. Develop between one and four pilot solar gardens that are de-risked and ready to implement and are underpinned by business models that are *desirable* to locked-out energy users, *viable* and *feasible*[g], or

2. Identify specific barriers that would prevent the social access solar garden model from working, and identify potential solutions to overcome these barriers.

The project supported five prototype teams, in five locations – Swan Hill in Victoria, Blacktown, Shoalhaven and Byron in NSW, and regional Queensland. The project structure is shown below.



[g] Note this project did not aim to include implementation of solar gardens.
* Enova was already developing a different model of a solar garden; they participated in the research streams and provided a case study for the project.

2 The legal research: are solar gardens feasible?

Norton Rose Fulbright (NRF) undertook legal research on the feasibility of social access solar garden (SASG) models. The legal stream involved three mains tasks:

1. **An initial review of the key legal considerations and questions going into the SASG business model design phase.**

   Process: Involved collecting questions from each of the prototype teams and providing them for NRF to consider. NRF worked with the Project Director and Project Managers to tailor the content of the report.

   Outputs: NRF produced a comprehensive lreport which outlines the legal considerations regarding legal structure options, regulatory context and risk allocation for community-led and retailer-led SASGs. It also provides assessment of the fit of various possible legal structures including co-operative, private company, public company and managed investment scheme options.

2. **A review of the proposed business models developed by each of the prototype teams.**

   Process: This involved each of the teams submitting their Business Model Reports to NRF for review. Having already applied the considerations of the legal review, this phase was about refining the legal aspects of each specific business model.

   Outcome: NRF provided a brief legal review of the four SASG business models proposed by each of the prototype teams to identify key legal considerations or constraints. These are confidential to each of the teams.

3. **Producing a range of guides and templates to inform the implementation of the SASG business models.**

   Process: Prototype teams provided a list of desired templates and guides, which was refined into a workable shortlist of key documents.

   Outcomes: NRF produced and/or collated an expression-of-interest template, sample PPA clauses, co-operative establishment documents, an example disclosure statement and a set of principles to apply to a solar gardens retail contract.

Overall conclusions of legal research

The legal review undertaken by NRF found that there are no legal or regulatory barriers to social access solar gardens. The SASG Legal Report provides a comprehensive assessment of the possible ways to structure a SASG and an assessment of each option against the project objectives. NRF made the following recommendations regarding effective ways to structure a SASG:

- Establishing a membership vehicle with overall control of solar garden, and a subsidiary special purpose vehicle (or development vehicle) to undertake actual development and physical management.
- A co-operative is likely to be the most advantageous legal form for the membership vehicle, although a public company may be more suitable for solar gardens developed by corporate entities.
- Having a separate development vehicle helps to manage project-specific financial (investment and debt) arrangements, can ease the project

management and development, and assist in risk and liability mitigation. Having separate development vehicles would be particularly useful in the case of multiple solar farms under the one SASG. The development vehicle would be wholly owned by the membership vehicle.

- A private company is most advantageous for the special purpose (development) vehicle.

The SASG Legal Report (p.8-9) provides an excellent summary table of the features, strengths and weaknesses of private companies, public companies, co-operatives and managed investment schemes in relation to SASGs.

NRF identified that public companies (unlisted), private companies and co-operatives are legal forms that may be used for both community-led and retailer-led SASGs. Managed investment schemes (MIS) were also considered, but are not recommended as they have a high regulatory and administrative burden.

In terms of other key legal and regulatory considerations:

- A **generator licence** is not required for projects under 5 MW.
- The **retail licence** is not required, as the participating retailer will have one.
- **Third line forcing** is not an obstacle for SASG. NRF commented that:

  "Third line forcing occurs when the supply of a product is dependent on contracting with a third party, in the Solar Garden case the partner retailer. This has been ruled to only be an issue if it results in a substantial lessening of competition in a related market. Given the small and elective nature of a Solar Garden, it unlikely to be deemed to be impacting competition".

- Requirement for an **Australian Financial Services Licence (AFSL**): Generally a body corporate (like a company and a co-operative) is exempt from having to hold an AFSL when it issues their own shares. However, if it issues shares for the explicit purpose of investing in another body corporate in order to generate profit, then it will need an AFSL. The social enterprise nature of SASG (where the primary motivations are social, environmental as well as economic) mean SASGs are less likely to require an AFSL. An AFSL (an exemption) will be required if the SASG enters into more than one power purchase agreement.

The legal review of each team's proposed SASG model did not raise any major impediments. However, the Queensland team identified a possible regulatory barrier that affects their ability to offer certain forms of electricity products. Currently, there is a prohibition on Ergon Retail offering discounted electricity products; if the SASG proceeded it would require clarification that a bill credit for member shares of SASG does not constitute a discounted rate (note the same guidance has been made for rooftop solar). In addition, the Queensland feed-in-tariff is currently only available on systems under 30 kW, and would need to be specifically revised for SASGs if they were to proceed.

It is worth noting that it was outside of scope to cover tax considerations, insurance requirements and not-for-profit legal form options. In addition, further work will need to be done to assess and manage potential risks (e.g. regulatory, commercial, liability).

It is essential to note that the legal review conducted by NRF does not constitute legal advice, but rather provides an informed starting point. Specific projects will need to seek specific advice before implementation.

Table of resources

All resources included below are for guidance only. Project proponents should seek specific legal advice prior to implementation.

Table 1: Legal resources and guidance on solar gardens

Resource	Description
Social Access Social Gardens: Legal Considerations Report	Outlines the legal structure options, regulatory context and risk allocation for community-led and retailer-led SASGs.
Expression of Interest (EOI) Template	A template EOI for a SASG seeking partner retailer. Contains detailed rationale and basic information on SASGs.
Sample Power Purchase Agreement (PPA) clauses	Specific SASG clauses which could be used to modify standard PPAs; it is envisaged that there would be a modified PPA between the retailer and the SASG. **Note that the sample PPA clauses are contained as Schedule 1 of the EOI template.**
Co-operative Establishment Document	Model rules for incorporating a co-operative (which can be adapted to suit) and a guide to establishing a co-operative.
Example Disclosure Statement for a Co-operative	Example for a disclosure statement with guidance on the information required in order to issue a public share offering (as a means of capital raising).
Principles to apply to a Solar Gardens Retail Contract	Outline considerations which a SASG retailer should consider.

All legal resources are available from www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/our-research/energy-and-climate/social-solar-gardens

3 Market research: are solar gardens desirable?

The aim of the market research was to investigate the level of interest in solar gardens within the target audiences, find out the important aspects of solar gardens, and inform the design work and product marketing of the prototype teams. Ultimately we aimed to identify the most promising ways to communicate and promote solar gardens to align with customers' needs and expectations. The research was structured into two phases:

- **Phase 1: Exploratory research** – March to June 2018. The focus was to explore audience reactions to the idea of solar gardens across the prototype locations and investigate which ways of framing are most likely to appeal to the target audience. The results were intended to inform and support the development of solar garden models by the prototype teams.
- **Phase 2: Refine messaging** – August to October 2018. The focus was to refine the messaging and determine the best way to promote the team's offer. The results were intended to inform the future marketing and communications strategy of the prototype teams.

The research design was partly informed by behavioural economics contributed by Concentric Energy[1] and comprised both quantitative methods in order to gain statistically significant results, and qualitative methods to gather rich data on opinions, perspectives and reactions to solar gardens from individuals (see Table 2). The research aimed to reach the specific customer segments of tenants, apartment dwellers and low-income households.

Table 2: Market research methods in Phases 1 and 2

	Method
Phase 1	Five rounds of split testing of different messages through Facebook
	Eight focus groups covering all prototype team locations
	Seven interviews in Queensland and Swan Hill
	A survey of Repower Shoalhaven members
Phase 2	Refine messaging of mock product with input from behavioural economics
	One round of Facebook split testing of different messages

The results are summarised in two reports[2,3] and demonstrate overall 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 first Facebook campaigns showed the most common motivation 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. In the second phase, the Facebook campaigns showed that the ads with the community framing were similarly successful to those with the financial/ environmental message. Environmental benefits were of less interest for most of the audience but did appeal to a higher income audience in some areas, showing that messaging will need to be tailored for the precise audience for each project. All messages achieved some traction.

Ultimately, the desirability of a solar garden offer depends crucially on the financial outcomes for the customer. 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.

The lessons learnt from both phases are:

- Household income will influence interest in solar gardens and how people may participate – low income households can only consider a subscription or lease model (without initial capital cost), while medium to higher income households would also be interested in buying a share upfront.
- Trust is an important element in marketing solar gardens. The research provided evidence that a local, recognised organisation is the best choice to market the solar garden.
- Solar garden siting was not of strong concern to the research participants. The most common (almost universal) reaction was "*it doesn't matter where it is as long as it works*". However on probing, some participants mentioned local jobs and livelihoods as being an important selling point for solar gardens.
- Cross subsidy was of little interest to most participants.
- There are many marketing and communication channels – face to face in town hall events, community discussions and presentations at community centres appeared to be the most preferred.
- Facebook advertisement could be a useful marketing channel, although it may not work for all locations and audiences, and appeared to work better in regional and rural settings. All messages – financial, social and environmental – generated some traffic. Care should be taken over the image choice, and it is recommended that the campaign simply aims to capture attention with the "main ask" on the linked website.
- Keep things simple for all communications (see Table 3).

To conclude, the research revealed that the solar garden model is desirable, but tailored marketing and consideration of the specific needs and requirements of customer segments will be crucial to successfully engage future customers.

Table 3: Essential elements to support customer decision making

First contact - KEEP IT SIMPLE and write in plain-English addressing primarily:	More detail in a potential 'prospectus'
• **What is the offer?** • **Eligibility criteria, e.g. participation only open to those who can't access rooftop solar** • **Life cycle costs and benefits** • **Solar farm process – time between commitment and first returns (not relevant if the model is lease/ subscription)** • **Sign up and waiting list arrangements**	• Potential risks / contractual details • Portability, including rights when transferring to another retailer • Sale and inheritance arrangements • Maintenance and repair • Auditing and assurance • Gifts and tax deductibility

4 Financial research stream: are solar gardens viable?

The objectives of the financial research stream were twofold. The primary objective was to provide participating teams with a means to assess the viability of their Solar Garden projects and predict the outcomes for both customers and the management organisation. The secondary objective was to allow a more general assessment of the conditions for viability of social access solar gardens in Australia.

