Case study: Solar Analytics

Clean Energy Knowledge Sharing Initiative

Peer-to-peer solar trading benefits the whole community

Inspired by the peer-to-peer operating model of businesses such as Uber and Airbnb, Australian software startup Solar Analytics wants to unlock the benefits of sharing community solar energy, and not just price savings. To achieve this, Solar Analytics is trialling a solar-sharing platform that allows household solar producers to allocate their excess generation to a consumer of their choice.

The trial encourages solar sharing within the local community by providing an engaging, informative and easy-to-use platform. Feedback from participants showed that simple prompts on trading actions and straightforward reporting metrics led to a more active use of solar sharing. The benefits of the trial were that participants gained more control, had more choice and engaged with their local community.

The trial is continuing. It will provide more insights into consumer behaviour and more opportunities to apply these findings. Solar Analytics is also exploring ways to facilitate financial transactions between solar producers and consumers.

Fast facts

Average amount of a solar owner's energy available to the community	55%
Average % of solar consumed by community participants in the trial	77%
Number of participants in the trial	10 producers and 10 consumers

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Background

Solar Analytics is an Australian software company providing information on energy generation to over 30,000 residential solar owners. The company is developing a system that enables peer-to-peer (P2P) solar trading between customers. The system allows customers to receive live data on their solar energy generation and allocate their excess solar to another participant of their choice via a shared solar dashboard.

With support from the NSW Government, Solar Analytics trialled this innovative system in the Canterbury Girls High School community. The pilot project aimed to:

- discover what solar owners and other electricity customers wanted from a P2P trading scheme
- show the benefits of solar sharing and how they are distributed within the community.

Solar Analytics surveyed potential participants to gauge their interest and test the solar trading idea. The survey found that money is not the sole driver of energy choices. Other benefits of solar sharing include control, more choice and a sense of contributing to the local community. Respondents expressed near-universal support for the idea of community energy sharing. More than half of all solar owners thought it was more important to choose who received their excess solar than to get the best price. Furthermore, 97% of those surveyed wanted to choose from whom they bought electricity.

> ***'Everybody likes to have a choice, and I would like to have some input into who benefits from my investment in solar.'***
>
> ***Solar producer surveyed by Solar Analytics***

Journey

The Canterbury Girls High School community in Sydney's inner west contains a mix of solar producers and energy consumers, presenting the perfect fit for Solar Analytics' trial. Solar Analytics pitched the concept of P2P solar trading to the school community. They signed up 10 solar producers that sold solar to the trial group, and 10 energy consumers that purchased solar from the producers.

Each participating household received an energy monitor and a personalised, online energy dashboard. This dashboard allowed energy consumers to see how much solar was available to be consumed, and solar producers to see how much excess solar was generated. Producers could also choose with whom they could share this excess.

In the future, the participants will be able to engage in solar trading through the Solar Analytics platform. Solar producers would set the price of their energy and select with which individuals they wanted to trade. Solar consumers would shop around for the best deal, accepting the solar trade of their choice—all through this platform.

Solar trading involving financial transactions can only take place through a retailer, which acts as an intermediary between producers and consumers. This would require all trial participants to switch to the same retailer. A survey of the participants showed that there is reluctance to change retailers, as the process is complex and confusing, and it is difficult to interpret the value of the retail plans on the market.

Instead of making participants switch retailers to engage in financial transactions, Solar Analytics focused the current trial on encouraging solar sharing within the community. A successful solar sharing platform is the critical first step in developing P2P offerings and related retail plans.

Table 1 summarises challenges and solutions from the trial.

Table 1. Challenges and potential solutions

Challenges	Potential solutions
Solar energy must be used when it is generated	Enhance the dashboard to show when peak production occurs and encourage 'load shifting' to align usage with these periods
Recruiting participants into the trial	Provide detailed onboarding material to build confidence among the participants
Participants are reluctant to switch energy retailers	Work with single retailer and offer the solar sharing platform to their existing customer base

Outcomes

The results from the trial showed the platform was successful in encouraging solar sharing between participants. Some solar owners were able to share up to 50% of the solar they produced with the community.

