

# AUSTRALIAN COMMUNITY ENERGY COLLECTIVE IMPACT ASSESSMENT 2023



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This report has been prepared predominantly on Ngunnawal, Gadigal and Wadawurrung land. The authors wish to acknowledge them as Traditional Custodians and pay our respects to their Elders, past and present. We extend that acknowledgement and respect to all First Nations people across Australia and recognise their knowledge and connection to Country is integral to our resilient and renewable futures, we offer our solidarity and support to First Nations groups working towards self determination and justice.

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# 1. EXECUTIVE SUMMARY

Since the emergence of community energy groups in Australia in 2006, the community energy sector has experienced significant growth. However, there remains a limited understanding of the nature of this sector, including the number of existing groups, project details, the economic, social, political, and environmental benefits they deliver, and the challenges they encounter. Although it seems evident that community energy groups could bring tangible benefits, such as reduced carbon emissions, strengthened local relationships, local cooperation, and regional economic development, they have frequently encountered significant obstacles. Furthermore, no national-level study on these impacts and obstacles has been conducted since 2015<sup>1</sup>. Since that 2015 study, the sector has undergone substantial growth and diversification across the country.

To address this knowledge gap, an Australian wide survey of community energy groups was completed in May 2023. This survey focused on community energy groups and their projects, aiming to gain deeper insights into their achievements, challenges and opportunities.

## **The objectives of the research project were to:**

- **Understand the collective impact of, and the challenges faced by community energy groups and their projects;**
- **Provide community energy groups, policymakers and other key stakeholders with greater knowledge of the community energy sector and its impact.**

This evidence-base can be used to inform further research, policy-making, communications, knowledge sharing, and story-telling within and beyond the sector, in order to progress community energy and reduce known obstacles.

## **1.1 Reach in the sector**

The project included a preliminary phase to identify community energy groups across Australia. Based on the community energy group data from the 2015 study, this phase included desktop research, self nominating groups from outreach efforts and connections between the community energy sector and the researchers from Community Power Agency, University of Technology Sydney and University of Melbourne.

After vetting the groups for eligibility (which will be discussed further in the methodology section of this report), 142 groups were invited to participate (139 via email and 3 via website forms). 11 groups were unable to be contacted due to bounced email addresses, and approximately 5 groups had closed or disbanded in recent years, leaving a total possible group of 126 groups.

- **Responses were received from 55 community energy groups.**
- This is almost double the 27 groups who responded to the 2015 survey from the 53 community energy groups invited.

<sup>1</sup> Kirsch, C., Jackson, M., Langham, E. & Ison, N. (2015) Community Energy Collective Impact Assessment (An Appendix of the National Community Energy Strategy). <https://cpagency.org.au/wp-content/uploads/2019/07/Community-Energy-Collective-Impact-Assessment.pdf>



## 1.2 Key findings

Reported data from community energy groups shows the significant environmental, economic and social benefits with key highlights including:



**37,758** supporters of community energy groups



**30** new community energy groups established since 2015



**730** projects

Solar installations were the most common project type followed by battery storage and energy efficiency projects.

Over the 12 month survey period community energy groups have:



**\$86.8** million raised by community energy groups for energy infrastructure



**3,951** community members contributing funds to projects



**19,000** MWh of clean energy produced



**11.8** MW installed renewable energy generation



**13,947** tCO<sub>2</sub>-e avoided from community energy projects

equivalent to



**7,748** cars off the road for a year



### The biggest challenges for community energy groups surveyed include:

- Difficulty in securing funds, especially in the early stage of projects.
- Many renewable energy grant programs are not designed for community energy.
- Difficult and complex regulatory systems in the energy system.
- Lack of expert support on starting and troubleshooting community energy projects.
- Reliance on volunteers who have limited capacity to work on projects and face burnout.
- Unfavourable political environments, with governments primarily supporting large scale commercial operations.



Photo credit: Junee Community Power at Junee Community Center - Ben O'Malley





## Recommendations

There are several opportunities to support the community energy sector to thrive and drive further support for Australia's transition to a renewable energy future.

1. Federal and/or state governments provide dedicated and ongoing funding for capacity building hubs for the community energy sector, with appropriate guidance and timeframes.
2. Federal and/or state governments deploy dedicated and ongoing grant funding specifically dedicated to community energy for project development and staff costs, with appropriate guidance and timeframes.
3. Federal Government to establish a national Community Energy Collaboration Network to support community energy groups navigate challenges and share information peer to peer.
4. State governments each set a target of 100MW of community energy by 2028 as a carve out of their renewable energy targets.
5. State governments establish community feed-in tariffs for mid-scale community energy projects of 6-7c premium above PPA/wholesale rate for 10 years.
6. State governments work with distribution network service providers (DNSP) to dedicate staff resources towards connecting with and supporting community energy groups in DNSP service areas.
7. State governments create incentive schemes for peer-to-peer energy trading or enable network tariffs that favour localised use of energy.
8. Develop centralised services that can be shared between different community energy groups.



## 2.

# BACKGROUND: COMMUNITY ENERGY

Community energy refers to the wide range of ways everyday people can join together to develop, deliver and benefit from sustainable energy. More specifically, community energy groups are formal or informal organisations whose aims and activities include initiating and/or implementing community energy projects, independently or in partnership with others.

A community energy project is defined as a renewable energy or energy efficiency related initiative in which at least some members of a community of place, and/or interest, are collectively involved as two or more of the following:



Funders, be they owners, lenders or donors;



Decision-makers, especially with respect to design and delivery; and/or



Recipients of financial, social and/or other benefits<sup>2</sup>

In Australia the community energy sector first emerged in 2006 and by the end of 2014 there were 11 community energy groups with operational projects and a further 13 groups with projects in the planning phase<sup>3</sup>. Since then the sector has evolved significantly with many more groups, support agencies and programs for the sector. However, both the latter are fluctuating in their consistency and level of support available.

Community energy groups are commonly motivated by a desire to source local affordable renewable energy for their community and to take action on climate change. They tend not to be primarily profit driven. However, there are several interlinked motivations and impacts as described below. A diversity of approaches and projects exist, as projects reflect the needs and opportunities of their local context.

## 2.1 Community energy benefits

Community energy projects can create positive outcomes across several impact areas. A common framework for the identification of cross-impacts (beneficial impacts are sometimes known as 'co-benefits') has been suggested by Ison and Hicks (2012) (Figure 1).

<sup>2</sup> These definitions of community energy groups and projects were developed by Dr. Adrian Ford to assist identification of potential survey respondents.

<sup>3</sup> Kirsch, C., Jackson, M., Langham, E. & Ison, N. (2015) Community Energy Collective Impact Assessment (An Appendix of the National Community Energy Strategy).





The framework of benefits includes the following five categories, which have been slightly expanded:

Figure 1 - Benefits of community renewable energy projects



### Environmental

Increase in clean energy production, increased local resilience under climate change, avoided greenhouse gas emissions compared with fossil-fuel based electricity generation, reduced pollution and lower ecological destruction.



### Economic

Localised, equitable wealth creation<sup>4</sup>, increased local capital, fossil fuel divestment opportunity, community assets and increased resilience, local job creation and increased local funding.



### Social

Local ownership, energy independence, participation and engagement, increased skills and competencies, attitudinal and behavioural changes and reduced land use conflict.



### Technological

Increased uptake of innovative technologies, development of a sustainable renewable energy industry, energy self-sufficiency and supportive environment for innovation in renewable energy technologies.



### Political

Community engagement and empowerment, 'winning hearts and minds', developing the 'what's in it for me' that will support the transition into a decarbonised economy, development of a broad community support base for political strategic leadership and regulatory changes and political engagement.

Community energy projects often deploy clean energy technology, particularly solar power, and offer promising solutions for enhancing local resilience and adapting to climate change. The *affordability, scalability, and modularity* of solar energy makes it feasible for local and small groups to establish energy projects tailored to their unique circumstances without requiring extensive capital investment. This also allows for expansion over time as more money becomes available. Decentralisation of energy generation enables communities to maintain control over their energy needs and can foster a sense of empowerment. Moreover, in times of climate-induced crises, like storms and bushfires, that disrupt traditional power grids, local renewable energy initiatives can provide a lifeline, allowing communities to respond autonomously and maintain essential services.

The 2015 survey results found that although there are many benefits associated with community energy, the sector was limited by a number of obstacles. These included a lack of access to host sites, access to funding and finance, volunteer fatigue and unfavourable political and regulatory environments. Key factors of success included support from local government and state MPs, human resources, capacity building and access to funding and host sites.

<sup>4</sup> O'Neil, DW, Dietz, R, Jones, N (Editors) 2010. Enough is Enough: Ideas for a sustainable economy in a world of finite resources. The report of the Steady State Economy Conference. Centre for the Advancement of Steady State Economy and Economic Justice for All, Leeds, UK.



## 2.2 Changing sentiment on climate change

Since 2015, there has been a significant shift in the Australian energy and climate change landscape. Australia ratified the Paris Agreement in 2016, committing to strengthen the global response to climate change by limiting the increase in the global average temperature to well below 2°C above pre-industrial levels and striving for a more ambitious target of 1.5°C. However, the Paris decision did not translate to effective action from the Australian Government under a series of Liberal Federal leaderships from 2016 to 2022.

**Indeed this extended period of weak climate action and fluctuating policy support for renewable energy - both at the community and large industry scale - anecdotally appears to have been a driving factor in many community energy groups springing into action to progress positive change at a local level in the energy sector.**

Over the past few decades, there has been a notable shift in public opinion concerning climate change in Australia. Initially, in the 1990s, the Australian Labor government announced the target of reducing GHG emissions by 20% by 2005, and most Australians who were polled on the question supported action. However, support and action declined after 2000, and declined further after the failure of the 2008 Copenhagen talks and the July 2014 repeal of carbon pricing.<sup>5,6</sup>

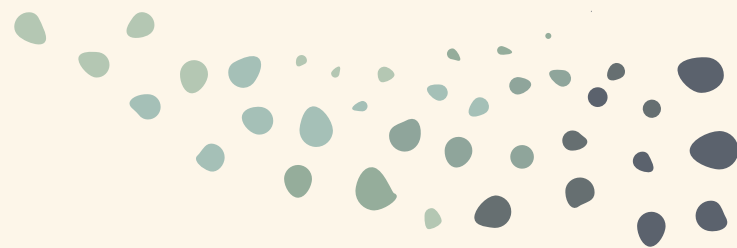
More recently, the Australia Institute's Climate of the Nation Report<sup>7</sup>, which annually tracks public sentiment on climate issues, revealed that the number of people in Australia who "accept that climate change is occurring," rose from 70% in 2015 to 80% in 2022. The cumulative impacts of extreme weather has also likely motivated climate concern and action in Australia. Since 2015, major weather events have included: the 2017-19 drought that impacted most of southern Australia; the unprecedented 2019-20 Australian bushfire season also known as Black Summer; followed by three years of La Niña which included the 2022 Eastern Australia Floods. Many communities are still in the process of recovering from these events.

## 2.3 Government support for community energy

Another change in the energy landscape since the previous collective impact report on community energy was the federal election of a Labor Government in 2022. One key election promise was to "end the climate wars", with another recognising the role of community energy. The ALP's 2021 pre-election platform stated:

*"Community and publicly-owned energy systems will play a critical role in the modernisation of Australia's energy system, including in regional and remote communities. Labor will support the ongoing development and deployment of community and publicly-owned energy systems, ensuring all Australians can access the economic and environmental benefits of renewable energy."*<sup>8</sup>

This 2022 election also saw the emergence of 'teal independents,' who campaigned successfully in traditionally conservative electorates, advocating for stronger action on climate change. Teal candidates bridged what continues to be a partisan divide on the issue.