To this end, an online financial tool was developed which gave teams the ability to test alternative scenarios. The financial tool was developed using a co-design methodology, where participant teams provided input into early stage prototypes on paper before a digital version was developed. This allowed teams to provide their assumptions and preferences and also have early stage feedback on feasibility of their business model concepts. The online tool was developed from a spreadsheet based business model of a community solar farm developed in a previous project.[4]

Each team is able to log into their own page and establish models of multiple solar gardens, allowing them to test assumptions regarding costs and overheads, different customer types (homes/businesses), and alternative financing structures. Different revenue models were explored, including upfront and lease purchase for customers, ‘gross’ and ‘net’ models for electricity credits, debt financing, user-editable feed-in rates, multi-year cashflow projections, and multiple generation and customer consumption time-of-use (TOU) profiles.

In order to provide a more general financial assessment of social access solar gardens for other potential solar gardens proponents and the wider community, isf has undertaken some generic assessments. These aim to identify key parameters that lead to viable solar gardens projects, in order to inform policy makers and future project proponents.

This section of the report gives an overview of how the financial tool works, a summary of the input assumptions used by the teams and in the generic assessments, followed by the results for the different customer types and some conclusions about whether solar gardens are viable.

The financial assessment tool methodology

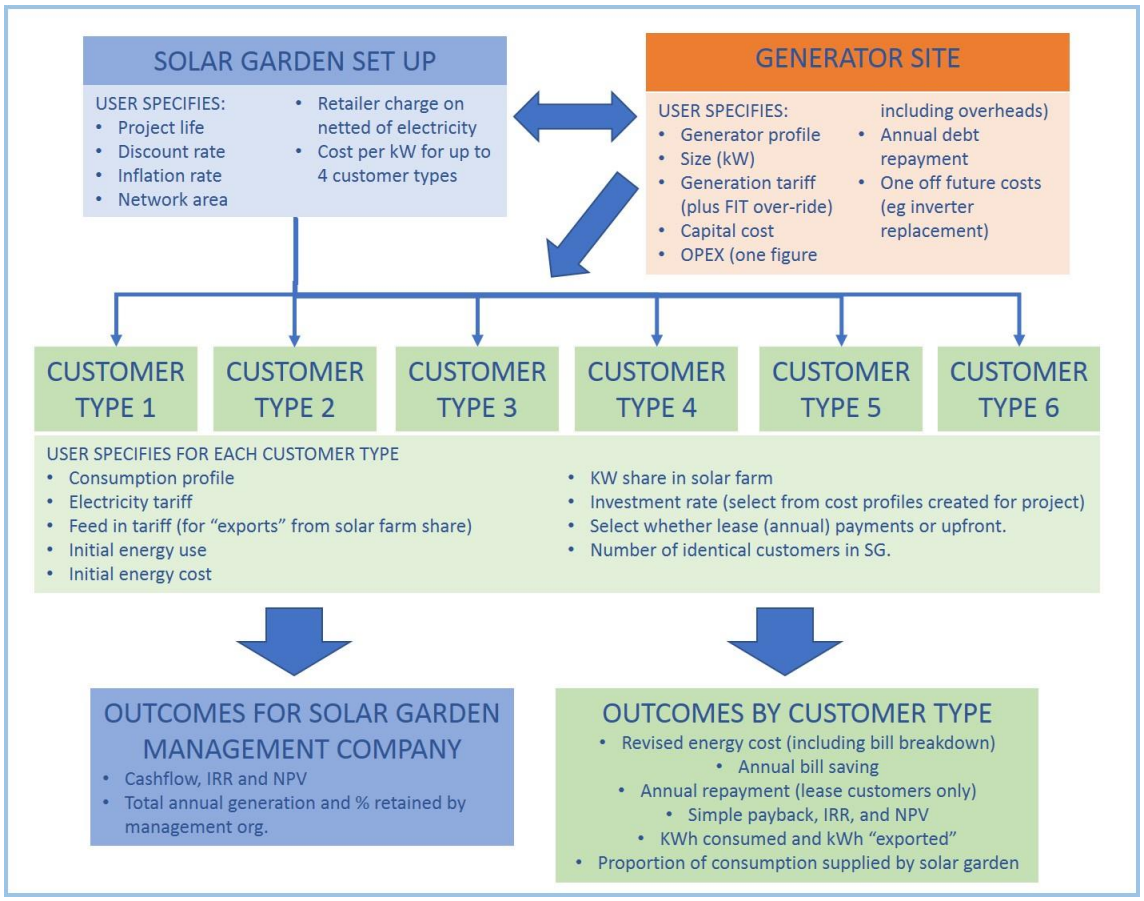
Each Solar Garden project is set up within the tool via three entry points, the overall project set up, the generator site, and the customer sites. This is shown schematically in Figure 1. Overarching variables are set for the project as a whole, then a generator site (the solar farm) is set up, and then a series of member/customer types (or sites) are created, each with their own individual characteristics.

In the solar garden set up, the overarching assumptions allow the user to select a network area, project time horizon, retailer administration costs, inflation and discount rates, and also establish different classes of investors.

The primary site for the solar garden is the solar generator itself. As the only generation site, exported generation can be attributed to the other customers in the solar garden, such as a home or business. The user puts in solar farm size, CAPEX, OPEX, borrowing, selects a generation profile and defines an annual series of time specific

operations and maintenance costs (for example, scheduling of an expected inverter replacement around year 10).

Figure 1 Financial tool overview (sites, user variables, and outcomes)



All the other sites in the solar garden are customer sites. These sites have a (user-entered) baseline electricity cost, pre-solar garden. This annual cost is then reduced as the customer receives a credit for their portion of the solar garden's generation.

When establishing a customer site, the user selects a consumption profile, along with a tariff applicable to the network area of the solar garden (a pre-defined selection of tariffs, consumption and generation profiles is available within the tool). The profiles are a combination of data that various teams have provided as well as ones that have been generated by ISF (see Appendix A for a list of consumption profiles). Tariffs were drawn from public information on retail and network pricing, relevant to the likely retail partners each team was engaged with.

The consumption profile is scaled for the user-entered annual electricity consumption and the user can either enter or calculate the baseline electricity cost. The user also selects the size of stake in the solar garden for this customer type (in kW), an investment class from the choices specified at project set up (which dictates their cost per kW to invest in the solar garden), and the number of this type of customer overall.

The management organisation outcomes are a function of:

- the capital input at the beginning from each of the member/customers who purchase a share upfront

- any subsidy specified[h]
- the income from any remaining electricity not allocated to a customer site
- the income from any lease customers who pay an annual fee for their share of the solar garden (note that these repayments are subtracted on the customer bill, so provided the energy cost saving is greater than the repayment, from the customer point of view the net effect is a bill reduction)
- the user-defined CAPEX and OPEX costs, debt and interest rate figures.

The customer outcomes result from the credit for their share of the solar farm being applied to their electricity bill, net of any lease payment.

Netting off – how the customer credit is calculated

In order to calculate the credit due, the customer's share of the generation profile is subtracted from their base consumption profile on a TOU basis. The tool distinguishes between three types of electricity profiles for the calculation of charges; the original (gross) consumption, the 'net' consumption after the co-incident generation is subtracted, and a 'virtual export', or the electricity generation from the customer share of the solar garden which is in excess of their consumption at that time. This is shown for a 24 hour period in Figure 2 .

The assumed charge structure is shown in

Figure 3. Only energy charges are netted off, so network and administrative fees are charged on the netted off electricity as per the normal tariff. Netted off electricity also attracts a retailer charge to cover billing services, which is specified by the tool user. The feed-in tariff rate is applied to the customer's virtual export.

These calculations combine to generate a new annual bill, and consequently an annual return as a function of the customer's original investment (or annual subscription) and their net bill saving.

This tool addresses the complexities associated with:

- calculating a net profile (consumption after solar generation has been subtracted) and then
- applying a complex tariff to this new net consumption profile (differing rates are applied to gross consumption, net consumption, gross export and net export)
- repeating this calculation for a large number of sites with varying tariffs, consumption and quantities of solar generation
- bundling sites together into a solar garden and repeating the calculation for multiple solar gardens with various sensitivities and varying assumptions.

[h] Note that subsidy is specified in two ways, either by reducing the capital cost or nominating a "donor" class of investor, who pays the selected subsidy for a nominal share.

Figure 2 What electricity gets "netted off"?