The interest in solar sharing can be attributed to participants engaging with the dashboard to monitor and track solar production and usage levels. Solar producers could see their level of energy production, monitor how much excess solar they sent out, select to whom they sent excess solar and track how much of it was being used.

During the trial, Solar Analytics also applied the insights collected from participants to refine the customer platform and fortnightly reports. The insights included:

- providing more details about their trading partners, building a sense of community and rapport to encourage further trading
- offering clear prompts to take part in solar sharing during peak generation times. This includes simple advice on how to shift energy consumption to these peak periods
- creating simpler graphical representations measuring the amount of solar energy produced versus the amount of solar energy consumed.

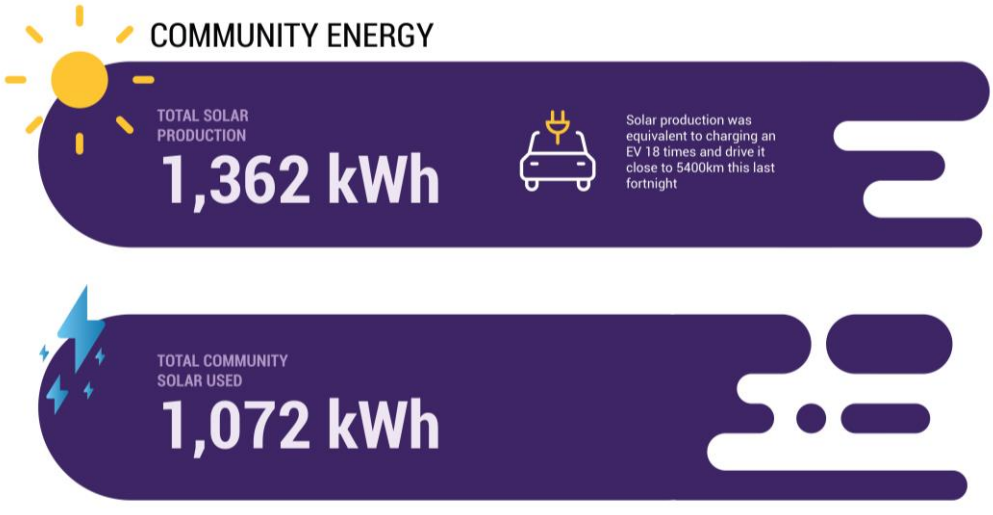

Figure 1. Example of the simplified graphics on fortnightly report

Participants also wanted more information about the mechanics and economics of solar sharing, including how Solar Analytics plans to manage excess solar production. Once the focus shifts to financial transactions, participants want a guarantee of accurate accounting and information on how Solar Analytics will manage the interface with the grid and energy retailer.

These insights showed Solar Analytics the importance of providing a comprehensive onboarding process and a robust trading platform. This builds confidence among participants and increases the number of people using the platform.

> ***'It's important I know the energy I'm using comes from within the community.'***
>
> ***Non–solar owner surveyed by Solar Analytics***

Findings

- Solar consumers and solar producers are motivated by social as well as financial concerns in their energy decision-making, in particular the need for control, choice and community engagement.
- Solar sharing can provide additional benefits through shifting electricity consumption from peak demand times to peak solar generation times.
- Solar sharing platforms must provide participants with comprehensive, clear information to gain trust.

Next steps

This trial presented the first phase of the solar sharing project. Solar Analytics will now focus on increasing the amount of solar shared by trial participants, using insights from the trial to refine the platform.

The company would like the platform to allow, eventually, for solar trading involving financial transactions. They are looking for the best way to manage such transactions, such as working with retailers to develop P2P offerings and related retail plans. They will then need to persuade customers to switch retailers.

In the long term, Solar Analytics wants to see whole communities benefit from sharing solar energy, including renters and those without access to a home solar system.

The platform demonstrated clear and accessible information on solar generation and usage. It is a major step in the right direction for developing a viable system for peer-to-peer trading.

About the initiative

The NSW Clean Energy Knowledge Sharing Initiative supports the NSW Government's objective to achieve net zero emissions in the state by 2050. The Initiative gives innovators and early adopters an opportunity to test and trial new clean energy solutions. To find out more or learn about similar projects, visit www.energy.nsw.gov.au/clean-energy-initiative.

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