



Kristy Walters (left) and Jonathan Prendergast (right) at the Grong Grong Solar farm, a crowd-sourced equity project that feeds the Haystacks Solar Garden Cooperative

Haystacks Solar Farm

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Key facts

Location (town + country)	Grong Grong Solar Farm
Duration (start/end dates)	Launch party in April 2024
Cost	\$1.4m
Project lead (Organisation)	Pingala
Project partners	Komo, Pingala, Community Power Agency, Energy Locals
No. participants	333 solar members plus staff
No. jobs created	
Case study type	Proof of concept/Technical demonstration/User-acceptance demonstration/Commercial demonstration/Early-stage commercial deployment

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Case study statistics

Parameter	As designed	As built
No. participants	Open	333 Cooperative members
Generation (kWp)	1.5 MW	1.5MW Solar Farm
Storage (kWh)	None at time of writing	None at time of writing
Unit price (\$/kWh)	Estimated at A\$0.12/kWh	Approximately A\$0.12/kWh
Project cost (\$)		Total of \$4.98m

Summary of case

Haystacks solar garden is in the Riverina region of New South Wales, and has provided an opportunity for 333 cooperative members to purchase solar garden plots equivalent to 3kW. Each plot, priced at \$4,200, is estimated to generate an average annual credit of \$505 on a member's electricity bill for ten years. Cooperative Capital Units (CCUs), a type of debenture, are the legal tool used for selling these solar garden plots to the co-op members.

The sale of these 333 solar garden plots worth \$1,398,000 has financed the farm. This amount is intended to be loaned to the 1.5MW Grong Grong Solar Farm, helping to fund its construction. The remaining funds for construction are sourced from the equity owners of Grong Grong Solar Farm and grant funding provided by the NSW Government Regional Community Energy Fund.

The loan repayments from Grong Grong Solar Farm to Haystacks Solar Garden form the revenue stream necessary to create on-bill credits for the members. This approach not only

promotes the adoption of renewable energy but also offers a unique investment opportunity for individuals in the cooperative, aligning financial incentives with environmental sustainability. This model represents a significant advancement in community-driven renewable energy initiatives, demonstrating a viable pathway for similar projects in the future.

Impact highlights

- Allowing people regardless of tenancy/ownership to realise the benefits of solar on their electricity bill
- 175 'plots' taken up as of April 2024
- Fully subscribed solar farm with cooperative 'plots' at a niche size
- Demonstration of model to expand ownership within existing regulatory framework

Project aims and objectives

- **What problem(s) does the case study aim to resolve?** The project aims to solve the issue of people, especially apartment owners, who can't install solar panels on their own properties. The Haystacks Solar Garden gives them the opportunity to invest in solar energy by purchasing plots hosted by the 1.5MW Grong Grong Solar Farm in the Riverina region.
- **What were the social objectives (if any)?** The main social goal was to make renewable energy more accessible, allowing more people to participate in the clean energy transition. The project received a grant specifically for community energy initiatives, helping to cover costs and expand involvement. It also emphasizes strong community engagement in renewable energy projects, ensuring that local communities benefit socially, environmentally, and financially.
- **What were the environmental objectives (if any)?** The environmental objective was to expand access to solar power, allowing people without rooftops to invest in and benefit from renewable energy.
- **To what degree were participants actively involved in design or operation?** The project was largely driven by members of the Pingala cooperative, along with other key partners, who played an active role in its development and operation.
- **Was participation financially or socially incentivized or both?** Participation was primarily incentivized as a financial investment, offering returns through energy credits.
- **What degree of demand response flexibility was provided?** There was no requirement for participants to adjust their energy use. Instead, they received bill credits based on the energy generated by their solar garden plots

The solar gardeners, who mostly live in cities hours away, will get at least \$455 off their power bills for the next decade, with \$505 a year for the first five years locked in.



Description of case

The Haystacks Solar Garden, in partnership with Grong Grong Solar Farm, has introduced a new approach to the 'Solar Gardens' concept, capturing the interest of many apartment residents and those unable to install their own rooftop solar. The initiative, supported by the NSW Office of Energy and Climate Change and Australian Renewable Energy Agency, has given people, especially apartment dwellers, a long-awaited chance to take part in the solar movement. Many participants have even purchased multiple solar garden plots, some as gifts for their urban-living children, while others have done so to support those affected by floods, particularly in the Northern Rivers region.

Initially funded by the NSW Government's Regional Community Energy Fund, the project began with a local focus in Wagga and Narandera but soon expanded to city residents through partnerships with councils like the Inner West Council, aligning with policies and goals to reduce emissions. This solar garden model provides a flexible solution for apartment owners, allowing them to transfer the security and environmental benefits of solar if they move.