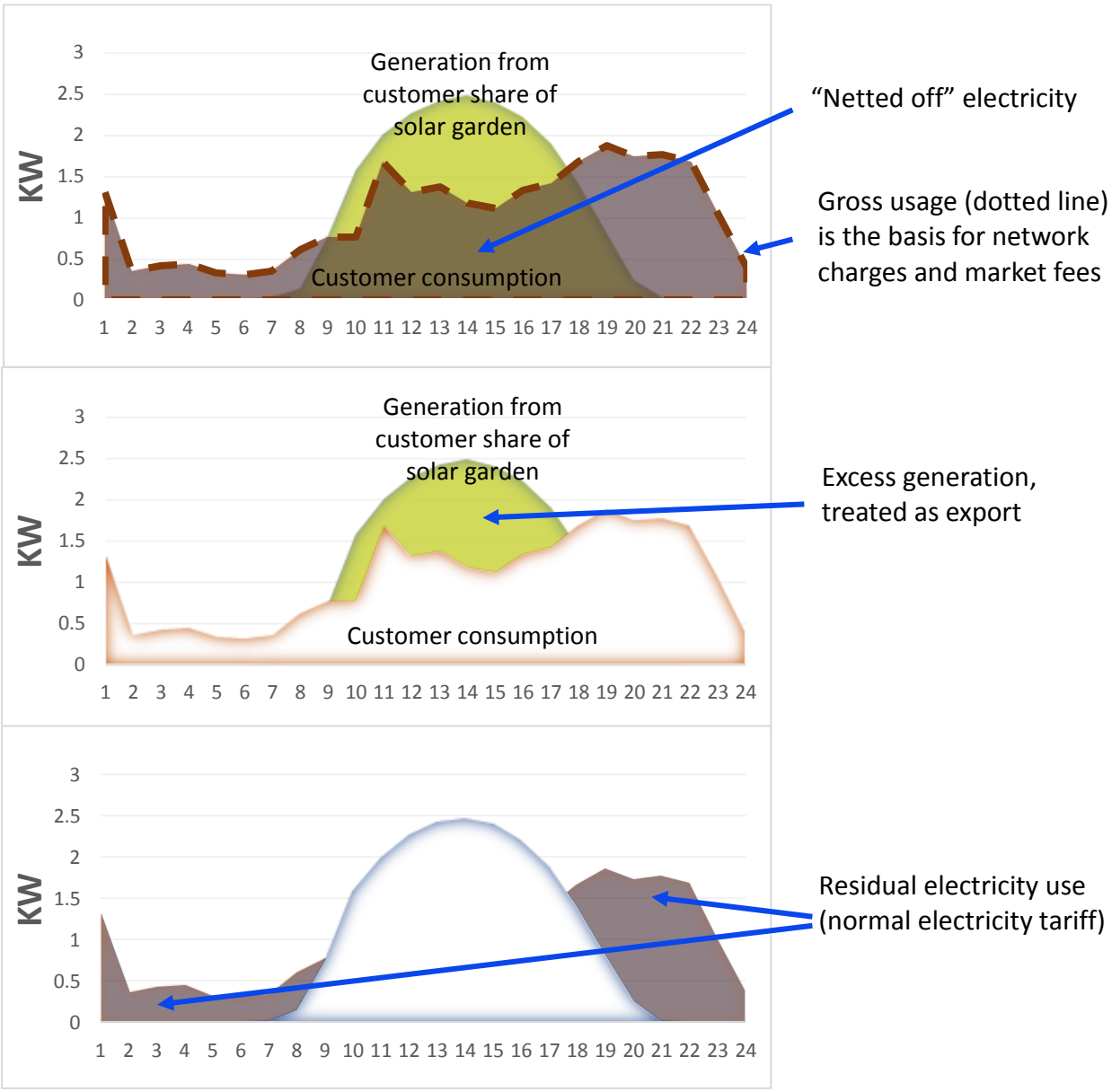
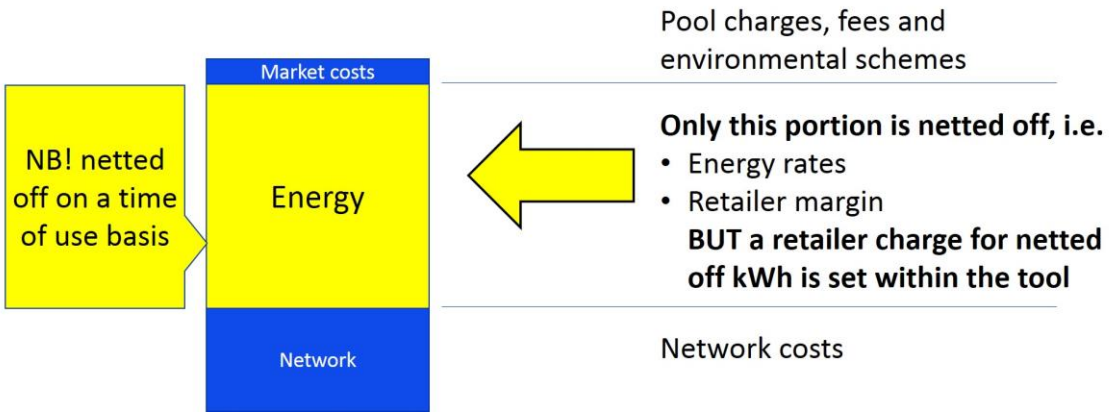


Figure 3 What exactly get "netted off"?



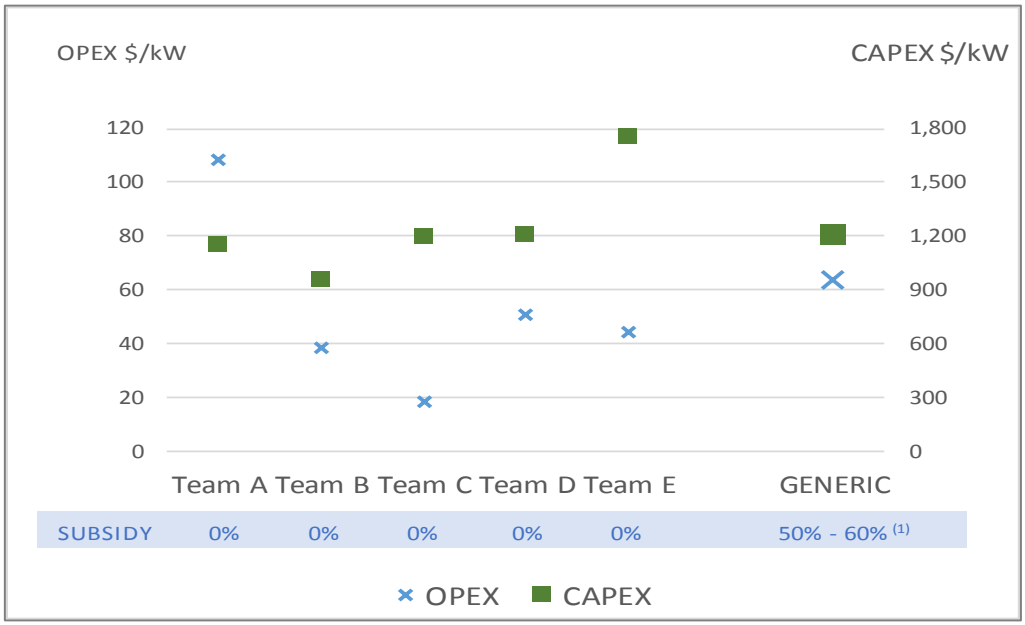
Team and generic assumptions

The generic assessments were undertaken to determine the type of key inputs required for a viable Social Access Solar Garden, defined as one in which the management organisation breaks even, with sufficient returns to attract members. While this is not an exact number, the market research indicated that customers would expect comparable returns to rooftop solar, and lease customers would need a reduction bill of approximately 20% to make it worthwhile to make the change to a solar garden (see Section 3 of this report).

The assumptions used for the generic assessments and the range used by the teams are shown in Figure 4 and Table 4. The structural assumptions for the generic assessment were informed by the learnings from the team assessment, namely:

- The per kWh operational cost for small projects is prohibitive; while there is no exact cut off, we consider projects need to be in the MW rather than the kW scale
- It is financially favourable for customers to take all the output, rather than retaining a portion for the management company to cover overheads. The value to customers is higher as modelled for both the netted off portion, because the energy charge (even after the network charge is subtracted) is usually somewhat higher than the export price. This is even more pronounced if the solar garden is getting a business feed-in rate, which may be set on the wholesale price, and the customer is getting the residential feed-in rate.
- Increasing the share held by lease customers increases the proportional reduction in their bill. Increasing the share does not increase costs to customers as they are not making an upfront payment in any case. However, the share cannot be extended indefinitely, particularly if the solar garden is operating on a netting off basis.

Figure 4 Comparison of key financial parameters (CAPEX, OPEX, and subsidy)



Note 1 NSW and Victoria 50% for purchasers, 60% for lease customers; Queensland 50% for both

Table 4: Assumptions for financial assessment (teams and generic assessment)

	TEAM ASSUMPTIONS		GENERIC ASSESSMENTS
	Minimum	Maximum	
Solar garden capacity (kW)	74 kW	4,000 kW	**1,000 kW**
Annual maintenance and overheads per kW	$19 (combined)	$108 (combined)	**$38 (0&M)**[i] **$20 (overhead)**
Cost per kW (net of STCs if applicable)	$955	$1,750	**$1,200**
Management company borrowing	$0	-$57,000	**$0**
Capital subsidy	0%	42%	**50% - 60%**
Total customers	41	800	**416**
Project life	10	25	**20 years**
% set aside for SG overhead	0%	33%	**0%**
Customer feed in tariff assumed on exports	0 c/kWh	16 c/kWh	**8.4 - 10 c/kWh**
Retailer charge on netted off energy	4 c/kWh	4 c/kWh	**4 c/kWh**
Interest rate	4%	8%	4%
Large-scale Generation Certificate	$0	$0	$0

Reasonable assumptions were used for CAPEX and OPEX, but it is assumed these will reduce over time. CAPEX for PV utility scale plant is falling[5], so actual costs may be lower, which would in turn reduce the subsidy required to get a reasonable return for customers[j].

Operational costs were set at $63/KW per year and $20/kW per year for organisational overhead of the management company, equivalent to $25,000 per year for a 1 MW system (note that the teams used a single figure inclusive). The $38/kW/yr was derived from EPRI (2015), which gives a range of O&M costs for PV plants.[6]

The FIT was set at 8.4 c/kWh in NSW and Victoria, 9.4 c/kWh in Queensland, and 9.9 c/kWh in Victoria, reflecting the current levels of FIT either mandated or recommended.[7,8,9] As shown in Table 5, between 50% and 60% of the solar shares modelled are treated as exports (that is, they are in excess of the customer's co-incident consumption), so this is a very important influence on the viability of all projects, and the maintenance of the FIT value over time would be a significant risk factor, as in all projects the savings for netted off electricity were higher than the export value. For projects that do not plan to net off electricity against member consumption, the FIT available would be a critical parameter.

Tariffs were chosen from those already in the financial tool, which largely resulted from the locations of the teams, so there is a generic assessment including network tariffs for Endeavour, Essential, Powercor, and Ergon. The retail tariffs chosen were all based

[i] Derived from EPRI (2015), converted from USD using 1.4AUD/USD
[j] Reductions of 20% in CAPEX reduce the amount of subsidy by approximately 10% if a 50% subsidy is maintained.

on tariffs from the retailers included in the project, and are all publicly available. The assessment was undertaken using the flat rate tariff (see Appendix A for details of the tariffs used).

The different project teams' ultimate choices were determined by the particular circumstances of the organisations involved. Inputs and business model structures were varied, ranging from small projects with only one or two customer types through to multi-megawatt projects with customers both buying and 'leasing' a share of the solar garden.

As shown in Table 4 and Figure 4, most teams did not include a subsidy, and the range of CAPEX is greater than the maximum subsidy included. Of course, reducing CAPEX and OPEX by 50% has the same effect as a 50% subsidy.