<sup>5</sup> Pearse G. (2007) *High and dry: John Howard, climate change and the selling of Australia's future*, Penguin Group.  
<sup>6</sup> Taylor M. (2014) *Global Warming and Climate Change: What Australia knew and buried... then framed a new reality for the public*, ANU Press.  
<sup>7</sup> Quicke A, Venketasubramanian S. (2022) *Climate of the Nation 2022*, Australia Institute.  
<sup>8</sup> ALP national platform: as adopted at the 2021 Special Platform Conference <https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22library%2Fparty%2F8047450%22>





Photo credit: Geni Energy

The community energy sector also witnessed some positive developments, thanks to impactful funding initiatives. After several years with no funding commitments aimed at community energy initiatives from the federal level, in 2020 the Australian Renewable Energy Agency (ARENA) announced a \$50 million Regional Australia Microgrids Pilot Program spread over six years. This allowed a handful of community groups to partner with research institutes and larger energy companies to investigate microgrids in their region.

In mid 2023 the Federal Government announced \$100 million for 85 Community Solar Banks and \$200 million towards 400 Community Batteries for Household Solar Program.<sup>9</sup> Both of these programs were in the very early stages of allocating funding and there are no funded installations as of October 2023. However, in the absence of targeted support for community energy groups or requirements for collective ownership and benefit sharing models, the community batteries grant program may simply subsidise the installation of mid-scale batteries by network operators.

Some state governments have also contributed to the community energy sector by initiating impactful programs, with Victoria leading the way.

The Victorian Government's Community Power Hub pilot program between 2017 and 2020 established three pilot hubs. These hubs successfully delivered 15 community energy projects in regional areas of Ballarat, Bendigo, and the Latrobe Valley, generating 1.35MW of renewable energy and creating \$14.5 million in value, representing an impressive 13-1 leverage of government investment. In 2021 the Victorian hubs program was successfully expanded to seven hubs across most regions, and several groups in this study have benefited from support and funding that the hubs allowed. However, funding for this program ceased in mid-2022.

In New South Wales the Regional Community Energy Fund was announced in 2019 with a funding package of \$30 million across two rounds. In the first round of funding seven community-led projects received a combined total of \$15.4 million in grants. It has not been confirmed if a second round will occur<sup>10</sup>.

<sup>10</sup> NSW Climate and Energy Action, *Regional community energy fund*, <https://www.energy.nsw.gov.au/government-and-local-organisations/ways-get-started/regional-community-energy-fund>



From 2016 the Australian Capital Territory had its target of 100% renewable energy by 2020 and as part of their reverse auction process carved out 1MW for a community solar feed-in-tariff. This higher than average tariff both guaranteed a good price for 20 years and a buyer for the energy produced from the winning community-led project - SolarShare<sup>11</sup>. Since this initiative the ACT has not had policies or programs specifically for community energy. Other Australian states and territories have had few, if any, community energy targeted policies or grant programs to date.

State governments have also played a crucial role in shaping the Australian renewable energy landscape. South Australia, for instance, led the nation in adopting large-scale renewable energy projects and investing in large-scale battery storage initiatives to enhance grid stability. Additionally, in late 2020 NSW's Electricity Infrastructure Roadmap to establish five Renewable Energy Zones (REZs) set a precedent for subsequent REZs in other states, which will contribute significantly to the National Electricity Market's energy supply.

While these initiatives are targeted to large scale commercial projects, individual households are taking action through installing rooftop solar, with Australia leading the world in the percentage of households with rooftop solar. The total capacity of rooftop solar in early 2023 was 19.8GW, which compares to total coal fired power capacity at 23.3GW. Indeed the Clean Energy Regulator Quarterly Report for the June Quarter 2023 states that installed rooftop solar PV capacity grew 21% year on year to 1.4 GW in the first half of this year<sup>12</sup>. This growth is despite widespread residential rooftop solar changing the dynamics of the market, by considerably lowering daytime demand, which has resulted in lower feed-in tariff rates.

In the eight years since the previous survey of community energy in Australia, a lot has changed in the sector, in community sentiment and in terms of government support and action. Alongside the continued surge in residential rooftop solar installations is the federal climate action ambition, new community energy policies, as well as multiple state government programs to encourage and support large-scale renewable energy projects. Community energy is clearly playing a role in Australia's shift to a clean energy future.



Photo credit: Totally Renewable Yackandandah

<sup>11</sup> The Australian Business Review, *ACT launches 'community solar' program*, <https://www.theaustralian.com.au/business/business-spectator/news-story/act-launches-community-solar-program/99de639e82da8705fb1f14cfb7a473a3>

<sup>12</sup> Clean Energy Regulator, *Quarterly Carbon Market Report June Quarter 2023*, <https://www.cleanenergyregulator.gov.au/Infohub/Markets/quarterly-carbon-market-reports/quarterly-carbon-market-report-june-2023>



# 3.

## METHODOLOGY

### 3.1 Survey design


The survey questions were informed by the first Community Energy Collective Impact Assessment (Kirsch et al. 2015). The 2015 assessment collected relevant information on the current state of community energy groups and projects in Australia, especially in regards to the installed kW, amount of energy produced, project costs, and funding structures. Similar to the previous survey, key indicators to assess the social, technological, environmental, economic and political benefits of community energy for Australia were developed. However, the indicators and associated questions were further refined based on knowledge of the community energy sector and additional surveys conducted by Community Power Agency and University of Technology Sydney. See Table 1 for 2023 Indicators.


The 2023 survey was hosted on Qualtrics at the University of Technology Sydney and comprised of the following three sections:

- **Section A:** Collected participant contact details for research communication purposes (contact details have been kept confidential).
- **Section B:** Collected information about each community energy group to build a comprehensive profile of the sector, and the challenges it faces.
- **Section C:** Collected details about community energy projects that groups had actively worked on during the previous 12 months.

The survey allowed people to make their own comments in response to many questions. This allowed for responses the researchers had not thought of and to allow respondents to speak directly to researchers and to readers of this report.

**Table 1 Key indicators for 2023 survey**

 Community Energy Groups
<b>Key Indicators</b>
Date of inception Group legal structure Key motivators # of supporters on socials / distribution list # active supporters # of active decision makers # of community events # of attendees at events Resources scale Ideas for helping meet resource challenges Obstacles scale Political/regulatory challenges Ideas to meet obstacles

 Community Energy Projects
<b>Key Indicators</b>
Total # of community energy projects # projects in previous 12 months Project location Years of project duration Technology Business model / project type Project legal structure # kw installed / in planning # kwh generated / saved / stored or in planning \$ total expected income / savings \$ project cost \$ funded by funding source # investors / donors Other key features # jobs created \$ in-kind value Community outcomes Negative or unexpected outcomes Project highlights



### 3.2 Survey distribution

To minimise the risk of invalid or automated submissions, the survey link was distributed directly to verified email addresses of community energy groups. Community Power Agency sent two reminders over a period of five weeks in April-May 2023. In the final week of the survey, researchers individually called and emailed groups who were known to be active but had not yet responded.

These contact details were sourced primarily from Community Power Agency's internal database, which has been developed over a 12-year period of working within the sector as recognised experts on supporting community energy groups. Additionally, co-author Dr Adrian Ford contributed an extensive list of community energy groups from field research in Victoria that was compiled with the aid of the flowchart and definitions outlined in Appendix B.

The survey was further promoted through Community Power Agency's official social media accounts on Facebook, Twitter, and LinkedIn, and through co-author Dr Jonathan Marshall's personal connections from previous research with community energy groups. Through these channels, community energy groups that had not received direct contact were encouraged to contact Community Power Agency for details on how to participate. Upon receiving inquiries groups were assessed using the flow chart outlined in Appendix B to ensure the legitimacy of their involvement in the community energy sector. Only verified groups received the survey invitation.

### 3.3 Potential limitations

It is important to acknowledge the potential limitations of this approach. Due to the nature of the data collection process, there may be a bias in the survey responses towards groups in eastern states, where researchers have predominantly worked. Additionally, as the database is managed manually, there may have been missing, outdated, or incorrect contact details for certain groups, which could affect their participation.

All the data is self-reported by the community energy groups. Some effort has been made to check figures that seemed incorrect, however, the results rely on each group having strong data collection and reporting skills. To maximise completion rates there were only three compulsory questions, this reduced responses in many of the questions.

Some participants provided feedback on the survey, noting concerns about its length and level of detail. As with any self-reporting survey, there is a possibility of misinterpretation of questions or responses. It is essential to consider the circumstances of many community energy groups, which often rely on volunteers with limited time and resources. This factor may have influenced the number of completed surveys and should be taken into account when interpreting the survey results.



Tathra Community Solar Farm - Clean Energy for Eternity



# 4.

## RESULTS AND DISCUSSION

**Community energy groups have significant environmental, economic and social impacts - both from their group's general activities and from the projects they initiate.**

*Note the survey questions specifically asked about projects that groups had been actively working on in the past 12 months only, not since the last survey was completed in 2015 as this was deemed too onerous for respondents to complete. Accordingly, this survey only captures the impact of recent activity, not the impact of the sector to date.*

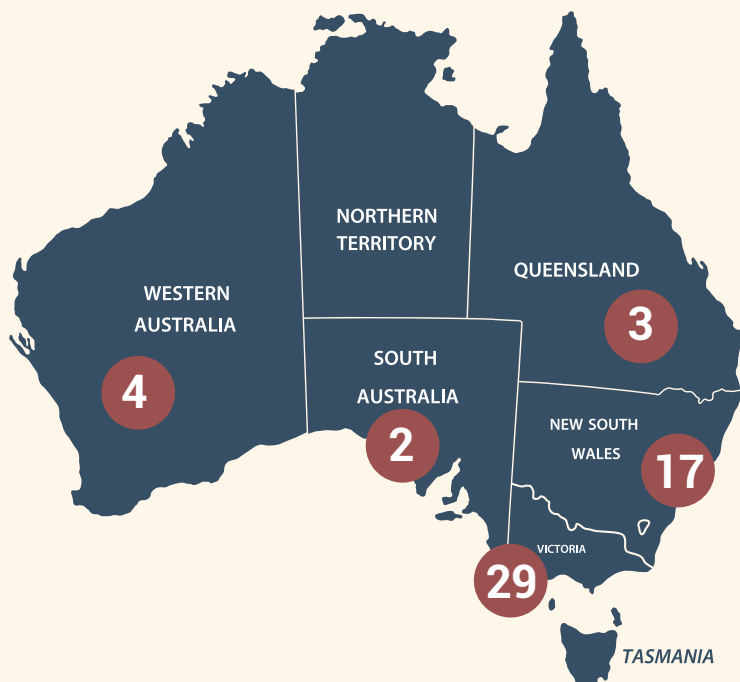
### 4.1 Change in the sector

From the 55 respondents out of 126 groups contacted, the survey found there had been considerable growth in the sector since the previous survey conducted in 2015. At least 30 new community energy groups have been established, indicating a rising trend of community-driven energy initiatives. These are the groups that listed their establishment date after the closure of the previous survey in February 2015.

Of the 55 survey respondents, 3 were from Queensland, 17 were from New South Wales, 29 from Victoria, 2 from South Australia and 4 from Western Australia. There were no survey responses from groups in Tasmania, Northern Territory or the Australian Capital Territory, although groups in these locations were invited to complete the survey.

The responses estimate a total of 44,114 formal members and supporters in community energy groups, more than doubling the 21,089 members and supporters in 2015, suggesting an expanding base of public engagement and support for the sector's goals. There has also been a large increase in active decision makers in groups since 2015, with an estimated total of 2,104 individuals involved in shaping the direction and decision-making processes of community energy initiatives in 2023 compared to 1,612 in 2015. However, there was a significant decrease in the number of active members, from 4,164 in 2015 to 2,605 in 2023.

**Figure 2 community energy group respondents around Australia**



This could be due to the global COVID19 pandemic and more difficult economic conditions which may have reduced volunteer capacity as highlighted in other results, or due to the interpretation of the question in the different surveys.

Community energy groups that responded have a combined social reach of over 85,849 from their email distribution lists, and social media accounts on Facebook, X (formerly Twitter) and Instagram. This data was not captured in the 2015 survey.

As this engagement and social reach data is from the 55 groups that responded from an eligible total of 126 groups that were identified, many of these figures could represent less than half of the true total figures.