Though owning rooftop solar remains ideal, solar gardens offer a practical alternative. The project offered two investment options: an equity-based model and a debt-based model. Careful planning, high-quality materials, and third-party reviews ensured the project's success, resulting in financial returns for investors, processed through the Haystacks system on a delayed billing cycle. The project has garnered media attention and enthusiastic community support. Market value proposition and key activities

Financing/funding (who contributed funding and under what terms) and Legal structure (co-operative; partnership; social enterprise)

The Grong Grong Solar Farm operates as a separate legal entity from the Haystacks Solar Garden Co-operative, though both projects are deeply interconnected. Grong Grong Solar Farm Pty Ltd is responsible for owning and managing the physical solar infrastructure, which includes a 1.5 MW solar array located in the Riverina region of New South Wales. Initially set up as a special-purpose vehicle by Komo Energy, Grong Grong Solar Farm Pty Ltd was established specifically to develop this mid-scale solar project.

The solar farm is primarily funded through a combination of sources: 34% of the capital is provided by a loan from the Haystacks Solar Garden Co-op, 48% comes from a Regional Community Energy Fund (RCEF) grant from the New South Wales government, and the remaining 18% is financed through equity investors. The Haystacks Co-op raises funds through Cooperative Capital Units (CCUs), allowing individuals to invest in the project and receive on-bill credits for solar generation, without needing rooftop solar.

Legally, Haystacks Solar Garden Co-operative Ltd provides a loan to Grong Grong Solar Farm Pty Ltd, which is repaid over time through the revenue generated from selling solar energy into the National Energy Market (NEM). The loan repayments from Grong Grong to Haystacks fund the on-bill credits that the co-op members receive on their electricity bills.

- **Timeframes:**

Haystacks

- **Project initiation:** Early discussions began in 2016 with the offer fully subscribed by late 2022.
- **Funding cycles:** Funding was obtained from the NSW Government's Regional Community Energy Fund, crowd-investment, and equity investors. Haystacks Solar Garden Cooperative raised \$735,000 through the sale of solar garden plots.
- **Detailed design:** The design process began with securing a 30-year lease for the land in Grong Grong, NSW. Detailed design and contracts followed.
- **Legals and contracts:** Pro bono legal support from Norton Rose Fulbright and Pegasus Legal. Cooperative members purchased Cooperative Capital Units (CCUs), securing a loan for the solar garden.
- **Participant recruitment:** Recruitment of 333 cooperative members occurred between 2021 and 2022. They purchased CCUs to fund the project.
- **Trial duration:** The solar garden project spans 10 years, during which members receive annual credits on their electricity bills.
- **Decommissioning:** No specific decommissioning date yet, but the lease on the land is for 30 years.

Grong Grong Solar Farm:

- **Project initiation:** Discussions started around 2016, with significant steps taken in 2022.
- **Funding cycles:** Funded by the NSW Government's Regional Community Energy Fund, cooperative loans, equity investors, and crowd-investment.
- **Detailed design:** The design phase included securing a lease for the land, finalizing grid connections, and contracting engineering services.
- **Legals and contracts:** Involves various agreements with landowners, grid service providers (Essential Energy), and contractors for the farm's construction.
- **Trial duration:** Construction is ongoing with completion expected by March 2023.
- **Decommissioning:** Expected lifespan of 34 years for the solar farm.

Stakeholders/project partners involved (Organogram)

The project partners and their relationships in the Haystacks Solar Garden and Grong Grong Solar farm are as follows:

1. Haystacks Solar Garden Co-operative Ltd: The main organization responsible for the project. It is a cooperative that enables individuals to access the benefits of solar power without owning or having access to a rooftop. The co-operative is governed by a board of directors, including Kristy Walters (Chairperson), Nigel Hancock (Secretary), and Karin Stark (Director). Haystacks pass the credits onto its members.

2. Grong Grong Solar Farm Pty Ltd: The solar array owner and recipient of the loan facility

provided by the Haystacks Solar Garden Co-operative Ltd. They are responsible for the development and construction of the solar array.

3. Komo Energy Pty Ltd: The organization responsible for developing the RCEF Haystacks Solar Garden project, which is part-funded by the NSW Government and promoted by Pingala and Community Power Agency.

4. Energy Locals: Participating Electricity Retailer: The electricity retailer with whom the Haystacks Solar Garden Co-operative Ltd has an on-bill credit agreement. This retailer is responsible for providing on-bill credits to the solar gardeners.

Participant types and characteristics:

Residents: The project primarily targeted people who could not install rooftop solar, including those living in **social housing**, **private rentals**, and **apartment owners**. The initiative gave apartment dwellers and renters an opportunity to access solar energy by purchasing solar garden plots, something traditionally only available to homeowners with suitable rooftops

Residents participating in the scheme came from various socioeconomic backgrounds, with affordability being a key focus. Each plot was sold for \$4,200, making it accessible to middle and lower-income individuals who were otherwise excluded from rooftop solar.