Table 5: Outcomes by state, generic assessments

	Share	NSW - Endeavour	NSW - Essential	Qld regional	Vic regional	Average
Simple payback by state (years)						
Upfront purchase (full cost)	2 kW	16 years	14 years	10 years	15 years	**14 years**
Upfront purchase (50% subsidy)	2 kW	8 years	7 years	5 years	7 years	**7 years**
Lease (60% subsidy) [1]	3 kW			immediate		
Annual saving by state ($)						
Upfront purchase (full cost)	2 kW	$310	$344	$468	$329	**$363**
Upfront purchase (50% subsidy)	2 kW	$310	$344	$468	$329	**$363**
Lease (60% subsidy) [1]	3 kW	$238	$281	$371	$270	**$290**
Annual saving by state (% of bill)						
Upfront purchase (full cost)	2 kW	18%	16%	27%	20%	**20%**
Upfront purchase (50% subsidy)	2 kW	18%	16%	27%	20%	**20%**
Lease (60% subsidy) [1]	3 kW	14%	13%	21%	17%	**16%**
IRR (upfront purchase only)						
Upfront purchase (full cost)	2 kW	3%	4%	7%	3%	**4%**
Upfront purchase (50% subsidy)	2 kW	11%	13%	19%	12%	**14%**
Proportion of solar generation share which is self consumed						
Upfront purchase (full cost)	2 kW	39%	39%	57%	56%	**48%**
Upfront purchase (50% subsidy)	2 kW	39%	39%	57%	56%	**48%**
Lease (60% subsidy) [1]	3 kW	31%	32%	41%	43%	**37%**

Note 1: except Queensland, in which outcomes for lease customers are also modelled with a 50% subsidy

Results - are solar gardens viable?

At present, using the assumptions shown, returns on the full cost solar gardens share is unlikely to be sufficient to make the investment worthwhile for customers. A full cost share delivers simple paybacks of 10 – 16 years (see Table 5 and **Figure 5**), compared to simple payback of approximately 5 years from rooftop solar. For lease customers, the full cost shares have not been considered, as in some cases the repayment was greater than the bill saving.

However, a subsidy of $2,400 - $4,300 per household delivers sufficient return to make Social Access Solar Gardens a viable option for all locked out consumers, as shown in **Figure 5** and **Figure 6**. The solar garden share and the household subsidy used in calculations for each customer type is shown in Table 6.

Table 6: Subsidy, initial energy cost, and share per customer (generic assessments)

	Share	Initial energy cost	Initial investment	Subsidy per household
Upfront purchase (full cost)	2.0 kW	$1,625 (Vic) $1,750 (NSW south) $1,750 (Qld) $2,160 (NSW north) (see note 1)	$4,800	$0
Upfront purchase (50% subsidy)	2.0 kW		$2,400	$2,400
Lease (60% subsidy)	3.0 kW		$0	$4,320
Lease (50% subsidy)	3.0 kW		$0	$3,600

Note 1 Energy cost varies by region, according to the network and retail tariffs, but has been set the same for each type of solar garden member. Energy use is set at 5,000 kWh per year.

Figure 5 Upfront purchaser outcomes (average of generic assessments)

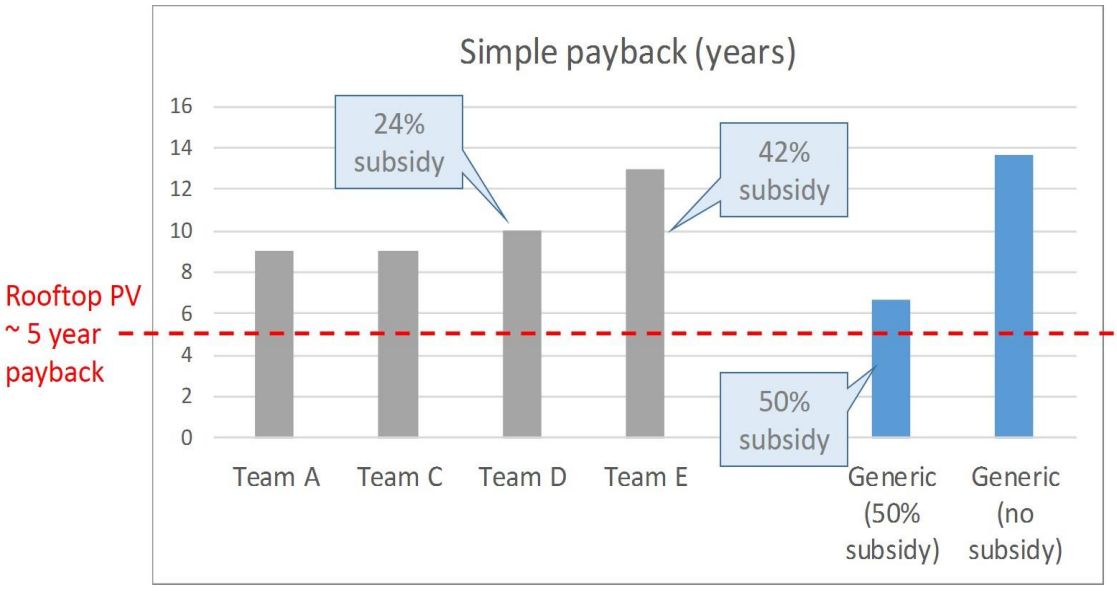
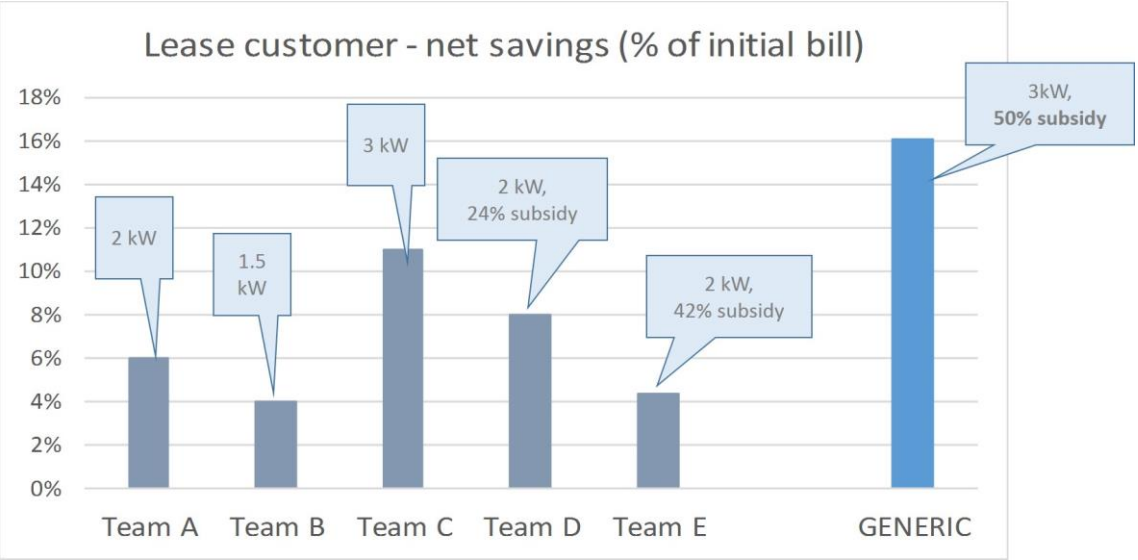


Figure 6 Lease customer outcomes (average of generic assessments)



Upfront purchasers with a 50% subsidy receive an average simple payback of 7 years, while lease customers (with a 3 kW stake) experience an average annual bill reduction of 16%.

Current FITs would have to be extended to the customer shares of the Solar Garden, as many mandatory and voluntary FIT offers are only available for residential rooftop solar. This could potentially be achieved by including customer shares of a solar garden as a special case in definitions of residential rooftop solar.

Financial assessment - conclusions

The financial assessment has demonstrated that a subsidy is likely to be required to render social access solar gardens viable in Australia, certainly if they are to deliver returns close to that achieved from behind-the-meter rooftop solar.

Subsidies in the range of $2,400 - $4,200 per household would be sufficient to deliver attractive returns. While these are not trivial amounts, they are not greatly different in magnitude from subsidies delivered to those Australians who are able to install solar on their own roofs via direct capital payments, and via the STCs.[k] Other learnings are:

- Size and cost matters: lifetime operational costs are approximately the same as the initial capital costs, and a proportion of operational costs are fixed (for example the organisational overhead). In larger systems, fixed costs are spread over a larger number of customers. Capital cost reductions can deliver the same effect as capital subsidy.

- Leasing is generally thought to be the only option for low income consumers. In general a higher stake will provide a more worthwhile return.

- It appears easier for solar gardens to break even if customers take all the outputs because the electrical output has a higher value to the customer than selling into the wholesale market. There may also be eligibility issues for FITs; it

[k], STCs may make a contribution of approximately $1,100 to a 2 kW solar system. The Victorian Government is currently offering $2,225 to houseowners installing solar.

is easy to imagine the benefit of FITs being extended to member customers for their share, but harder to imagine the same extended to a management company.

- In some cases, export rates for customers may be similar to netted off value, however this assumes that there is a reasonable FIT available to members/ customers for their share of the solar garden, and that such a FIT is guaranteed for most of the project life.

- The solar gardens as modelled do not appear to deliver sufficient returns for business customers; however there is a growing movement for corporate PPAs for business[I], which may provide access in a different manner.

[I] https://www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/our-research/energy-and-climate/business-renewables-centre%E2%80%93australia

5 Solar gardens – the prototype teams

The Social Access Solar Gardens project was designed to prototype solar gardens. Four prototype teams in five locations were supported – Swan Hill in Victoria, Blacktown, Shoalhaven and Byron in NSW, and regional Queensland.

The New South Wales and Victorian prototype teams were comprised of a local council, local community energy group, an electricity retailer and, in three cases, a social welfare organisation. The Queensland team was centred around Energy Queensland and included their retail arm.

The community retailer Enova also participated in the project. Enova was in a different position from the other teams, as they were already advanced with their business model development for a behind-the meter-solar garden. They received assistance with customer research and product testing, and are the subject of a case study in this report.

The prototype team process

This prototyping process included support for and co-ordination of prototype teams who planned for their own real-world pilots of social access solar gardens.

The teams did this in a structured process to design a business model and test key hypotheses that underpin their business design. The prototype teams carried out planning for real-world pilots in order to test the feasibility, desirability and viability of developing their solar garden. The project was not intended to include implementation, but rather to take the teams to a decision point regarding whether to proceed.

The project has included both research-led methodology and a more dynamic design process of “learning by doing”. Research informed the plans made by the prototype teams for their business models, and interaction with the research teams occurred both in workshops and informally at other times. However, prototype teams did not have direct contact with each other apart from the inception workshop at the start of the project, and the wrap up meeting at the end. This was to protect any commercially sensitive material developed, and to allow different models to emerge.

Host site options and site selection were an important part of the process, and the prototype teams were self-sufficient with respect to identifying prospective sites for their solar garden installations and choosing the intended site for the pilot. The teams also needed to develop a realistic and achievable plan for implementing the billing changes required to enable on-bill credits for participating customers. This was addressed by the electricity retailer involved with the prototype team.