## Organisational type

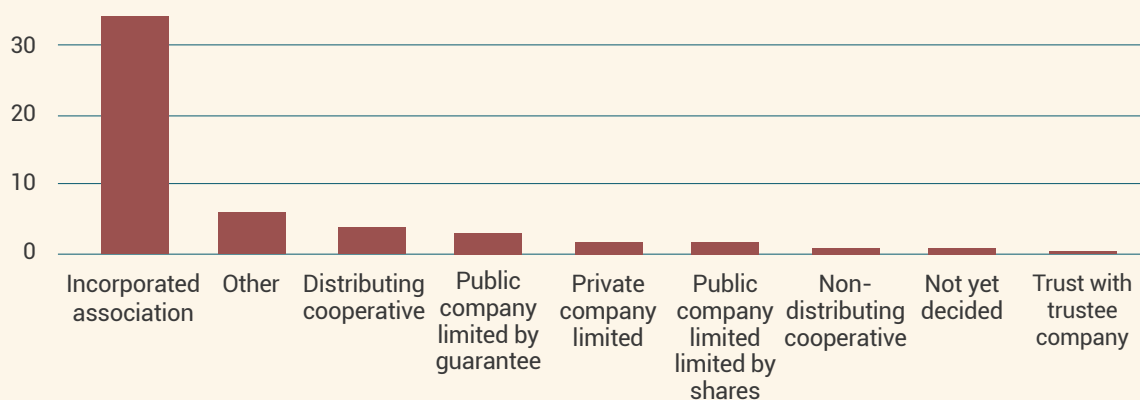
The most common type of organisational legal structure for community energy groups is an incorporated association, accounting for 64% of respondents. The 'Other' category, which accounted for 11% of respondents, included working groups with members from different organisations, informal groups, and one group that shifted from an incorporated to an unincorporated structure. Distributing cooperatives are the next highest with 8% of community energy groups.

**Table 2 Survey respondents summary - project and member numbers by state**

State	Formal members & supporters	Active members	Social reach	Members involved in decisions
NSW	5,273	219	16,593	444
VIC	37,995	2,288	61,237	1,563
WA	356	39	357	39
SA	288	16	4,188	26
QLD	202	43	3,474	32
<b>TOTAL</b>	<b>44,114</b>	<b>2,605</b>	<b>85,849</b>	<b>2,104</b>

\* Note - social reach includes email distribution lists and social media followers hence there may be duplicates.

**Figure 3: Organisational legal structure of community energy groups**





## 4.2 Motivations & types of projects

Almost all community energy groups are environmentally driven with 94% of groups listing action on climate change and emissions reductions as a motivational driver. This was followed by a desire for participation in the renewable energy transition and for increased energy reliability and self-sufficiency.

Groups were able to choose more than one option and able to add text if they chose 'other' motivational drivers. Some 'other' responses included:

**“[To] drive the uptake of renewable energy generation technologies”**

**“Socially equitable outcomes from our inevitable energy industry transition”**

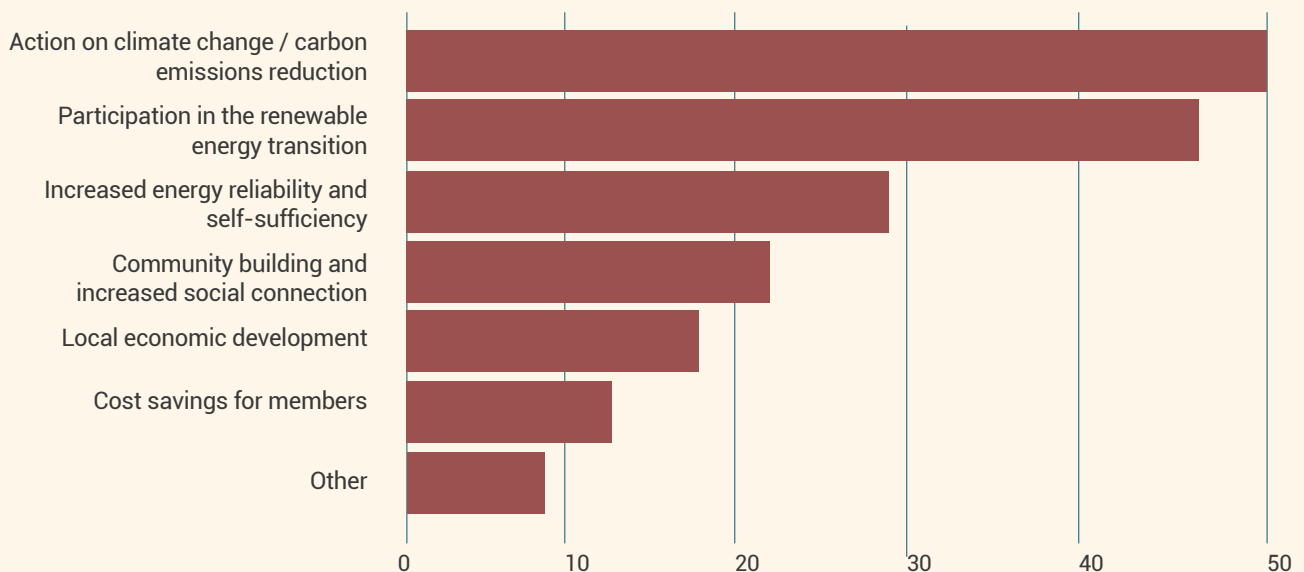
**“Tap into a new source of investment to power the renewable energy transition by making it easy for mum and dad investors to use their savings for solar”**



Photo credit: Geni Energy



**Figure 4: Motivational drivers of community energy groups**



Note: Survey participants could select more than one answer

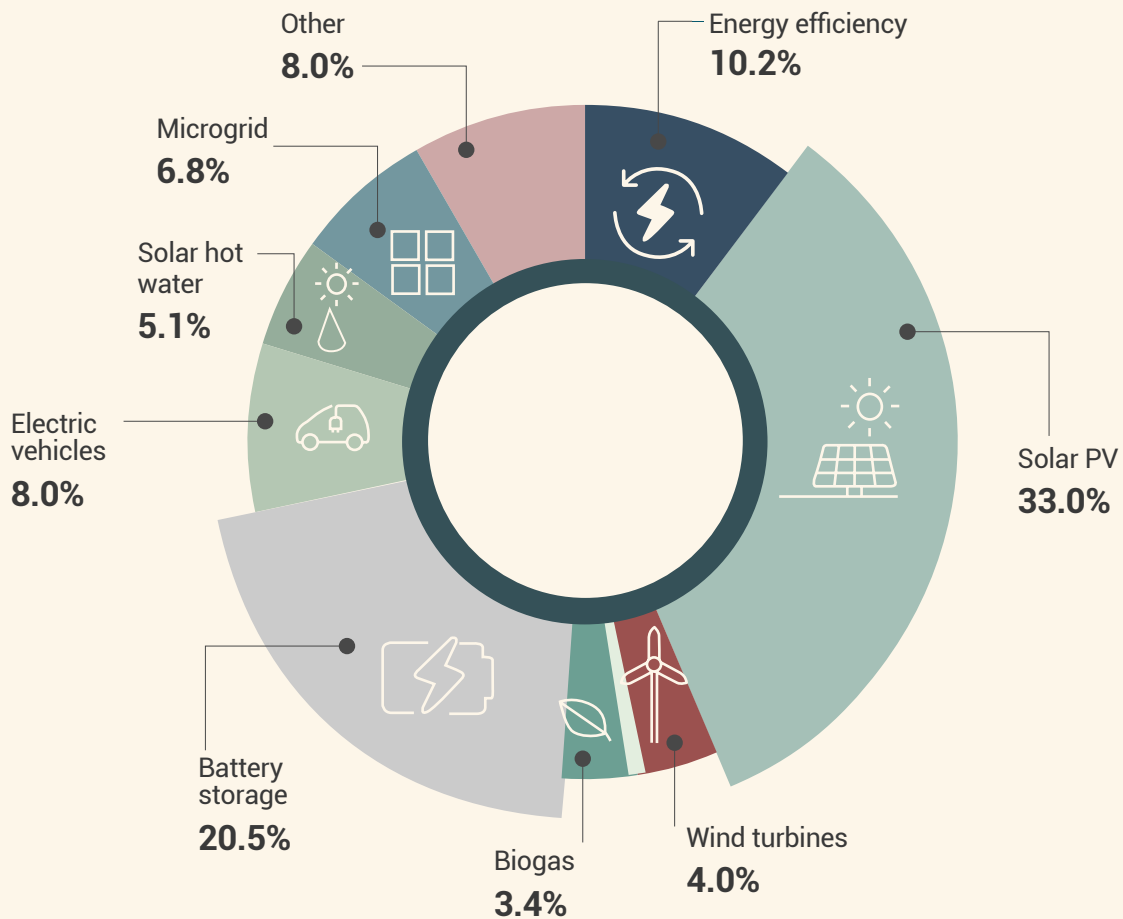




Photo credit: Totally Renewable Yackandandah

Responding community energy groups have been directly involved in at least 730 projects, with groups actively working on 220 projects in the past 12 months. Solar projects emerged as the most common project type, followed by battery storage and energy efficiency projects as shown in Figure 5.

**Figure 5: Types of projects community energy groups have been working on in the reporting period**



## 4.3 Environmental impact

As community energy organisations are largely driven by environmental concerns, it is useful to consider their environmental impact. A key indicator to measure climate impact is the amount of greenhouse gases, expressed as tonnes of carbon dioxide equivalent (tCO<sub>2</sub>-e), that have been avoided due to community energy projects. This estimation is based on the number of kilowatt hours (kWh) produced through generation projects and kWh saved through energy efficiency projects.

Over the past 12 months, community energy groups who provided survey data have installed almost 12 megawatts of renewable energy. They have generated over 19,407 MWh of clean energy and saved 1,099 MWh through energy efficiency projects (Table 3).

Note generation capacity (projects) that were installed before the 12 month period surveyed produced electricity (kWh) that are included in the generation column. For example, Denmark Community Windfarm in Western Australia has one quite large project that was installed almost a decade ago that is generating large amounts of kWh.

Also to note several larger well-known community energy groups that have significant operational projects either did not complete or gave incomplete answers to part C of the survey that collected project data. Additionally several well-known community energy groups did not provide data to the survey at all.

Community energy groups that provided data on storage capacity have installed a total of 398kWh over the previous 12 months, which over the same period stored 59,090kWh (Table 4).

This data shows that community energy groups in Victoria reported to have installed more storage capacity than groups in New South Wales yet the amount of kilowatt hours actually stored is greater in NSW. This may be due to systems in Victoria being installed in the one or two months before the survey and thus not operating for the entire 12 month period, or systems in NSW storing (charging) and discharging energy more frequently. As mentioned in the methodology section, all data was self reported with only minor checks when there were obvious inconsistencies such as high installation kW with very low generation kWh.

**Table 3: Kilowatts installed or in development and kilowatt hours generated or saved from community energy groups over the last 12 months**

State	kW installed	kW in development	kWh generated	kWh saved
NSW	4,544	34,996	2,776,579	16,200
VIC	4,561	48,356	10,446,915	795,001
WA	2,430	0	6,184,000	0
SA	301	348	0	287,514
QLD	34	10	0	0
TOTAL	11,870	83,710	19,407,494	1,098,715



**Table 4: kWh of storage installed and how much was stored over the last 12 months**

State	kWh installed of storage capacity	kWh stored
NSW	148	44,645
VIC	220	14,445
WA	0	0
SA	0	0
QLD	30	0
TOTAL	398	59,090

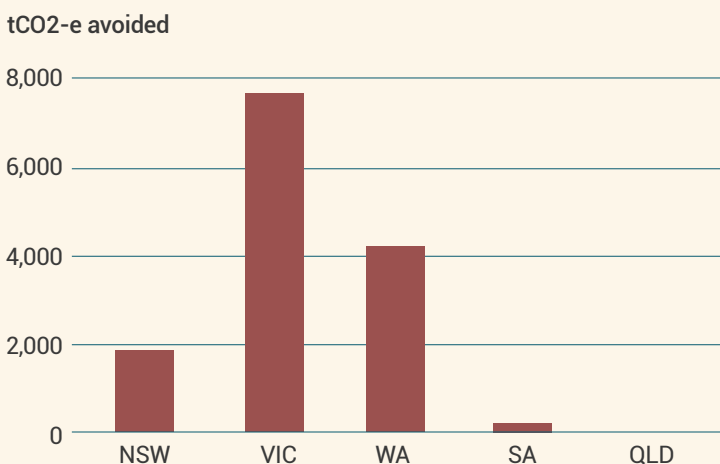
Figure 6 shows the spread of carbon dioxide emissions (CO<sub>2</sub>-e) avoided by community energy groups across Australian states. Kilowatt hours generated or saved during the 12 month reporting period avoided 13,947 tonnes of CO<sub>2</sub>-e, which is the equivalent of taking 7,748 cars off the road each year.<sup>13</sup> Groups in Victoria reported the highest avoided carbon dioxide emissions at almost 8,000 tonnes collectively.