The primary inclusion criterion was that participants had to become a member of the Haystacks Solar Garden Cooperative, paying a \$51 membership fee. Additionally, they had to purchase a Cooperative Capital Unit (CCU), which represented a 3kW plot in the solar garden. Importantly, participants were required to switch their electricity provider to **Energy Locals**, the project's chosen electricity retailer, to receive their on-bill credits from the solar garden's generation.

There were no strict exclusions based on income or residency type, as long as individuals were willing to join the cooperative and switch their electricity provider.

Participant recruitment methods, incentives, and protection

Participants were recruited through a mix of online information sessions (around 50 sessions) and extensive media coverage. The objective of the project proponents was to engage the community transparently and clearly explain the benefits of getting a share in the energy transition. Articles in outlets like *The Canberra Times* and *PV Magazine* helped spread awareness and drive interest in the project.

Participation was **opt-in** — individuals had to actively join the cooperative by purchasing solar garden plots. Participants were not paid to participate, but they benefited financially

through energy credits applied to their electricity bills. There were no direct financial risks, but members were required to switch to **Energy Locals** as their electricity provider to receive credits from the solar farm. The main financial commitment was purchasing a plot for \$4,200.

Participants' roles in co-creation of the project and objectives

The project had significant community involvement, particularly through the **Haystacks Solar Garden Cooperative**. Members were engaged early on and played a role in shaping the project's direction. The cooperative model allowed participants to have a say in key decisions, such as the financial structure and the solar garden's goals, ensuring the project reflected community interests and values.

Functional Requirements

Regulatory structure: The project worked within existing regulatory frameworks but aimed to demonstrate what could be done under current laws. There was a desire to show that local energy solutions could be scaled and integrated into the broader system, similar to the efforts in Victoria, Dandenong and Western Australia through Horizon Power.

Stakeholder requirements: The design of the trial focused on meeting the needs of community participants, government stakeholders, and the cooperative members themselves. Transparent community engagement was key.

Technical architecture: The project was primarily focused on solar energy generation. Future plans include integrating battery storage as part of a broader energy solution.

Data architecture: No specific data standards or ontologies were mentioned, but the system involved managing energy generation data and billing through **Energy Locals**.

Financial model: The financial structure relied on participants purchasing plots and receiving energy credits. Additionally, a loan was provided to the Grong Grong Solar Farm, which would be repaid through energy sales.

Geographical scale

Grong Grong solar farm is located in New South Wales with plans to eventually expand beyond just solar power to include battery storage.

Governance structure

The governance of the project is managed by the *Haystacks Solar Garden Cooperative*. This structure ensures that decisions are made collectively by members, allowing for a democratic process.

Electricity network ownership

The electricity network is publicly owned and managed by *Essential Energy*, ensuring the solar energy generated by the project is fed into the grid and participants receive their credits.

Management of changes over time

The project includes plans for managing changes such as participants leaving or equipment failures. Cooperative governance allows for decision-making in the case of participant turnover, while technical maintenance ensures that asset failures or data losses are addressed in a timely manner.

Key takeaways

- Haystacks has demonstrated a niche model can work, but the pandemic made it challenging to create a community willing to support it.
- Success hinged on public support for high quality engagement and outreach. Grants funded this and the project would not have proceeded without public support
- Key takeaway three
- *When you go out for finance is a bit tricky – can't go too early as people get nervous. Go too late and you're carrying too much debt yourself.*

Outcomes and achievements

- **Wider Participation in Solar Energy:** The project successfully enabled 333 cooperative members to benefit from solar energy without the need for rooftop installations.
- **Financial Savings:** Participants received on-bill credits valued at approximately \$505 per year, helping them reduce electricity costs.
- **Community Engagement:** The cooperative model allowed members to actively participate in project decisions, fostering a sense of ownership and collaboration.
- **Environmental Contribution:** The project contributed to reducing carbon emissions by generating clean energy through a 1.5MW solar farm.
- **Media and Public Attention:** The project garnered significant media attention, raising awareness about the potential of community solar gardens and encouraging replication across other regions.

Key takeaways

- Haystacks Solar Garden provided renters and apartment owners access to solar energy, offering a practical solution for those without rooftop options.
- The cooperative model empowered participants by involving them in decision-making, fostering local engagement and collaboration in renewable energy.
- The project delivered savings through energy credits and reduced carbon emissions, offering a scalable model for community-driven clean energy projects.

Obstacles to rollout

1. Community Engagement Challenges

- The COVID-19 pandemic made it difficult to build and maintain strong community support for the project. In-person engagement was limited, and while online information sessions were helpful, they were less effective in fostering trust and participation compared to face-to-face interactions.

- Recruiting participants unfamiliar with cooperative models or renewable energy investment posed a challenge, requiring extensive outreach and education.