Finally, the teams were required to commit to whether or not they intended to move forward with a pilot, if the business model designed was considered to be viable, feasible and desirable. The following key tasks were completed by each of the prototype teams with support from the research teams.

Prototype design workshops

A two-day co-design session with the prototype team members. The workshops took inputs from the research streams, to begin designing the most suitable business model for the prototype team’s solar garden pilot project.

Business model reports

The business model reports summarised the outputs of the prototype design workshops. The reports outline how the pilot Solar Garden business model will work, including what roles each organisation will play, target market/audience, legal arrangements needed, financial flows, ideas for marketing and more. The Business Model Canvas[m] was used as the basis for outlining the proposed business models. A summary of the models can be found in Table 8, with further detail in Appendix B.

Mock product prototype

The prototype teams developed a mock product prototype, such as an invitation to register for information about the solar garden. Alternative framing of the message was tested online to inform future marketing by the teams.

Site Feasibility

Choosing a host site for the solar gardens was an important part of the real planning for the pilot project. The site feasibility was led by a member of the prototype team. In several teams local councils played a key role in identifying and assessing sites, and in others, the local community energy group played this role. A site feasibility template was provided to teams to assist them in their assessments.

Billing implementation plan and on-bill credits

- This task required retailers within the prototype teams to create a realistic plan for how the required billing system changes would be implemented to accommodate the solar gardens pilot project and provide an on-bill credit that would reflect the customers share. The two retailers involved in prototype teams produced such plans, and found they could implement appropriate billing systems to deliver on-bill credits. Enova is already committed to delivering on-bill credits for their behind-the-meter solar garden, and obtained a tax ruling to confirm customer credits from their solar garden will not be taxable (see case study, page 35).

Final workshop and statement of intent

A final workshop brought together the work of each prototype team, providing a final opportunity to resolve any outstanding issues before determining if each team member intended to proceed with the pilot project. A statement of intent was then provided by each team member to either:

- provide confidence that the business model and supporting plans were achievable and feasible
- identify the reasons for not proceeding and outline any alternative plans.

The prototype team business models

Throughout the project the prototype teams worked to refine their business models by ongoing site feasibility assessment and drafting of their team business model reports, with support from the three research streams. Each team developed a model unique to

[m] Business Model Canvas is a template for developing new or documenting existing business models. It is a visual chart with elements describing a firm's or product's value proposition, infrastructure, customers, and finances. www.strategyzer.com/canvas/business-model-canvas

their own context and location, however, there were recurring themes across the models.

Key Themes

- Low-income customers were identified as a priority customer segment across all of the models, with two teams setting targets of 20 - 30%. All models included consumers who could not access solar in other ways, and renters were a specific focus for two teams (although included in all teams). One model had no restrictions on customer type.
- Most models require all but low-income customers to pay for their solar garden share up-front. All recognised that low-income customers would require a subscription option or some type of gifting.
- All of the models had a preference for participation from local customers.
- Four of the five models adopt a co-operative legal structure, with only one retailer model emerging within the Queensland context. This reflects the importance of the legal research to the process.
- Engagement channels were many and various across the models, with teams choosing to use face-to-face events and activities as well as online and traditional media to connect with customers.
- All of the models indicate the importance of external stakeholders, particularly potential funders such as state and federal governments.

More detail on each of the business models can be found in Table 8 and Appendix B. It is important to note that the business models are only indications of planning and research undertaken up until October 2018 and further work continues to take place within the prototype teams with the models continuing to evolve under various conditions.

Prototype team outcomes

During the final workshops, prototype teams (and each member organisation) were supported to decide whether or not to proceed with the implementation of their pilot Solar Garden. Teams identified whether there were conditions that must be present or were missing to proceed with their pilot, and what the reasons were if they chose not to proceed. This decision (along with any conditions/reasons) was formalised through a Statement of Intent, the results of which can be found in Table 7.

Most partner organisations intend to proceed to pilot their solar garden, with each identifying multiple conditions that must be present to enable this. The most common condition identified was the need for external funding via subsidy or philanthropic funds, both for development and specifically to facilitate the participation of low-income households. Due to the marginal financial benefit offered to regular customers through a solar garden product, most project partners have concluded that to enable social access to solar for vulnerable energy users, financial support would be required.

Of the three retailers involved in the project, Powershop is planning to go ahead, provided various conditions are met, Enova is fully committed to implementation of a Solar Garden, and Ergon Retail is not proceeding at present.

Continued partnerships were also cited as a necessary condition for organisations choosing to proceed to pilot. This includes strong and ongoing partnerships within the prototype team, as well as a partnership with a committed retailer.

Resolving issues around site feasibility and grid connection/metering was also identified by various partners as an important step in moving forward, along with a need for further market testing.

Several partners, including community energy groups and councils, also indicated the need for a funded staff member to undertake the development work necessary to progress pilot plans. A huge amount of in-kind support has been contributed the project thus far and continued participation cannot be realised without adequate resourcing and organisational support.

Energy Queensland and Blacktown City Council have chosen not to proceed to pilot at this time for specific reasons. The Queensland context is unique in that it has identified a potential regulatory barrier that while not insurmountable, would require time and resources to navigate which are currently unavailable. For this reason, Energy Queensland has chosen to revisit their solar gardens plans in twelve months when they have greater organisational capacity. Blacktown City Council is still progressing its plans to secure a solar garden site and will progress the model if/when this occurs.

Table 7: Summary of the Statements of Intent, with key conditions or reasons

	ORGANISATIONS PLANNING TO IMPLEMENT							NOT GOING AHEAD	
	Pingala	Powershop	Swan Hill Rural City Council	Repower	Byron Shire Council	COREM	Shoalhaven City Council	Blacktown City Council	EQ (Y)
Secure funding/ subsidy	✓	✓	✓	✓	✓	✓	✓	✓	
Continued partnerships inc. retailer	✓	✓	✓	✓	✓	✓	✓	✓	
Site issues resolved		✓	✓	✓		✓	✓	✓	
Further market testing			✓	✓	✓	✓	✓		
Funded staff position	✓					✓	✓	✓	
Grid connection issues resolved		✓		✓		✓	✓		
Organisational support		✓			✓			✓	✓

Table 8: Selected themes from business models – all teams

	BLACKTOWN	QUEENSLAND	SHOALHAVEN	BYRON	SWAN HILL
Customer base	Low-income households Any consumers who cannot put solar on roof	Primarily renters with a carve-out for low-income renters (~20-30%), but has mass market potential for residential and small business customers.	No restrictions	Low income customers Any consumers who can't put solar on roof. Commercial, public and retail sector	Low income households (20% target) Renters (inc. business) Any consumers who cannot put solar on roof Council
Number of customers	At least 100	50-60 (min 1kW each)	Approx. 2060	1000 (assumes 4MW)	50
Payment options	Upfront payment Low-income households subscription payment	All subscription	Upfront payment except Low-income households to receive a gift/ subsidy/ rebate/ no-interest loan	Upfront payment except Low-income households to receive a gift/ subsidy/ rebate/ no-interest loan	Upfront payment except Low-income households to receive a gift/ local crowdsource/ subsidy/ member cross-subsidy
Solar garden member boundaries	Option 1: Local sign-up limited to the Blacktown LGA Option 2: minimum 100 members from the Blacktown LGA	Preference for local; hard boundary: Ergon Retail area	Local sign-up (limited to Shoalhaven LGA at least initially)	Local sign-up (limited to the Byron Shire Council at least initially)	Prioritise local sign-up.

	BLACKTOWN	QUEENSLAND	SHOALHAVEN	BYRON	SWAN HILL
Customer exit	Customers must sell their share if they leave the LGA, within a time specified in the co-op rules.	Moves within Ergon area customers can take their subscription with them. If they leave this area they must exit the solar garden.	Customers involved in initial set up can take share with them if they move (must stay with the same retailer). Others must sell if the leave the LGA.		If customers move outside the LGA, they can remain in the solar garden, regardless of which retailer they choose.
Size of system	Option 1: 300kW Option 2: 2.7MW	99kW	4MW	Stage 1 - 74kW Stage 2 - 4MW	99kW
Storage	No	No	No	No	99kW/100kWh
Cost structure and revenue streams	Investment from funders and non-low-income membership	Yurika to cover the upfront costs including sourcing low interest debt if needed	At risk investors, debt and bridging finance	At risk investors, debt and bridging finance	Members/Council buy shares. Low income shares from crowd funding / grants
Legal structure	Co-operative	Private company/SPV via Ergon Retail / Yurika	Distributing Co-operative, limited company SPV (owned by co-operative)	Co-operative plus SPV (owned by co-operative)	Distributing Co-operative, not incorporated

CASE STUDY: ENOVA
A Behind-the-Meter solar garden

Enova is planning to launch a community-owned solar garden in the Northern Rivers region of NSW to enable renters and others who are unable to install rooftop solar on their homes to invest in panels and reap the benefits of renewables.

About the solar garden

Enova plans to build a 99 kW solar system at a host site and 'sell' the panels to customers who cannot have solar at home because they are renting, live in apartments, live in houses that are shaded, or cannot afford to invest in a whole system. Business customers are also eligible to become 'solar gardeners' and Enova is committed to enabling vulnerable households to access the scheme as well. Customers will subscribe to solar capacity as members of the solar garden, and receive credits on their bill for the value of their solar generation. Enova calculates that credits will amount to a return of between 8% and 23% per year on the original investment, depending on the number of kilowatts a customer has and how many they use at their own premises. Solar Garden customers will have to become Enova electricity customers if they are not already.

In contrast to the solar gardens examined in the rest of the Social Access Solar Gardens project, the solar panels will be installed "behind the meter", and there will be a long term contract to sell the electrical output to the host site, which must also be an Enova customer.

The return on this type of solar garden is higher than a solar garden which exports electricity to customers via the electricity grid, as the electricity does not incur network charges because it is used on-site at the host site.