Looking ahead, these community energy groups have projects in development that are estimated to generate 5,205 MWh and save 3,816 MWh through energy efficiency initiatives. This figure is likely to be higher as several operational community energy groups did not respond to the survey, or did not answer the relevant question in the survey. These future energy projects will further strengthen the environmental impact of the community energy sector in Australia by expanding renewable energy capacity whilst simultaneously reducing demand from the grid.

As well as achieving direct emissions reductions, 84% of groups reported that their projects had increased awareness in the community regarding renewables and energy issues “a moderate amount”, “a lot” or “a great deal”. Similarly, 73% reported their projects had increased awareness of climate change and the need to take action to reduce carbon emission at least a moderate amount or higher. One group stated *“There is a huge community awareness of the benefits of renewable energy now, which is a great thing.”*

In addition to direct decarbonisation impacts, some groups were utilising the electricity cost savings from community energy projects to fund broader sustainability initiatives. For example, Energy Forever Inc. put their savings towards local community sustainability grants. Additionally, Surf Coast Energy Group’s Barwon Solar Schools project directed cost savings to sustainability and education initiatives on biodiversity, energy, waste and water.

**Figure 6: Avoided CO<sub>2</sub>-e (tonnes) from community energy projects**



<sup>13</sup> Average of 1.8t CO<sub>2</sub>-e per car, per year, based on the National Transport Commission’s average 146.5 g CO<sub>2</sub>e/km for Australian light vehicles (<https://www.ntc.gov.au/light-vehicle-emissions-intensity-australia>) and the Australian Bureau of Statistics that estimates the average Australian drives 12,100km per year (<https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release>)



## Environmental impacts case study – Hepburn Energy

Hepburn Energy is Australia's first community owned wind farm, established in 2007 as a co-operative with around 2000 members who invested to support climate action and renewables. Since it started generating in 2011, the co-operative has abated 106,610 tonnes of CO<sub>2</sub>-e emissions. Hepburn Energy advocates for strong climate and renewable energy policy. In 2020, the co-operative collaborated with Act on Climate, rallying around 250 members and supporters, advocating for state-based emission reduction targets in line with limiting global warming to 1.5°C.

The co-operative also collaborates with local groups, representatives and council to work towards a zero-net emissions shire as part of the collaborative partnership Hepburn Z-NET. This partnership unites community groups like Hepburn Energy, local businesses, and the council with the aim of achieving zero-net emissions by 2030.

The efforts of Hepburn Z-NET led to the development of a Community Transition Plan which maps a pathway to zero-net energy by 2025 and zero-net emissions by 2030. In a recent assessment, Hepburn Z-NET revealed that renewable energy consumption within the shire reached 42%, largely due to a surge in rooftop solar installations, strongly supported by their partner, the Hepburn Solar bulk-buy. Since 2019, these community efforts have resulted in the activation of over 45 local projects and the mobilisation of more than \$5.5 million for various programs and initiatives.

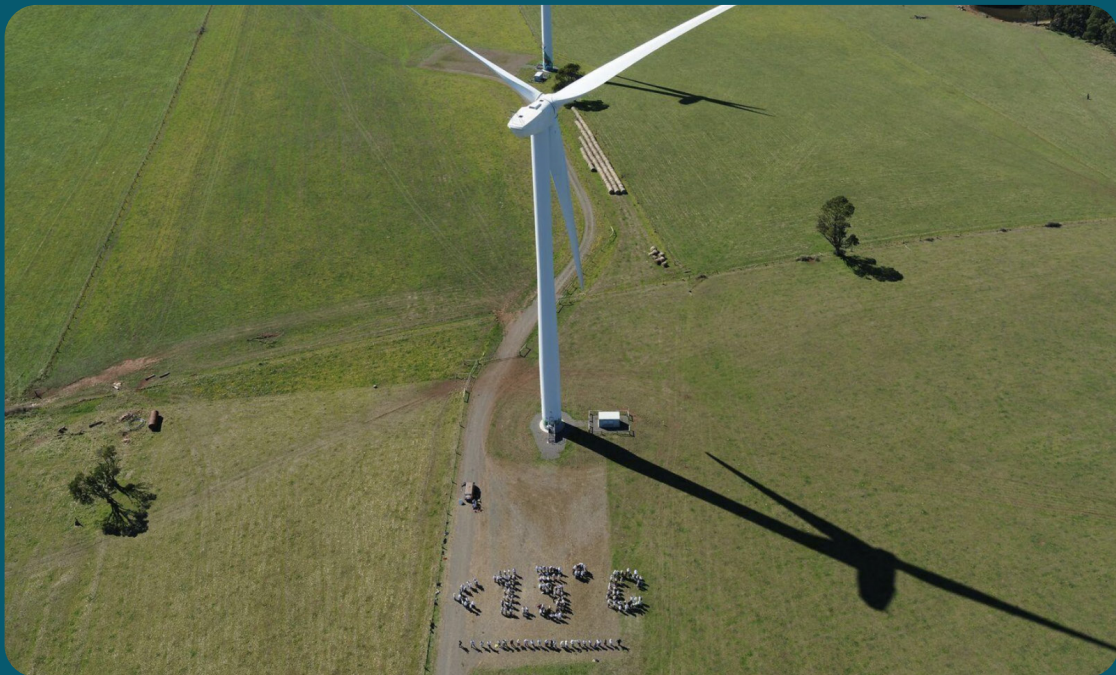


Photo credit: Environmental impacts – Hepburn Energy

## 4.4 Economic impact

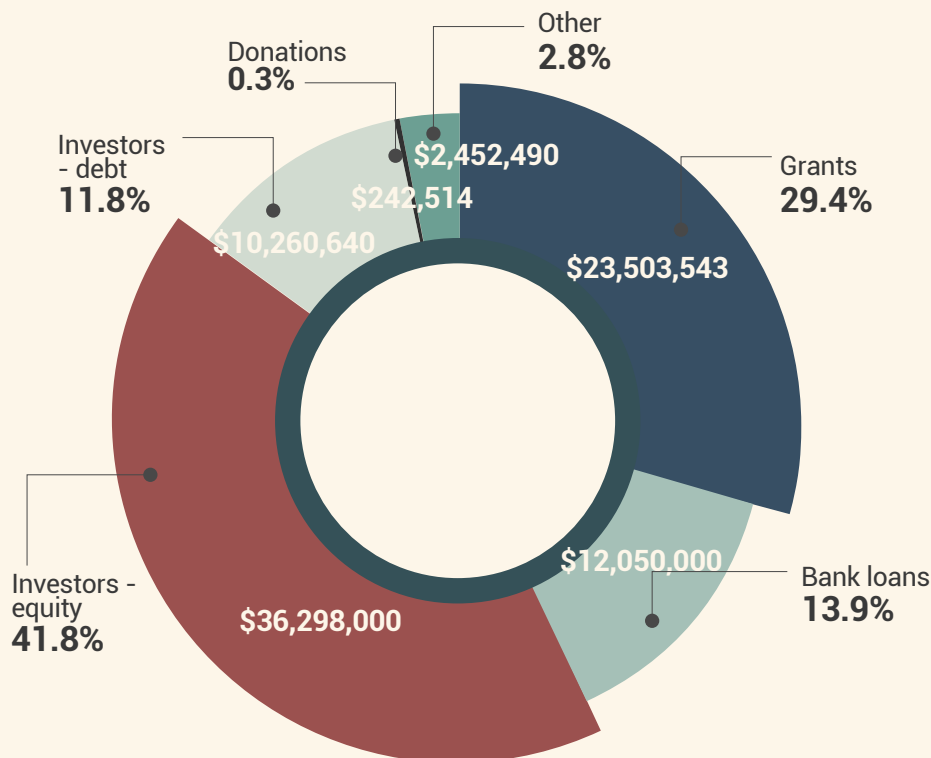
In the reporting period, almost 12 MW of renewable energy capacity was installed by the community energy sector. Community energy groups estimated their total project costs are \$165 million, contributing significantly to economic activity in Australia. Community energy projects active in the 12 months leading up to the survey have raised over \$86.8 million from grants, bank loans, investors, donations and other sources.

Figure 7 shows that the majority of funding (\$36,298,000) came from equity investors (eg. shareholders, investors with decision-making power) (42%) with groups reporting a total of 3,951 investors. This was followed by \$23.5 million in grants (29%), which is a substantial increase since 2015 when government grants contributed \$5.77 million (22%) in funds. A further 14% in bank loans, 12% in debt investors and 0.3% in philanthropic donations from approximately 1,310 donors has been provided to community energy projects.

In addition to increased investment in community energy projects, groups have reported an increase in investor confidence in the sector. ClearSky Solar Investments explained that a key positive outcome had been enabling investors to make an ethical investment with a good return. This group believes that by demonstrating to investors that behind-the-metre solar can generate a good return, they had encouraged previously sceptical investors to become solar advocates.

Community energy groups are also stimulating local economies due to the prevalence of supporting local installers and tradespeople. Fieldwork on community energy sites by co-author Dr Marshall confirmed these survey results, finding that people preferred their money from energy services to stay local and add to regional prosperity and development over leaving the region in the hands of company shareholders that are likely overseas.

Figure 7: Funding sources of community energy projects



This survey found the total expected income and/or savings from community energy groups over the anticipated duration of the projects is \$74.95 million. Around one third of respondents cited local development as a key motivational driver of their projects and are finding innovative ways to distribute profits amongst the community. For example, CoPower, a non-distributing co-operative, voted to allocate its \$100,000 surplus to 15 community organisations and initiatives.

Other organisations such as Clean Energy for Eternity (CEFE) in the Bega region have been raising money and providing solar panels to public buildings (schools, clubs, sewerage farms etc), and fire sheds. The building occupants or owners then repay CEFE with saved electricity costs until the solar system is paid off, which allows funds to circulate into further donated community solar systems. This 'climate generosity' increases the amount of renewable energy being used locally, while also enabling fairly frequent replication of an easily understood process. Similarly, other community energy groups like CORENA have developed revolving fund models, such as crowdfunding or upfront grant injections, which provide interest-free loans to non-profit community organisations to pay for clean energy projects. Once the loans are repaid, these funds are lent to finance subsequent emissions reductions projects. Other groups have facilitated bulk-buys of rooftop solar installations which serves to boost solar skills and businesses locally.

Community energy groups reported improving energy resilience and safeguarding their communities against environmental risks. They are increasing energy resilience by upgrading community facilities, reducing electricity disruptions and losses for businesses and organisations and ensuring essential services can continue running during disasters. The Southcoast Health and Sustainability Alliance's Heatwave and Bushfire Haven Project upgrades community facilities with energy systems that can operate during power outages, ensuring continuity of essential services with temperature and air quality control. This initiative provides a safe haven for community members during emergencies.

Similarly, 2030Yea Renewable Energy Group's equipped the Yea Recreational Reserve with solar and batteries which while hosting several committee groups is also a neighbourhood safe place, so it reduces costs for those local committees but also ensures the provision of vital resources like lights and water during natural disasters. These measures contribute to community safety and well-being during crisis situations. Or as one group said they needed:

**“Resilience for extended outages and emergencies (more than self-sufficiency, and distinct from reliability)”**



Photo credit: SHASA



## Economic impacts case study – Surf Coast Energy Group

The Barwon Solar Schools project installed a total of 115kW of solar panels across five primary schools in the Barwon region. Surf Coast Energy Group secured over \$100,000 in grant funding from the Victorian Government's New Energy Jobs Fund to install the solar systems which will reduce carbon emissions and electricity bills. Cost savings will be used to fund further sustainability education activities at participating schools.