2. Regulatory Complexity

- Navigating the regulatory landscape, particularly around grid connections and market rules, added complexity to the project. Grid connection processes and compliance with energy market regulations were time-consuming and costly, slowing down progress.

- There were few frameworks to support community energy projects, requiring the project to find workarounds within existing regulations.

3. Timing of Financial Investments

- Raising funds at the right time was a delicate balance. Raising capital too early made investors nervous due to a lack of detailed plans, while raising funds too late risked the project carrying unsustainable levels of debt. Timing was critical to ensuring financial stability.

4. Technical and Legal Considerations

- Early feasibility studies, while necessary, became outdated within 6 to 18 months due to changing circumstances and market conditions, making early investments less useful over time.

- Legal complexities, including cooperative legal structures and project financing agreements, required careful planning and expert advice, increasing administrative costs and slowing down project rollout.

5. Sustainability of Long-Term Community Involvement

- Ensuring continuous community participation and engagement over the long term was a challenge. Keeping participants motivated and involved, especially with fluctuating financial returns and project timelines, required consistent communication and transparency.

A successful solar garden needs the right partners, careful timing, regulatory support, community engagement, and detailed planning

Key takeaways

- Challenges in building support, especially during the pandemic, emphasized the need for strong outreach and clear communication.
- Navigating complex regulations and timing financial investments were critical to balancing project costs and investor confidence.
- Managing legal structures and outdated feasibility studies added administrative burdens, highlighting the need for expert advice and flexibility.

Key learnings for other pilots

A key lesson learned from the project development process is the importance of careful financial planning. Good accountants and financial planners are crucial. Early feasibility studies, costing around \$30,000–\$50,000, can become outdated in 6 to 18 months, so balancing early investment and securing detailed project plans is crucial. Additionally, raising funds at the right time is essential—too early and investors may be nervous; too late and the project may carry too much debt.

Partnerships with community energy groups, such as regular communication, are vital for project success. The construction phase requires just as much attention as development and finance, especially regarding safety and metering. Delivery is just as intense as finance and development!

For community groups looking to partner with industry, the top tips include defining clear objectives, regular communication, prioritizing "must-haves" versus "nice-to-haves," and finding a patient landowner. The Regional Community Energy Fund from the NSW Government provided 50% of project costs, which was crucial for the project to get over the line.

The official launch of the Haystacks Solar Garden in Grong Grong was April 27 2024, some 5 years after project conception.

Key takeaways for future Solar Gardens

- The cavalry isn't coming – it's us!
- 5MW scale is easier but you don't get economies of scale
- Legal and accounting expertise, as well as community networks are crucial
- When to secure funding from community: tradeoffs between going too early or late

Recommendations for policymakers

What	Who	Why - Example from Case Study	How	When
Increase funding for community energy initiatives	Policymakers, government agencies	Haystacks Solar Garden relied heavily on grants from the NSW Regional Community Energy Fund to cover costs.	Expand and create accessible grant programs for community energy projects. Focus on lowering barriers for underrepresented groups.	Early project planning and development
Simplify regulatory requirements for community energy projects	Energy regulators and policymakers	Haystacks Solar faced regulatory complexities, particularly around grid connection and energy market compliance.	Review and streamline grid connection processes. Simplify compliance with market rules for small and community-led projects.	During regulatory reform cycles and ongoing project management
Promote education and awareness on community energy benefits	Government and local councils	The success of Haystacks was driven by community engagement and education on the benefits of solar energy participation.	Launch educational campaigns and workshops to raise awareness about community energy and its benefits.	Throughout project life cycle
Provide technical support and resources for community energy groups	Policymakers, local governments, and energy agencies	Technical challenges, such as feasibility studies and financial structuring, were key hurdles for Haystacks Solar.	Develop government-backed technical support programs and templates for feasibility studies and project financing models.	Early project phases and project development

Further information

- Official Website: <https://haystacks.solargarden.org.au/>
- Foly, E (2024) 'A rose by any other name: Haystacks Solar Garden in full bloom' PV Magazine, <https://www.pv-magazine-australia.com/2024/04/26/a-rose-by-any-other-name-haystacks-solar-garden-in-full-bloom/>
- Inner West Council: Haystacks Project information Sheet [https://www.innerwest.nsw.gov.au/ArticleDocuments/32309/Introduction%20Fact%20Sheet%20for%20Haystacks%20Project%20V2%20\(1\).pdf.aspx](https://www.innerwest.nsw.gov.au/ArticleDocuments/32309/Introduction%20Fact%20Sheet%20for%20Haystacks%20Project%20V2%20(1).pdf.aspx)
- Grong Grong Solar Farm officially launched <https://gronggrongsolarfarm.com.au/haystacks-solar-garden-officially-launched/>

FURTHER INFORMATION

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