Where it is up to

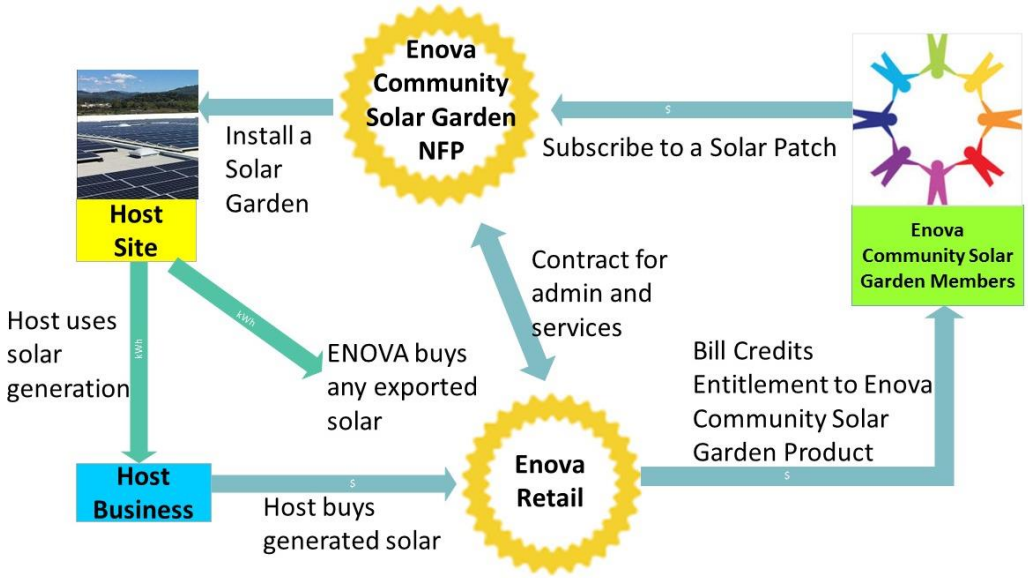
Enova has received more than enough registrations of interest to support a pilot solar garden and has secured a host site for the trial. They are planning to start building their first solar garden in the near future, however no date has been set for the launch of the first site.

How it will work

- People purchase a share in solar panels in a community owned 'garden' (small-scale solar farm) and receive the benefits for the energy generated as a credit on their power bill.
- The solar garden is installed by Enova on the roof of a business, club or community organisation, which must become an Enova customer and sign a long term supply contract. The solar is installed "behind the meter", and the host site should be able to use as much as possible of the solar electricity at the time it is generated.
- The host site is not responsible for any maintenance or repairs on the solar garden, nor for any installation costs. In return for making the roof available, they receive a long term discount of 30% on all the solar power they use (compared to Enova's normal business rate). After 20 years the panels belong to the rooftop owner.
- The business or club might want to invite members or customers to become members in the garden. However, anyone in the community is free to become a member.
- The people who have bought panels in the garden receive a credit on their bill for the energy generated from "their" share of the solar garden. The value will vary depending whether the generation is all being used on-site by the host (the highest return).
- Calculation of the bill credit that customers receive is based on two revenue streams: the discounted price paid for the solar power consumed by the host site, and the price paid for the solar power exported which is purchased by Enova. The return for customers is higher if

the business is using the electricity, rather than exporting it, and depending on the amount used by the business, the return to the solar garden member is close to the return from owning panels on your own roof.

- Enova has currently set the FIT for electricity exported from the solar garden at the small business rate of 9c per kWh. This may vary for future solar gardens.
- The operation and maintenance costs, including reporting and inverter replacement are subtracted from the revenue streams before the bill credit is provided to customers.
- 'Membership' in the solar garden is portable – so renters can still get their rebate if they move houses but stay with Enova as a supplier. Memberships can also be sold and can be bought as gifts – as long as the recipient is an Enova customer.
- There is no guaranteed return on investment, but Enova's cost/benefit modelling indicates a payback of approximately 5 years. However, this will be dependent on actual capital expenditure and other factors including the proportion of solar generation consumed at the host site.
- A tax ruling has been received for the model to confirm that credits received on bills will not be taxable.



The structure

- The Enova solar garden is set up as a subsidiary of Enova Community Energy and is a not-for-profit (NFP) entity. While it is not community-owned, customers are members of the solar garden and benefit is returned to them via the bill credit. No profit is generated on the energy produced by the solar garden panels and consumed onsite.
- A detailed contract exists between the host site and the NFP - the "Garden contract". The contract term is 20 years however after 10 years the host site can exit the contract by paying the value of the depreciated residual energy of the solar garden. This value is either returned to the members as a quarterly bill credit or as a lump sum by Enova.
- A "Gardener contract" is made between the member and the NFP which details access, termination/exit from the solar garden. It entitles the customer to benefits for up to 20 years.
- A market retail contract is also held between the member and Enova Community Energy which is linked to the Gardener contract and which details the solar garden product.

More information

To find out more about the Enova solar garden: enovaenergy.com.au/solar-garden/

6 What would enable social access solar gardens in Australia?

The project found that social access solar gardens are feasible both legally and technically, and that they are desirable for consumers. The research also identified that the economic and financial benefit to customers is marginal without support. However, such support has been forthcoming for households who are able to install solar on their own roofs, and equity considerations would suggest the same support should be extended to consumers who are locked out from the traditional ownership model, particularly if those consumers have low incomes.

The wider policy context includes commitments from both the NSW and Victorian Governments to support renters and low income households to access solar, including financial support. The Victorian Government is also offering a 50% subsidy for homeowners to install solar, up to a limit of $2,225 per household.[10]

In addition to the rebates mentioned, household rooftop solar systems benefit from Small-Scale Technology Certificates, with the cost spread across all consumers, including those who are locked out. STCs amount to a support payment of approximately $1,100 for a 2 kW system[n]. While 1 MW solar gardens would not be eligible for STCs[o], this certainly puts the requirement for subsidies of $2,000 – $4,000 per household share in context.

If these support programs were expanded to include solar gardens, the financial benefit to members would be significantly increased, and this model would become viable for renters, apartment dwellers and low income consumers, and could be an important route by which consumers who are currently excluded can benefit from renewable energy. We note that in situations where solar is suitable for rooftop installation (for example, some social housing), this should be the first choice because the return to the consumer is greater.

Based on the findings and this broader context there are three recommended next steps to progressing the implementation of Solar Gardens.

- Work with the NSW and Victorian Governments to see a Social Access Solar program established that includes ongoing support for solar gardens. There is no shortage of evidence that shows some households cannot install solar on their roof, whether they rent, live in an apartment or have shaded roofs. Solar Gardens is perhaps the only model that can help all locked-out households to sidestep their specific barrier to solar energy. Establishing equitable support for these consumers should be a priority.

- Continue to work with those prototype teams in NSW and Victoria that wish to proceed to implementation, in order to see the first pilot social access solar gardens established. Delivering these pilots will require additional funding, both for “first mover” set up costs, and also to provide the subsidy prior to a more

[n] Assuming 16 STC’s per kW at $34.50 each, from https://www.rec-registry.gov.au/rec-registry/app/calculators/sgu-stc-calculator and https://www.tradeingreen.com.au/prices-93.html

[o] Solar gardens would be eligible for LGCs, but in the absence of additional renewable policy these are unlikely to have value. They have been ascribed a zero value in this modelling.

general program establishment. Existing funding routes are being actively explored.[p]

- Investigate the establishment of an aggregation co-operative. Many community energy groups, retailers and renewable developers have expressed interest in social access solar gardens. However, the business model has a degree of complexity that may be out of reach for some organisations. As such, one of the project teams intends to pursue this idea, proposed by Norton Rose Fulbright in the legal research, of establishing a platform co-operative.[11] This co-operative would act as an administrative entity that manages the legal relationship with participating retailers. The members of this co-operative would be local solar gardens co-operatives, who would in turn be owned by local solar gardens customers.

[p] For example, the NSW Regional Community Energy Program

Appendix A Financial tool additional information

This appendix details the tariffs and profiles that were developed and used in the financial tool.

CONSUMPTION TARIFFS	
NSW	Endeavour Energy, Diamond Energy Residential single rate. Volume block 1: 25.66c/kWh first 100kWh/month. Volume block 1: 26.98c/kWh next 240kWh/month. Remaining usage: 28.49c/kWh. Fixed charge $27.22/month. Includes network fees of 9.07c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 12c/kWh.
NSW	Endeavour Energy, Diamond Energy Residential TOU. Peak 34.9.98c/kWh for first 340kWh/month, remaining peak usage 37.87c/kWh. Shoulder 27.97c/kWh. Offpeak 17.9c/kWh. Peak from 1300 to 2000 business days. Shoulder from 0700 to 1300 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $31.92/month. Includes network fees of 14.4c/kWh for peak usage, 9.46c/kWh for shoulder usage and 5.57c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 12c/kWh.
NSW	Endeavour Energy, Energy Locals Business single rate. All usage 27.99c/kWh. Fixed charge $177.94/qtr. Includes network fees of 8.95c/kWh for the first 2500kWh/qtr and 9.07c/kWh for remaining usage. Rates are ex-gst. Feed in rate 8c/kWh.
NSW	Endeavour Energy, Energy Locals Residential single rate. All usage 22.99c/kWh. Fixed charge $85.78/qtr. Includes network fees of 9.07c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 13c/kWh.
NSW	Endeavour Energy, Energy Locals Residential TOU. Peak 23.99c/kWh, Shoulder 22.99c/kWh, Offpeak 20.99c/kWh. Peak from 1300 to 2000 business days. Shoulder from 0700 to 1300 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $126.084/qtr. Includes network fees of 14.4c/kWh for peak usage, 9.46c/kWh for shoulder usage and 5.57c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 13c/kWh.
NSW	Endeavour Energy, Origin Business Block. Volume block 1: 28.49c/kWh first 2500kWh/qtr. Remaining usage: 28.61c/kWh. Fixed charge $92.62/qtr. Includes network fees of 8.95c/kWh for the first 2500kWh/qtr and 9.07c/kWh for remaining usage. Rates are ex-gst. Feed in rate 8c/kWh.
NSW	Endeavour Energy, Origin Residential single rate. All usage 27.09c/kWh. Fixed charge $75.64/qtr. Includes network fees of 9.07c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 8c/kWh.
NSW	Endeavour Energy, Origin Residential TOU. Peak 40.98c/kWh, Shoulder 33.49c/kWh, Offpeak 17.58c/kWh. Peak from 1300 to 2000 business days. Shoulder from 0700 to 1300 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $91.02/qtr. Includes network fees of 14.4c/kWh for peak usage, 9.46c/kWh for shoulder usage and 5.57c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 8c/kWh.
NSW	Endeavour Energy, Powershop Residential single rate. All usage 25.02c/kWh. Fixed charge $85.14/qtr. Includes network fees of 9.07c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 10.2c/kWh.
NSW	Endeavour Energy, Powershop Residential TOU. Peak 29.6c/kWh, Shoulder 25.61c/kWh, Offpeak 22.4c/kWh. Peak from 1300 to 2000 business days. Shoulder from 0700 to 1300 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $95.94/qtr. Includes network fees of 14.4c/kWh for peak usage, 9.46c/kWh for shoulder usage and 5.57c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 10.2c/kWh.
Qld	Ergon Energy, Residential single rate. All usage 26.442c/kWh. Fixed charge $112.20/qtr. Rates are ex-gst. Feed in tariff 10.1c/kWh. Derived from Ergon Energy tariff 20