More specifically, the project installed a 28kW solar system at Aireys Inlet Primary School, a 22kW solar system at each of Highton, Manifold Heights and Ocean Grove Primary Schools, and a 20kW solar system at Birregurra Primary School.

It is estimated these solar PV systems will collectively reduce carbon emissions by 155 tonnes and reduce electricity bills by over \$20,000 each year. Over their 25-year life span, it is estimated these systems will collectively reduce carbon emissions by 3,875 tonnes and reduce electricity bills by over \$500,000.

Electricity cost savings will be used to fund further sustainability actions, especially those identified in Sustainability Victoria's ResourceSmart Schools program and modules on biodiversity, energy, waste, and water to increase sustainability and sustainability education across school facilities, curricula, and communities.

In addition to grant funding from the New Energy Jobs Fund, Surf Coast Energy Group contributed \$2,000 of community donations raised via The People's Solar crowdfunding platform towards the cost of installing the solar PV system at Airey's Inlet Primary School. Similarly, Birregurra Community Group facilitated a contribution of \$2,500 from Birregurra & District Lions Club towards the cost of installing the solar system at Birregurra Primary School. In addition, most participating schools contributed between \$2,000 - \$6,000 to the cost of their respective systems.



20kW solar system installed at Birregurra Primary School. Photo credit - Surf Coast Energy Group.



## 4.5 Social & Political impacts

Community energy projects in Australia leverage a significant amount of in-kind support to deliver their projects, both from volunteer effort and pro bono professional services and other goods & services provided in-kind.

Survey responses show that community energy groups benefited from an average of 271 volunteer or unpaid hours per project (across 73 projects reported) for the previous 12 month period, representing a significant volunteer effort. More than half of the total project hours for these projects were carried out by volunteers. This substantial investment of time and energy during the project cycle is crucial to the success of these initiatives. Without the passion and commitment demonstrated by volunteers, such projects may not be feasible.

**Table 6: Numbers of hours contributed to community energy projects**

Time contributions	Total
Volunteer hours	19,760
Paid hours	12,743
<b>Total project hours</b>	<b>32,503</b>

Groups also noted that their projects had improved community understanding of the renewable energy sector and empowered them with the knowledge to know what can be achieved.

**“To me the highlight was the level of community engagement we achieved during the presentation, even though the outcomes were not what the community wanted to hear. We all built a more mature understanding of Australia’s energy system and why in-front-of -the-metre community energy projects don’t make sense.”**

**“Enhance[d] energy literacy across the board, focussing on what can be achieved.”**

**Table 7: In-kind value leveraged for community energy projects**

In-kind value leveraged	Amount
Volunteer hours (costed at \$45/hr)	\$889,200
Office or event space	\$195,774
Professional services	\$2,181,570
Other goods & services	\$55,970
<b>Total</b>	<b>\$3,322,514</b>

Given that 40% of community energy groups reported community-building and increased social connection as primary motivating factors, it is unsurprising that these groups are generating a notable social impact. In the 12 months preceding survey completion, community energy groups reported to have organised 420 events, with a total of 32,330 attendees.

Community energy groups also reported additional social outcomes from their projects, including:

- Enhanced skills or capacity of group members (77%)
- Partnerships with other local initiatives and organisations (76%)
- Increased sense of community connection and/or social capital (75%)
- Increased media and social media relating to energy issues and/or climate change (70%)
- Behaviour change towards more sustainable behaviour (e.g. energy efficiency at home) (42%)

As well as bringing people together, community energy projects are boosting participation and engagement in the energy system. The Haystacks Solar Garden project enables people who have previously been locked out of rooftop solar, such as renters and apartment dwellers, to purchase a solar plot. The people purchasing these solar gardens also found innovative ways to extend the benefits of solar. For example, one woman in the Northern Rivers bought three solar garden plots to gift to people in the area affected by the recent floods, helping reduce their electricity costs while they recover. Others purchased multiple plots to give to their children.



In addition, many projects are centred on improving community facilities. For example, the Ballarat Renewable Energy and Zero Emissions Incorporated (BREAZE Inc.) are helping a regional NDIS provider to access solar which will reduce energy costs and enable them to invest more in their core service of helping people with disabilities whilst also reducing regional GHG emissions. Furthermore, the participatory approach of community energy groups has fostered enhanced social cohesion. CoPower for instance, has highlighted the efficacy of their participatory budget as a compelling tool for community formation, with the potential to bolster wider adoption within the community energy sector.

## Political impacts from community energy groups

Some groups highlighted clear positive political impacts from their efforts. For example Hepburn Energy has collaborated with environmental NGO, Act on Climate, to advocate for state-based emission reduction targets in line with limiting global warming to 1.5°C. Additionally through their advocacy efforts with other local community groups, the co-operative secured council commitment to a zero-net emissions reduction target. This laid the groundwork for the collaborative partnership, Hepburn Z-NET, and their Community Transition Plan to achieve net-zero.

Another example of how community energy groups engage with their MPs is to secure election commitments in their electorate, as was the case for another group on the back of the 2022 Community Batteries election commitment:

**“The project encouraged a group of local residents to lobby their Federal MP and secure a pre-election pledge to fund the installation of a community battery in Torquay. The MP won her seat and her party honoured the pledge, worth approximately \$500,000.”**

Anecdotally, community energy groups have political power when organised, as was seen in the Federal electorate of Indi. This electorate has the highest concentration of community energy groups in Australia and were successful in securing a co-designed community energy policy as a 2019 election commitment from candidate Helen Haines. The Australian Local Power Agency Bill<sup>14</sup> was tabled by the Indi MP in 2021 after months of co-design with community energy groups from around the country and experts including Community Power Agency and the Coalition for Community Energy.

It should be noted that not many groups reported engagement in political processes. When asked about additional outcomes from their projects 38% reported participation in policy processes relating to energy such as writing submissions or meeting with parliamentary members.



Photo credit: Hepburn Wind Tour - Jarra Hicks.

<sup>14</sup> Australian Local Power Agency Bill as tabled in Parliament - [https://www.aph.gov.au/Parliamentary\\_Business/Bills\\_Legislation/Bills\\_Search\\_Results/Result?bld=r6673](https://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bld=r6673)



## Social impacts case study – Southcoast Health & Sustainability Alliance

The Southcoast Health & Sustainability Alliance (SHASA) is upgrading community-owned facilities using best practice renewable energy sources. The Eurobodalla Heatwave and Bushfire Havens – created since the 2019/2020 bushfires – provide places where vulnerable community members can seek refuge during heatwaves, or when heavy smoke reduces air quality. The havens support continuation of services in the event of power disruptions.

SHASA's Heatwave and Bushfire Haven Project has so far installed a total of 49.4kW of solar panels and 60kW of battery storage across five community-owned facilities in the Eurobodalla. SHASA secured grant funding from the NSW and federal governments to establish havens with independent power systems so that these buildings can operate when the grid goes down.

It is estimated these solar and battery systems will collectively reduce carbon emissions by 75 tonnes and reduce electricity bills by over \$10,000 each year. These facilities are critical to the social fabric of the Eurobodalla and reducing their ongoing running costs is essential. Other vital works undertaken include the installation of air conditioning for temperature control and HEPA filters for air quality control. Other improvements include upgrades to LED lighting, external awnings and insulation.

SHASA's tax deductible Public Fund has used donations from members of the public to fund appliance upgrades and stretchers for these havens. This fund will allow solar and LED lights to be installed at the Anglican Church Hall in Batemans Bay. SHASA has also developed a Heatwave and Bushfire Smoke Haven Plan for the Eurobodalla Shire that includes business cases to upgrade an additional 13 community-owned facilities in the Eurobodalla. Funding has been sought from the Federal Government's Strengthening Rural Communities Program, the NSW Infrastructure Grants, the Federal/NSW Government Disaster Ready Fund and the Fires to Flourish Program funded by the Ramsay Foundation.



## 4.6 Obstacles and resource challenges

### Obstacles

The survey asked for an assessment on the various obstacles that prevent community energy groups from achieving their goals. Based on the list of obstacles provided from groups who answered this question, the results show that the majority of groups face the greatest challenges in regards to a 'lack of time', 'lack of finance/funding' and the 'political and/or regulatory environment' (Figure 8).

These results are very similar to the 2015 survey results, with the notable change being that the availability of host sites is no longer a major obstacle. This could be the result of the increase in group reach noted above and thus knowledge of potential sites and the likely increase in public awareness of community energy groups due to the expanded sector.

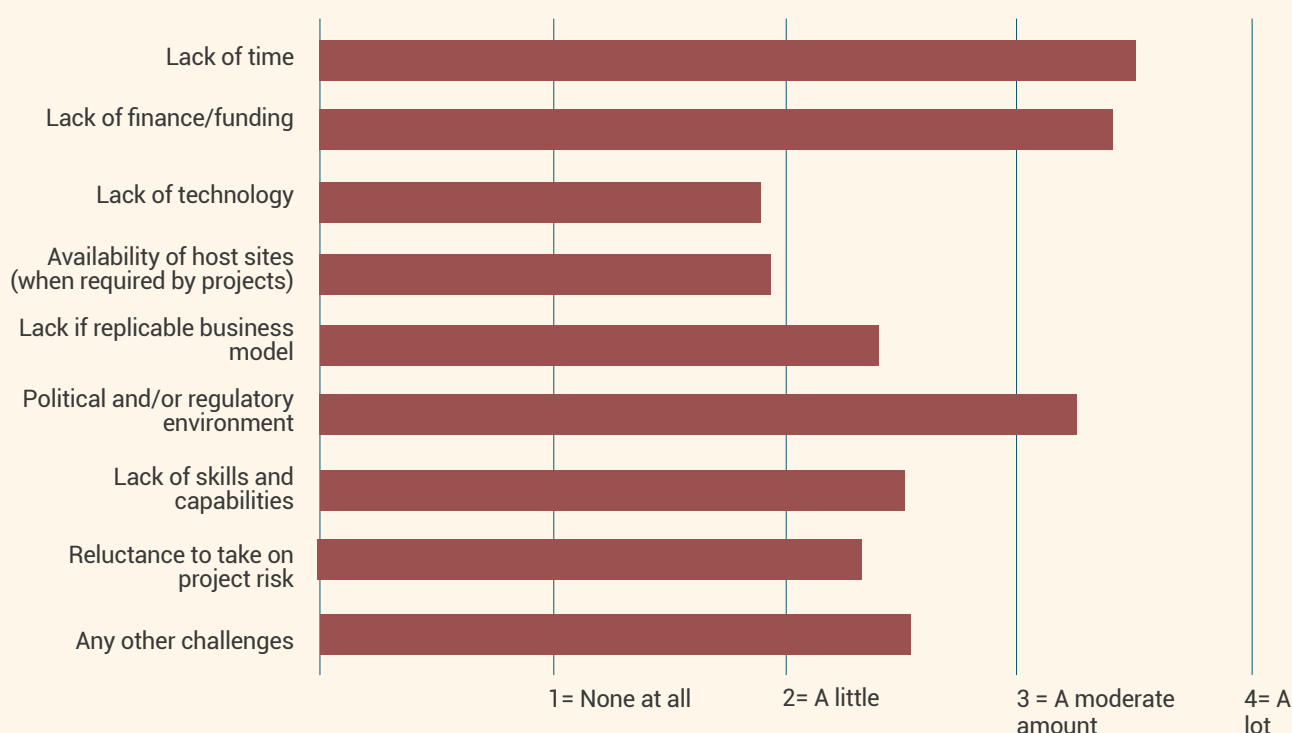
### Resource challenges

Unlike the obstacles, there is a clear change between the 2015 and 2023 survey results on the resources that groups have access to. When asked about the resources needed to achieve their objectives, Figure 9 shows community energy groups reported the following four areas as where they had the most resources:

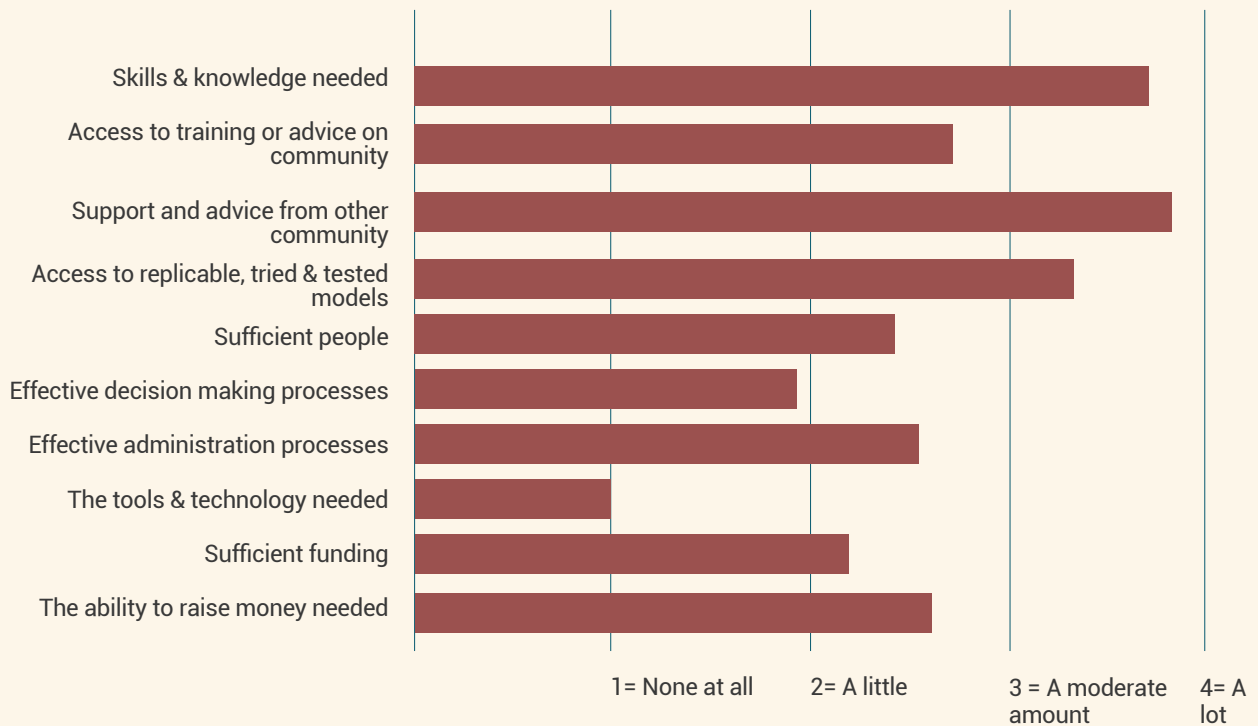
- Support and advice from other community energy groups
- Access to replicable, tried and tested models for community energy
- Skills and knowledge

This is almost a complete reversal from the 2015 survey results where aside from sufficient people, these categories were the top resource challenges. Since 2015 several support agencies for community energy groups including Community Power Agency, Coalition for Community Energy (C4CE) and for the few years they were funded, the Victorian Community Power Hubs, actively supported the sector. These organisations created materials, guides and ran multiple trainings for community energy groups. Additionally, the increased number of community energy groups and the 2017 Community Energy Congress also built skills, networks and shared information.

**Figure 8: Average level of obstacles faced by community energy groups**



**Figure 9: Average resource availability for community energy groups**



The key resource challenges reported were: sufficient funding & time and effective administration processes (Figure 9).

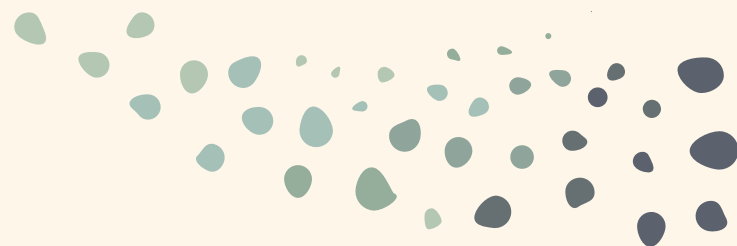
To further illustrate the obstacles and challenges below are comments from survey respondents made throughout the survey in open text questions.

**These are grouped into four categories in order of the level of difficulty these:**

1. **Funding and human resources**
2. **Regulations and approvals**
3. **Capacity building and support**
4. **Environment and technical challenges**



Photo credit: Natasha Sebire



## 1. Funding and human resources

There is frustration with the lack of funding and support from governments, and a need for better organisation and promotion of funding streams.

**[We need] easier access to sufficient funding to implement larger scale projects. Presently funding grants are allocated on a very piecemeal basis federally and in NSW.**

**[We found] most grants are aimed at commercial providers rather than community groups.**

**Better decisions from government about grant streams eg. Community Batteries [are] not producing much if any direct community benefit.**

**QLD government say they support community energy, but won't support groups to achieve outcomes.**

Many groups also faced major challenges in finding people with time to volunteer, and effective administration processes.

**Things move slowly [and] people are busy elsewhere. [We] only meet monthly for 9 months of the year, not all members are equally skilled, not a relatively wealthy part of Australia [and there's] some naysayers in the community...**

**Community-minded people in our district are involved in many, many community recovery and sustainability projects and are exhausted.**

**We need advice on how to set up employee relationships and how to better manage our finances. How do we move from a group with a part-time project manager being paid an honorarium monthly to someone who is employed by the group.**

**[Dealing with] the risks associated with managing larger projects as a small local organisation. We need financially stable, well-resourced partnerships.**



## 2. Regulations and approvals

Political and regulatory obstacles are one of the leading barriers for community energy groups, hindering progress and scalability. Groups reported a range of issues relating to approvals and a lack of clarity in rules and regulations which inhibit action.

Obtaining government department approvals for installations such as electric vehicle chargers on public land has caused considerable schedule delays for some projects. Processes relating to grid connection pose further hindrances, as they are onerous, expensive, and obstructive to project progress. Issues with network operators have also arisen, as efforts to establish a productive relationship and share crucial information have been met with poor communication.

**Regulatory and bureaucratic environment with our DNSP means there seems little understanding or capacity to deal with the granularity of issues, circumstances and environment in our many small towns.**

**Changes in state and federal political and regulatory environments caused considerable problems.**

Working with grid network operators and other regulators in the electricity market was a common problem:

**[Complicated] electricity grid rules, DA planning rules, network tariff structures.**

**Approvals for our solar farm have been significantly costly in terms of time and money, got to end of process and received a 60 days to pay \$300k+ connection fee.**

**[We need] easier planning, development and grid connection pathways (this has been delivered in Japan for example) for midscale renewables.**

**Can't get feedback on likely success of connection without going through the connection process which can be very expensive and time consuming.**

**If the retail energy market rules and also the network tariffs were more suitable we could come up with more innovative ways to create benefits for energy consumers. For instance we can't sell electricity 'over the fence', we have to go through the grid which adds to cost.**





Photo credit: Ballarat Renewable Energy and Zero Emissions Incorporated (BREAZE) at the the launch of the Grampians Community Power Hub - BREAZE

### 3. Capacity building and support

Some groups reported feeling that they had insufficient organisational and expert support, volunteer fatigue and limited resources. Additionally, some respondents cited a lack of motivation or pushback from some in their community:

We are aware of C4CE but the complexity of our projects has taken all our resources and we [WA group] feel out of touch with the movement in Australia.

We particularly need advice on how to build a stronger, more sustainable group.

[We faced] uncertainty about policies regarding batteries and "Solar Banks".

So much information, so hard to determine the right path.

[Help with] funding application writing and extreme competition.

Motivation in the community appears to be very low, post-covid.





## 4. Environmental and technological challenges

Groups reported feeling the impacts of the COVID19 pandemic, followed by the energy crisis that began to tighten in 2021 and three years of La Niña which impacted renewable generation.

La Nina has meant that over the last 3 years generation has been less than we predicted. A bankruptcy has resulted in investors in one of our projects getting their money back, but with zero interest, five years into the 10 year term.

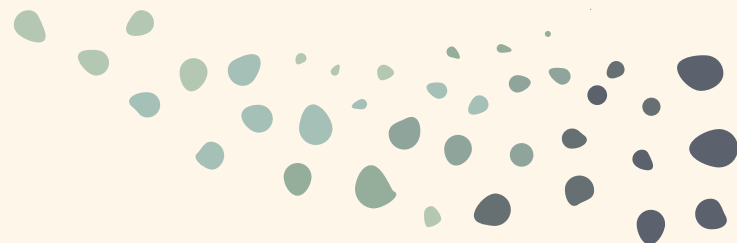
[The project] was all done under on/off COVID conditions so very challenging in many respects (lockdowns to supply chain issues, etc).

We need resilient, preferably islandable, local power generation to help us in the event of major emergencies.

Marshall's fieldwork also identified similar problems<sup>15,16</sup> with groups dealing with complicated regulations not designed for community energy, significantly delaying projects, even with local council involvement.

In one case the corporations law also inhibited the ease of organising community involvement, and limited the size and cost of the projects.

In another case, organising community energy not only faced the complicated regulations and procedures, but faced significant opposition from fossil fuel interests, and from fears of losing jobs and economic opportunities if the projects went ahead and affected fossil fuel projects. Some state government policy seemed to favour large-scale renewables or fossil fuel development over community renewable energy.



<sup>15</sup> Marshall, JP, (2023) 'Disputes over Coal Mining and Gas Drilling in an Australian Country Town' *Cosmopolitan Civil Societies: An Interdisciplinary Journal*. 15(1): 106–125. <https://epress.lib.uts.edu.au/journals/index.php/mcs/article/view/8425>

<sup>16</sup> Marshall, JP, (2022) 'Comparing local energy conflicts in NSW Australia: moving to climate generosity.' *Globalizations*. DOI: [10.1080/14747731.2022.2073067](https://doi.org/10.1080/14747731.2022.2073067)

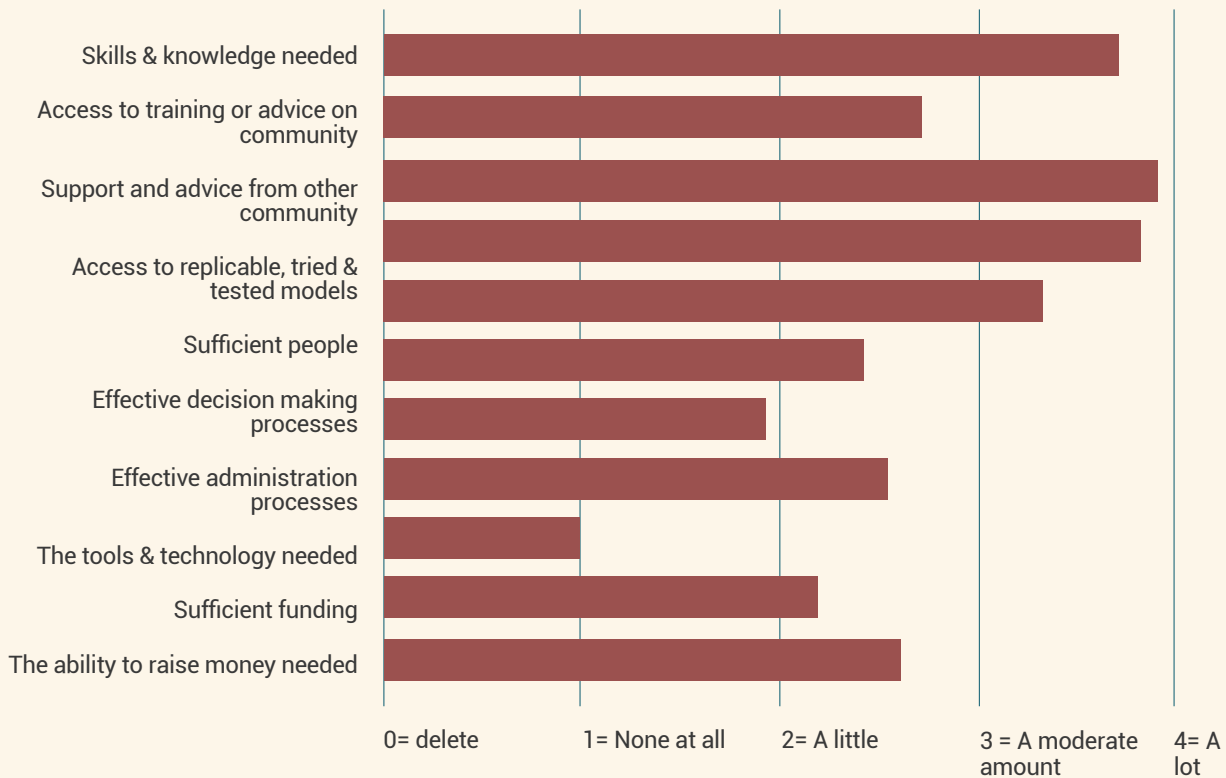


## 4.7 Project highlights & additional outcomes

Survey respondents were asked to rate additional outcomes that have been generated from their projects on a five point scale of 'None at all' to 'A great deal' (Figure 10). Notable mentions with high average ratings were in the following outcomes:

- Increased awareness in community regarding renewable energy & energy issues
- Partnerships with other local initiatives & organisations
- Skills or capacity of group members enhanced

**Figure 10: Additional outcomes from community energy projects**



Community energy groups described many positives from their groups' operations and projects, with groups innovating new ways for stakeholders to be involved in energy projects. Some of the highlights reported were:

**Investors thanking us for making it so easy to invest in solar and proudly visiting the site they have financed and sharing the day by day on-line monitoring of the site with their friends.**

**Three buildings in Healesville installed solar, and as they pay their loan off with us using the difference in what they would have paid, we use the money to install more solar on another building. Once their loan is paid off, the savings are completely theirs.**

**There were many, many highs, all related to painting a picture of what a single project like this can do in/for a community and the organisations involved.**



Community/private partnership and visibility of large scale renewable project.

Generating about half the local electricity consumption for ten years so far, broad community support, spinoff projects in planning, and paying an annual dividend of 10% to shareholders from the first year of operation.

The positive spin-offs of greater community participation both at the local and regional levels including interstate via our community energy network connections.

It has been great to work with local RFS brigades in raising funds via community events such as concerts with local bands to achieve the goal of increased resilience.

The ability to reinvest all proceeds into local community sustainability programs as grants has been an excellent outcome.

We have seen a real increase in the buzz around renewables.



Photo credit: Totally Renewable Yackandandah



## 5. POLICY RECOMMENDATIONS

**The community energy sector in Australia plays an important role in Australia's shift to an energy system that is powered by renewables. While the community energy sector's contribution towards Australia's decarbonisation goals is modest compared to the large-scale renewables sector, this largely volunteer-led sector delivers many tangible and intangible social, political, environmental, technological and economic benefits to communities that host and are involved with these projects.**

Some of these benefits include enhancing local resilience under climate change, enabling community control over their energy needs, fostering a sense of empowerment, localised wealth and job creation, and developing the 'what's in it for me' that will support the transition to a decarbonised economy.

There are several opportunities to support the community energy sector to thrive and drive further support for Australia's transition to a renewable energy future. We suggest that Federal and/or State support is required and can be delivered in a number of formats as described in the following recommendations.

### Recommendations

#### 1. Federal and/or state governments provide dedicated and ongoing funding for capacity building hubs for the community energy sector, with appropriate guidance and timeframes.

Adequate expert support is essential, not only for ensuring the expansion and continuity of community energy projects, but also for preventing volunteer burnout. Supporting community energy volunteers with training and information will greatly enhance the ability to deliver successful projects. Hubs must have adequate funding for project staff dispersed across multiple regions with funding to run engagement activities and service a drop-in location.

The application process for existing appropriate organisations to become a hub must be clear and accessible, with guidance on what a successful application looks like with at least a 12 week application period to allow largely overworked community members time to work on their application.

Capacity building programs should offer templates, resources and examples for common community energy models as well as provide technical & legal expertise and facilitate seamless interactions with grid operators and energy suppliers.

These programs could be established at a national or state level. Examples of successful government funded programs include the Community Power Hubs program delivered via Sustainability Victoria<sup>17</sup> from 2018-2012 and Energy Communities<sup>18</sup> programs in the European Union.

<sup>17</sup> Community Power Hubs Pilot Program final evaluation, 2019, Sustainability Victoria [https://assets.sustainability.vic.gov.au/susvic/Report-energy-Community-Power-Hubs-pilot-program-evaluation-summary\\_2021-02-16-010355.pdf](https://assets.sustainability.vic.gov.au/susvic/Report-energy-Community-Power-Hubs-pilot-program-evaluation-summary_2021-02-16-010355.pdf)

<sup>18</sup> [https://energy.ec.europa.eu/topics/markets-and-consumers/energy-communities\\_en](https://energy.ec.europa.eu/topics/markets-and-consumers/energy-communities_en)



## 2. Federal and/or state governments deploy dedicated and ongoing grant funding specifically dedicated to community energy for project development and staff costs, with appropriate guidance and timeframes.

Different to the capacity building hubs described above, grant funds are required for community energy groups to complete the early pre-feasibility, feasibility and developmental phases on their projects. These are the most risky phases of any energy project and, unlike private enterprise or government bodies, community groups do not have a large capital reserve to draw on. Once projects are through development stages and proven viable, then (experience indicates) they can successfully raise funds for capital costs from community members.

Grants can be split into a 'first projects' stream for small-scale and a 'replicable projects in new areas' (~\$35,000 per group) and a 'mid-scale community renewables' stream for development phase with milestone based payments ensuring that next stage funding is released after successfully achieving agreed upon outcomes (~\$500,000 per grant).

Similar appropriate guidance and timeframes are required as outlined above. However, ongoing funding programs would be preferred, so that community energy groups can develop programs within their capacities and timeframes. While there are grant programs for renewable energy available through organisations such as ARENA, these are notoriously difficult for community groups to access as they often require multi-million dollar projects, and are not designed in a way to accommodate or encourage community-led projects.

An example of a program that was specifically targeted to community energy groups is the Regional Community Energy Fund of the NSW Government<sup>19</sup>.

## 3. Federal Government to establish a national Community Energy Collaboration Network to support community energy groups navigate challenges and share information peer to peer.

There have been ad hoc capacity building initiatives over the years in Australia, however these initiatives lack continuity and adequate funding to deliver wide reach and most useful benefit to groups around the country.

Developing a well-resourced and targeted mentoring, training and networking events program delivered at a combination of levels - national, state, regional and virtual would help overcome many of the challenges identified by community energy groups.

Crucial to success is a guaranteed adequate funding stream over at least six years. A structure that facilitates collaboration and is well staffed and resourced will grow the capacity of the community energy sector to contribute to Australia's decarbonisation goals.

An example of programs that have turbo-charged the community energy sector in the past is the Community Energy Congress<sup>20</sup> held in 2014 and 2017. Holding a Congress every two or three years would be a key activity of the Community Energy Collaboration Network.

<sup>19</sup> Regional Community Energy Fund, NSW Government, <https://www.energy.nsw.gov.au/government-and-local-organisations/ways-get-started/regional-community-energy-fund#regional-community-energy-fund>

<sup>20</sup> Community Energy Congress, 2017, Coalition for Community Energy <https://c4ce.net.au/congress2017/>



#### 4. State governments each set a target of 100MW of community energy by 2028 as a carve out of their renewable energy targets.

Community energy often falls below thresholds for participation in state-based renewable energy targets or renewable energy auction schemes (>10MW) and are too large for household level support programs (<1MW). Much like the large-scale renewables industry needs policy certainty and financial incentives for investment, so too does the community energy sector.

A carve out of each state's renewable energy target ensures the regulatory framework recognises that commercial large-scale renewable projects are not the sole enablers of Australia's shift to a renewable powered future. Regulations should accommodate and encourage a diverse range of energy models, with a particular emphasis on community-driven initiatives.

Indeed, enabling community-led projects through policy and financial certainty can greatly assist in building the social licence needed for the large-scale energy projects planned and required.

#### 5. State governments establish community feed-in tariffs for mid-scale community energy projects of 6-7c premium above PPA/wholesale rate for 10 years.

As explained above, community energy projects require policy and financial certainty. A community energy target and feed-in tariff (FiT) both provides incentives and allows for a guaranteed income stream to attract project finance. Internationally there is significant evidence that feed-in-tariffs for community energy generation are highly effective.<sup>21</sup>

#### 6. State governments work with distribution network service providers (DNSP) to dedicate staff resources towards connecting with and supporting community energy groups in DNSP service areas.

The distribution network is where the vast majority of community energy projects are or would be hosted and this recommendation recognises the importance and opportunity of these mid-scale energy projects in our transition to renewable energy.

Several DNSPs have said publicly in 2023 that they have significant capacity on their distribution network, which face much fewer connection hurdles than larger scale projects do in connecting to the transmission network. Therefore this is a quicker way to add more renewable generation capacity to Australia's grid - the National Electricity Market.

DNSPs should provide appropriate data so community groups can make informed assessments about viable locations for their energy projects like community batteries and community-led mid-scale solar farms. As well as providing contact details for community energy groups to connect with someone in their DNSP and ensuring their staff have time and permission to interact with community members.

State governments should develop strategies, trials and implementations plans to modernise the management of the distribution network to enable higher levels of renewable energy (e.g. through dynamic management), and commit budget to improving the DNSPs ability to enable this.

For example the Victorian Neighbourhood Battery Initiative<sup>22</sup> has made improvements to ensure community groups are engaged by DNSPs seeking to win a grant in the program.

<sup>21</sup> Victorian Neighbourhood Battery Initiative, 2023, Department Energy, Environment and Climate Action, Victorian Government <https://www.energy.vic.gov.au/grants/neighbourhood-batteries/neighbourhood-battery-initiative>

<sup>22</sup> Gsänger, S. and T. Karl (2020). Community Wind Under the Auctions Model: A Critical Appraisal: 233-257.



**7. State governments create incentive schemes for peer-to-peer energy trading or enable network tariffs that favour localised use of energy.**

Creating a viable method for everyday people and community-led projects to share or trade their excess solar production with neighbours in an easy and fair manner makes better use of our distribution system and increases the feasibility of dispersed smaller battery installations.

**8. Develop centralised services that can be shared between different community energy groups.**

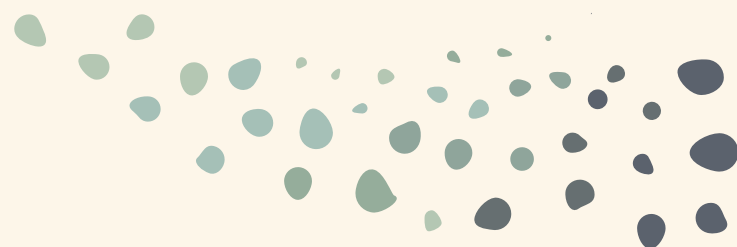
Community energy groups often cannot capitalise on “economies of scale” in their project and member administration and thus face higher costs than typical commercial energy projects.

Centralising common requirements through a shared service platform could include investor share registry, auditing, compliance, registering and receiving payment from members. These services would be limited to member, social or financial management as anecdotal experience suggests that much of the legal, technical and environmental aspects of projects are highly dependent on the local context and change project to project.

For example developing or enabling significantly reduced cost of services for website hosting, email services, volunteer and director insurances would aid groups immensely.