CONSUMPTION TARIFFS	
Qld	Ergon Energy, Residential single rate. All usage 26.442c/kWh. Fixed charge $112.20/qtr. Includes network fees of 2.53c/kWh for the first 250kWh/qtr, 8.44c/kWh for the next 4750kWh/qtr and 10.46c/kWh for remaining usage. Rates are ex-gst. Feed in tariff 10.1c/kWh. Derived from Ergon Energy tariff 20
Qld	Ergon Energy, Residential single rate. All usage 25.298c/kWh. Fixed charge $81.16/qtr. Rates are ex-gst. Feed in tariff 10.1c/kWh. Derived from Ergon Energy tariff 11
NSW	Ergon Energy, Residential single rate. All usage 25.298c/kWh. Fixed charge $81.16/qtr. Includes network fees of 2.12c/kWh for the first 250kWh/qtr, 5.18c/kWh for the next 1250kWh/qtr and 7.18c/kWh for remaining usage. Rates are ex-gst. Feed in tariff 10.1c/kWh. Derived from Ergon Energy tariff 11
NSW	Essential Energy, Enova Business single rate. All usage 36.38c/kWh. Fixed charge $154.0/qtr. Includes network fees of 14.21c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 10c/kWh.
NSW	Essential Energy, Enova Business TOU. Peak 36.45c/kWh, Shoulder 35.2c/kWh, Offpeak 21.43c/kWh. Peak from 0700 to 0900 and 1700 to 2000 business days. Shoulder from 0900 to 1700 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $610.47/qtr. Includes network fees of 13.99c/kWh for peak usage, 12.67c/kWh for shoulder usage and 6.38c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 10c/kWh.
NSW	Essential Energy, Enova Residential single rate. All usage 29c/kWh. Fixed charge $129.58/qtr. Includes network fees of 10.28c/kWh for anytime usage. Rates are ex-gst.Feed in tariff 16c/kWh.
NSW	Essential Energy, Enova Residential TOU. Peak 36c/kWh, Shoulder 35c/kWh, Offpeak 19c/kWh. Peak from 0700 to 0900 and 1700 to 2000 business days. Shoulder from 0900 to 1700 and 2000 to 2200 business days. Offpeak all other times. Fixed charge $129.58/qtr. Includes network fees of 13.13c/kWh for peak usage, 11.85c/kWh for shoulder usage and 4.35c/kWh for offpeak usage. Rates are ex-gst. Feed in rate 16c/kWh.
Vic	Powercor, Powershop Business 5 day TOU. Peak 29.01c/kWh, Offpeak 18.63c/kWh. Peak from 0700 to 2300 business days. Offpeak all other times. Fixed charge $126.58/quarter. Includes network fees of 12.86c/kWh for peak usage and 3.17c/kWh for offpeak usage. Rates are ex-gst. Feed in tariff 11.8c/kWh.
Vic	Powercor, Powershop Business 7 day TOU. Peak 27.53c/kWh, Offpeak 18.45c/kWh. Fixed charge $126.58/quarter. Peak from 0700 to 2300 everyday. Offpeak all other times. Includes network fees of 11.38c/kWh for peak usage and 3.17c/kWh for offpeak usage. Rates are ex-gst. Feed in tariff 11.8c/kWh.
Vic	Powercor, Powershop Business single rate. All usage 23.48c/kWh. Feed in tariff 11.8c/kWh. Includes network fees of 7.97c/kWh for anytime usage. Rates are ex-gst. Fixed charge $126.90/quarter.
Vic	Powercor, Powershop Residential 5 day TOU. Peak 27c/kWh, Offpeak 17.7c/kWh. Peak from 0700 to 2300 business days. Offpeak all other times. Fixed charge $94.16/qtr. Includes network fees of 12.34c/kWh for peak usage and 2.62c/kWh for offpeak usage. Rates are ex-gst. Feed in tariff 11.8c/kWh.
Vic	Powercor, Powershop Residential single rate. All usage 22.05c/kWh. Fixed charge $94.2/qtr. Includes network fees of 7.18c/kWh for anytime usage. Rates are ex-gst. Feed in tariff 11.8c/kWh.
Vic	Powercor, Powershop Residential Flexible. Peak 27.95c/kWh, Shoulder 22.24c/kWh, Offpeak 17.84c/kWh. Fixed charge $94.16/qtr. Peak from 1500 to 2100 business days. Shoulder from 0700 to 1500 and 2100 to 2200 business days, and 0700 to 2200 weekends. Offpeak all other times. Includes network fees of 12.90c/kWh for peak usage, 7.46c/kWh for shoulder usage and 3.12c/kWh for offpeak usage. Rates are ex-gst. Feed in tariff 11.8c/kWh.

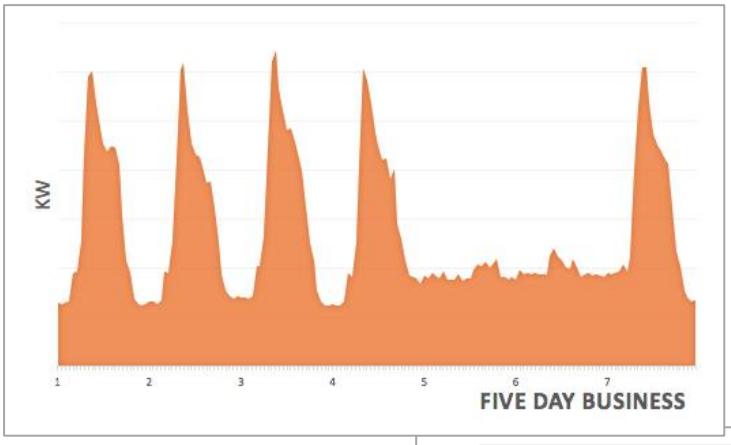
CONSUMPTION TARIFFS	
SOLAR FEED IN TARIFFS	
	Energy Locals,
NSW Solar	Enova Energy, residential New South Wales solar 9c/kWh Feed in tariff
NSW Solar	Enova Energy, residential New South Wales solar plus 16c/kWh Feed in tariff; demand_window: 30min
NSW Solar	Origin Energy, residential New South Wales solar 8c/kWh Feed in tariff
NSW Solar	Powershop, residential New South Wales solar 10.2c/kWh Feed in tariff
IPART NSW Solar	IPART, average recommended residential New South Wales solar 7.65c/kWh Feed in tariff
IPART NSW Solar	IPART NSW Solar feed in TOU. Peak 17.2c/kWh, Shoulder 9.5c/kWh, Offpeak 7.9c/kWh. GST inclusive. Peak from 1600 to 1900 every day. Shoulder from 1500 to 1600 and 1900 to 2000 every day. Offpeak all other times.
Qld	Ergon Energy, residential regional Queensland solar 10.2c/kWh Feed in tariff. demand_window: 30min
Qld	Ergon Energy, residential regional Queensland solar TOU 13.5c/kWh peak times, 7.358c/kWh offpeak times.
Vic Solar	Powershop, Residential Victoria solar 11.8c/kWh Feed in tariff.
Vic Solar	Victorian Government, average recommended residential Victoria solar 9.9c/kWh Feed in tariff.
Vic Solar	Victorian Government, solar feed in TOU. Peak 29c/kWh, Shoulder 10.3c/kWh, Offpeak 7.2c/kWh. Peak from 1500 to 2100 business days. Shoulder from 0700 to 1500 and 2100 to 2200 business days, and 0700 to 2200 weekends. Offpeak all other times.

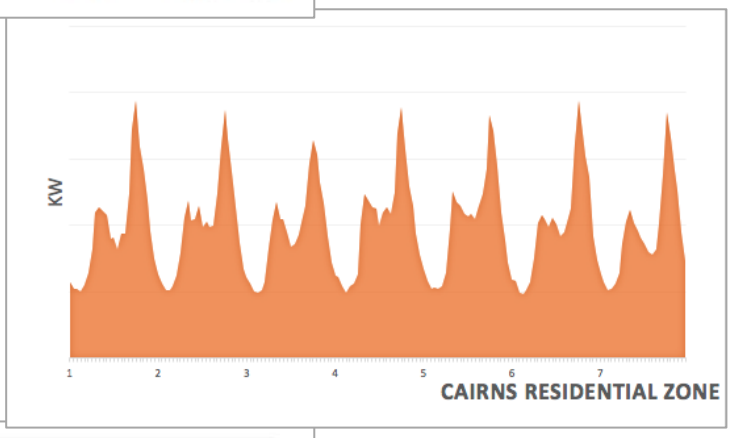
GENERATION PROFILES		(kWh/kW
Queensland	SE Qld Generator - Optimal tilt	1,548
Queensland	SE Qld Generator - East/West fixed 10 degree tilt	1,652
Shoalhaven	South Coast NSW Generator - Optimal tilt	1,519
Shoalhaven	South Coast NSW Generator - East/West fixed 10 degree tilt	1,367
Swan hill	NW Vic Generator - Optimal tilt	1,495
Swan hill	NW Vic Generator - East/West fixed 10 degree tilt	1,335
Byron	Northern NSW Generator - Optimal tilt	1,528
Byron	Northern NSW Generator - East/West fixed 10 degree tilt	1,386
Blacktown	Sydney NSW Generator - Optimal tilt	1,381
Blacktown	Sydney NSW Generator - East/West fixed 10 degree tilt	1,525

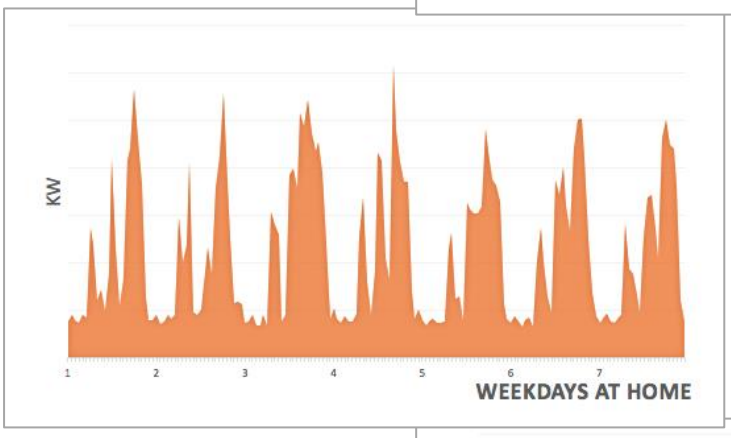
CONSUMPTION PROFILES	
Queensland	Customer Type 1
Queensland	Customer Type 2
Queensland	Customer Type 3
Blacktown	Gross export customer
Swan Hill	Council building Behind the meter
Swan Hill	Residential - in weekdays - no air con
Swan Hill	Residential - out weekdays - summer air con
Swan Hill	Residential - out weekdays - no air con
Swan Hill	Business - 5 days ops
Swan Hill	Business - 7 days ops
Byron	Business - 5 days ops
Byron	Residential - small user
Byron	Residential - family
Byron	Residential - social access user
Byron	Business - Cavanbah sports centre
Shoalhaven	Business - 5 days ops
Shoalhaven	Residential - out weekdays - no air con
Shoalhaven	Residential - out weekdays - summer air con
Shoalhaven	Residential - social access user
Shoalhaven	Average - zone substation profile
Swan Hill	Council building Behind the meter
Blacktown	Residential placeholder
Blacktown	Business placeholder
Blacktown	Social access user placeholder
Blacktown	Generation placeholder

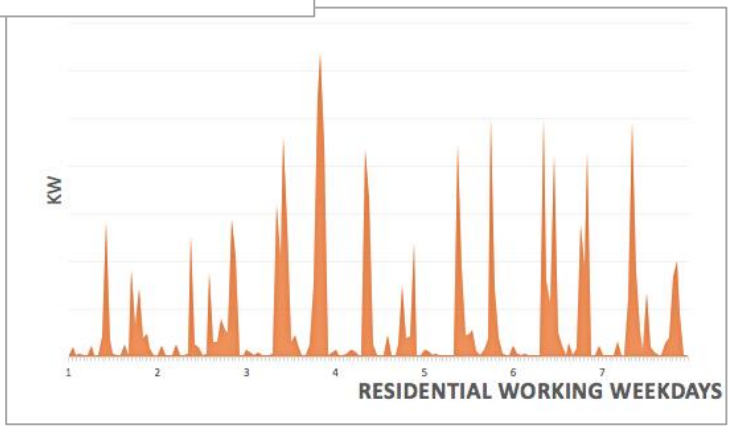
GRAPHS OF SELECTED PROFILES

A selection of profiles is shown to display some of the variability in customer demand.









Appendix B Business Model Summary

BLACKTOWN PILOT MODEL	
Customer base	Low-income consumers, non low-income consumers who can't put solar on their roofs
Other stakeholders	Funders (corporate business, Government, philanthropists)
Engagement	Social media, Council newsletters (online), local press, word of mouth, info events, partner events, guest speaking
Number of customers	At least 100
Payment options	Upfront payment for all but low-income customers who will receive a gift/subsidy/rebate/no-interest loan
Customer boundaries	Option 1: Local sign-up of all members limited to the Blacktown LGA Option 2: Local sign-up of at least 100 members from the Blacktown LGA
Customer exit	Customers must sell their share if they leave the LGA, within a time specified in the co-op rules
Size of system	Option 1: 300 kW Option 2: 2.7 MW
Location	Option 1: Blacktown City Council PPA Option 2: Wagga Wagga
Netting off	Gross
Storage	No
Cost structure and revenue streams	Investment from funders and non-low-income membership
Legal structure	Co-operative
Organisations involved	Blacktown City Council, Powershop, Pingala, Western Sydney Community Forum
Legal relationships	Customers are both members of the co-operative and customers of Powershop

BLACKTOWN PILOT MODEL	
Developer	Option 1: Blacktown City Council oversees the development as part of a larger PPA Option 2: Solar constructor with oversight from Pingala
Owner	Option 1: Solar garden asset owned by property developer and a PPA held with Council Option 2: Co-operative established by Pingala will own the solar garden asset
Manager	Co-operative (new structure)
Other roles	Blacktown City Council – oversight of development, assessment of low-income eligibility, promotion Pingala – Collective ownership of asset (Option 2), billing arrangement with retailer, promotion Powershop – Retailer, creditor and promotion WSCF – Promotion

QUEENSLAND PILOT MODEL	
Customer base	Primarily renters with a carve-out for low-income renters (~20-30%), but has mass market potential for residential and small business customers.
Other stakeholders	Anchor customers (e.g. EQL, Council, charities) who can buy excess generation or subscriptions/shares Government, community organisations
Engagement	Community organisations (social welfare/housing/ community energy) as trusted intermediaries, Ergon Retail letters, social media
Number of customers	50-60 (min 1 kW each)
Payment options	Different subscription terms, from monthly, to quarterly, yearly or three years or longer (which would begin to resemble paying upfront)
Customer boundaries	There is a preference for local customers to reduce losses. Marketing and recruitment will target local customers. Required boundary: Ergon Retail area

QUEENSLAND PILOT MODEL	
Customer exit	If the customer moves within Ergon NEM connected network, they can take their subscription with them. If they leave this area they must exit the solar garden.
Size of system	99 kW
Location	EQL Depot rooftop, Garbutt
Netting off	Time of Use
Storage	No
Cost structure and revenue streams	Yurika to cover the upfront costs including sourcing low interest debt if needed
Legal structure	Private company/SPV via Yurika
Organisations involved	Yurika, Ergon Retail, EQL, QCOSS
Legal relationships	Yurika will hold the subscription contract with the customers, with a pass-through agreement with Ergon Retail
Developer	Solar constructor with oversight from Yurika
Owner	Yurika
Manager	Yurika
Other roles	Yurika – Ownership of asset, oversight of development, operation Ergon Retail - Retailer State Government (DNRME) – Subsidising low-income participation Department of Housing and Public Works - Recruitment

SHOALHAVEN PILOT MODEL	
Customer base	Low income households (social housing tenants, renters, and strata title properties), regular households and small business/organisations locked out of solar, State Government Agencies, large local energy users

SHOALHAVEN PILOT MODEL	
Other stakeholders	State and Federal Government, social/community organisations – Southern Cross Housing, retailer
Engagement	Community meetings and engagement, individual approaches and marketing on local radio, TV and newspapers, flyers, plus social media
Number of customers	Approximately 2060
Payment options	Upfront payment for all but low-income customers who will receive a gift/subsidy/rebate/no-interest loan
Customer boundaries	Local sign-up limited to the Shoalhaven LGA, at least initially
Customer exit	Customers involved in the initial set up of the solar garden can remain in the scheme if/when they move – as long as they stay with the same retailer. Other customers must sell their share if the leave the LGA.
Size of system	4 MW
Location	The redundant North Nowra council tip, subject to necessary approvals
Netting off	Gross
Storage	No
Cost structure and revenue streams	At risk investors, debt and bridging finance
Legal structure	Distributing Co-operative, limited company
Organisations involved	Repower Shoalhaven, Shoalhaven City Council, Southern Cross Housing
Legal relationships	Customers are members of a co-op with two class of shares – investor and customer Customer of the retailer - Investor in the SPV
Developer	Solar constructor with oversight from Repower
Owner	SPV (owned by co-operative) – Repower as advisor and initiator
Manager	Solar company/Retailer

SHOALHAVEN PILOT MODEL	
Other roles	Repower – Oversight of development and operation Co-op – Collective ownership of asset, billing arrangement with retailer, promotion Shoalhaven City Council - promotion

SWAN HILL PILOT MODEL	
Customer base	Low income customers – 20% target, non low-income renters (households and businesses), home owners with inappropriate roofs, businesses, Council
Other stakeholders	Funders (corporate business, gov, philanthropists)
Engagement	Community Advisory Group (local relationships and networks, local champions), referrals, events (market stalls, Council information sessions), Social welfare organisations, newspaper, online, radio, social media, electricity retailer
Number of customers	50
Payment options	Upfront payment for all but low-income customers who will receive a donation – local crowdsource/ member cross-subsidy/grant
Customer boundaries	Prioritise local sign-up. Include postcode in application
Customer exit	If customers move outside the LGA, they can remain in the solar garden, regardless of which retailer they choose.
Size of system	99 kW
Location	Sea Lake, Swan Hill Rd, unused former landfill site
Storage	99 kW/100 kWh
Cost structure and revenue streams	Members buy shares, Council buys shares and finances build Low income shares covered by crowd funded donations or grants (e.g. Government – DEWLP, DHHS, SV)

SWAN HILL PILOT MODEL	
Legal structure	Distributing Co-operative Community Advisory Group (not incorporated, but will have a charter)
Organisations involved	Swan Hill Rural City Council, Powershop, Bendigo Sustainability Group, Brotherhood of St Lawrence
Legal relationships	Members purchase shares in the Co-operative and agree to become a customer of retailer (Powershop) to receive the bill credit.
Developer	Solar constructor with oversight from Co-operative
Owner	Co-operative
Manager	Co-operative
Other roles	Swan Hill Rural City Council – Host site, advisor, co-operative member and electricity consumer Community Advisory Group – Community engagement Powershop – Retailer, creditor

BYRON PILOT MODEL	
Customer base	Low income customers (social housing tenants, renters, and strata title properties), residential properties without access to solar. Commercial, public sector and the retail sector
Other stakeholders	State and Federal Government, social/community organisations
Engagement	Community meetings and engagement, individual approaches and marketing on local radio, TV and newspapers plus social media, COREM newsletters
Number of customers	1000 (assumes 4 MW)
Payment options	Upfront payment for all but low-income customers who will receive a gift/subsidy/rebate/no-interest loan
Customer boundaries	Local sign-up of all members limited to the Byron Shire Council, at least initially

BYRON PILOT MODEL	
Size of system	Byron Shire Council: 74kW – Stage 1 COREM: 4MW – Stage 2 Possibility of linking both options and staging the process
Location	Byron Shire Council – Cavanbah Sports Centre COREM – undisclosed
Storage	No
Cost structure and revenue streams	At risk investors, debt and bridging finance
Legal structure	Co-operative
Organisations involved	COREM, Byron Shire Council
Legal relationships	Customers are both members of the co-operative and customers of the engaged retailer
Developer	Solar constructor with oversight from COREM/Council
Owner	SPV (owned by co-operative)
Manager	Solar Company/Retailer
Other roles	COREM/Byron Shire Council – Oversight of development and operation, promotion Co-operative – Collective ownership of asset, billing arrangement with retailer, promotion

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