Photo credit: Natasha Sebire



# APPENDIX

## A. Key indicators data comparison

Key Indicators Comparison	2023 Data (Previous 12 months)	2015 Data (Since group inception to end of 2014, sometimes up to 8yrs)
Members of community energy groups	44,114	21,089
Social reach (email, social media followers)	85,849	no data
# of people actively participating in decision-making	2,104	165
Events in last 12 months	420	15 (site visits)
Attendees at these events	32,330	10,112
Total # of community energy projects	730	334
# projects in previous 12 months	220	no data
kw in planning	83,710	no data (52 projects in planning)
kw installed	11,870 (in previous 12 months)	9,256 (Inception to 2014)
kwh generated/stored	19,466,584 (in previous 12 months)	50,350,501 (Inception to 2014)
kwh saved	1,098,715 (in previous 12 months)	16,851 (Inception to 2014)
Expected income/savings over project lifetime (\$AU)	\$74,945,987	\$39,231,770
Project cost (\$AU) (including funds not raised)	\$165,088,246	\$21,190,386
Grant funding	\$23,503,543	\$5,773,000
Bank loans	\$12,050,000	\$4,100,000
Investor funding - equity & debt	\$46,558,640	\$15,932,500
Donations	\$242,514	\$236,386
Other	\$2,452,490	\$50,000
# investors	3,951	2,067
# of donors	1,310	no data
Volunteer hours	19,760	14,771
Job creation (in employee hours)	12,743	48,041
In-kind value over last 12 months (office space, professional expertise etc)	\$2,685,058	no data
Total in-kind value (Volunteer hours calculated at \$45/hr for 2023, \$35/hr in 2015)	\$3,574,258	\$516,985
Co2 emissions avoided (tonnes)	13,947 (in previous 12 months)	43,116 (Inception to 2014)





## B. Identifying community energy groups and projects

Figure 11: Identification flowchart.

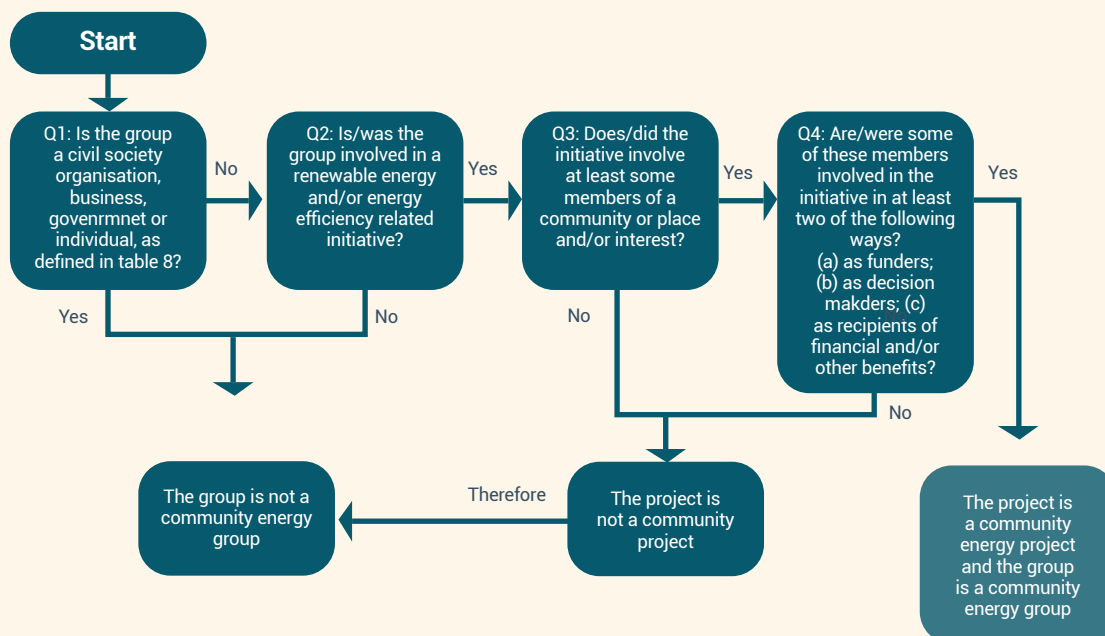


Table 8: Typology of Actors

Type of Actor	Definition
Community Energy Group	A formal or informal organisation whose aims and activities include initiating and/or implementing community energy project(s), independently or in partnership with others. A community energy project refers to a renewable energy or energy efficiency related initiative in which at least some members of a community of place and/or interest are collectively involved as two or more of the following: funders; decision-makers; or recipients of financial and/or other benefits.
Civil Society Organisation	A for-purpose organisation that is not a community energy group, where 50% or more of its profit/surplus funds its purpose. Note: the organisation is a Business if less than 50% of its profit/surplus funds its purpose.
Business	A for-profit enterprise that is not a community energy group, where 50% or more of its profit/surplus is distributed to owners/members. Note: the enterprise is a Civil Society Organisation if less than 50% of its profit/surplus is distributed to owners/members.
Government	A local, state or federal government, authority, department or agency.
Individual	A natural person (i.e. a human being).



## C. Survey questions

### Part A: Contact Details

Please complete this part in case the researchers need to ask any follow up questions about your group, or its community energy projects. This information will not be revealed to anyone beyond the research team.

**Q1 Please provide contact information: This will be kept confidential.**

- Contact Name :
- Email address:
- Phone number:

**Q2 Please provide the following details for your group:**

- Group name:
- Postcode:
- Website address (or facebook page if you don't have a website):

### Part B: Group Details

**Q3 On what date was your group established? (DD/MM/YYYY)**

**Q4a What is the organisational structure of your group? (select one)**

- Incorporated association
- Distributing cooperative
- Non-distributing cooperative
- Public company limited by guarantee
- Public company limited by shares
- Private company limited by shares (i.e. Pty Ltd)
- Trust with trustee company
- Not yet decided.
- Other

**Q4b If other, please specify**

**Q5a What are the main motivations driving your group (you can select more than one)**

- Action on climate change / carbon emissions reduction
- Community building and increased social connection
- Local economic development
- Cost savings for members
- Participation in the renewable energy transition
- Increased energy reliability and self-sufficiency
- Other

**Q5b If other, please specify**

**Q6 How many people are: (please provide estimates and don't worry if people are included in more than one of these categories)**

- Formal members of your group (however your group defines that)?
- Supporters of your group?
- Contacts on your group's email distribution list?
- Followers on your group's Facebook page?
- Followers on your group's Twitter account?
- Followers on your group's Instagram account?

**Q7 Roughly how many of your group's members or supporters are active (i.e. help deliver projects, organise events, assist with social media and/or administration)?**

**Q8 Roughly how many of your group's members or supporters participate in decision making (e.g. at annual, committee and/or project meetings)?**

**Q9 How many events have been organised by your group over the last 12 months? (please include online and in-person events where members, supporters, the public and/or media have been invited.)**

**Q10 How many people attended these events? (please provide the total from all events over the last 12 months.)**



**Q11 To what extent does your group have: (rate on five-point scale)**

	None at all (1)	A little (2)	A moderate amount (3)	A lot (4)	A great deal (5)
The skills and knowledge needed to achieve its objectives?					
Access to training or advice on community energy?					
Support and advice from other community energy groups?					
Access to replicable, tried and tested models for community energy?					
Sufficient people to achieve its objectives?					
Effective decision making processes?					
Effective administration processes?					
The tools and technology needed to achieve its objectives?					
Sufficient time to achieve its objectives?					
Sufficient funding to achieve its objectives?					
The ability to raise money needed to achieve its objectives?					

**Q12 What would help your group to address resource gaps or challenges?**

**Q13a To what extent do the following issues / obstacles prevent your group from achieving its goals? (rate on five-point scale)**

	None at all (1)	A little (2)	A moderate amount (3)	A lot (4)	A great deal (5)
Lack of time					
Lack of finance/funding					
Lack of technology					
Availability of host sites (when required by projects)					
Lack of replicable business model					
Political environment					
Regulatory prevention					
Regulatory complexity					
Local opposition					
Lack of skills and capabilities					
Reluctance to take on project risk					
Difficulties with wiring and connection					
Other					



Q13b If other, please specify;

Q14: If you have problems with the political or regulatory environment, can you please give a quick description of the problem?

Q15 What would help your group to address the issues / obstacles it has experienced?

Q16 How many different community energy projects has your group been involved with since it formed?

## Part C: Project Details

Please complete this part on behalf of the group you are representing. If your group has undertaken projects that involve multiple sites (e.g. bulk-buy schemes, revolving loans, helping individual households install rooftop solar or similar), please report the totals rather than each individual site.

Q17 How many different community energy projects has your group been actively working on in the last 12 months, including projects that started before this period? (please enter a numerical value)

*Note that this section - Part C - will repeat for the number of projects you specify in this question. For example, if you specify 3 projects you will be invited to complete this part 3 times (once for each project).*

Q18 What is the name of the project you are currently describing?

Q19 Where is the project located? (this information will not be given to anyone beyond the research team without your prior written consent.)

Q20 On what date did the project start (i.e. date of first meeting to plan the project)? (DD/MM/YYYY)

Q21 What is the actual or expected duration of the project? (in years/months)

Q22a What technology does the project involve? (select all that apply)

- Energy efficiency
- Solar PV
- Wind turbines
- Hydro power
- Biogas
- Battery storage
- Electric vehicles and/or charging stations
- Solar hot water and/or heat pump hot water systems

- Microgrid
- Other

Q22b If other, please specify

Q23a What is the type of project? (select one)

- Bulk-buy (e.g. for residential solar and/or batteries)
- Donation (e.g. for a solar system on a community building)
- Investment (i.e. 100% community-owned, e.g. Hepburn Wind)
- Co-investment (i.e. part community-owned, e.g. Sapphire Wind Farm)
- Community education (e.g. film night, guest speaker, training session)
- Whole of community target (e.g. 100% renewables, zero emissions)
- Electricity retail (e.g. Indigo Power)
- Other

Q23b If other, please specify

Q23c What stage is the project at now? (select one, best fit)

- Preparation (group is discussing what potential projects it could be doing)
- Initiation (Group has decided on technology, agreed on project objectives)
- Social feasibility (Engaging wider community, scouted potential sites, prepared pre feasibility)
- Technological feasibility (Developing financial & legal model, started technological feasibility study, developed business case)
- Planning (Started or received planning approval)
- Capital raising (fundraising, grants, crowdfunding etc.)
- Construction (signed a contract to construct)
- Operation

Q24a What organisational structure is being used to deliver the project? (select one)

- Incorporated association
- Distributing cooperative
- Non-distributing cooperative
- Public company limited by guarantee
- Public company limited by shares
- Private company limited by shares (i.e. Pty Ltd)
- Trust with trustee company
- Not yet decided
- Other



**Q24b** If other, please specify

**Q25** Select one of the following options that best describes your project:

- Grid connected, operating 'behind the meter' (primarily for on-site consumption)
- Grid connected, operating 'in front of the meter' (primarily for export to the grid, includes most community batteries)
- Off-grid (no electricity imports or exports)
- None of the above (for projects that don't generate and/or store electricity)

**Q26** Over the last 12 months, how many:

- kilowatts (kW) has the project installed, if it involves electricity generation? (enter 0 if appropriate)
- kilowatt hours (kWh) has the project installed if it involves electricity storage? (enter 0 if appropriate)

**Q27** Over the last 12 months, how many kilowatt hours (kWh) has the project:

- Saved, if the project involves energy efficiency? (enter 0 if appropriate)
- Produced, if the project involves electricity generation? (enter 0 if appropriate)
- Stored, if the project involves electricity storage? (enter 0 if appropriate)

**Q28** If the project is in development, how many:

- kilowatts (kW) does it plan to install, if it involves electricity generation? (enter 0 if appropriate)
- kilowatt hours (kWh) does it plan to install, if it involves electricity storage? (enter 0 if appropriate)

**Q29** If the project is in development, how many kilowatt hours per annum (kWh/pa) does it plan to:

- Save, if the project involves energy efficiency? (enter 0 if appropriate)
- Produce, if the project involves electricity generation? (enter 0 if appropriate)
- Store, if the project involves electricity storage? (enter 0 if appropriate)

**Q30** What is the total expected income and/or savings over the duration of the project? (in Australian dollars)

**Q31** What is the total estimated cost of the project? (in Australian dollars)

**Q32a** What amount of funding is provided to the project from each of the following sources? (in Australian dollars, enter 0 if and where appropriate)

- Grants
- Bank loans
- Investors - equity
- Investors - debt finance/loan
- Donations (i.e. gifts of money, with no financial return)
- Other

**Q32b** If other, please specify funding source

**Q33** How many investors did the project attract? (enter 0 if appropriate)

**Q34** How many donors did the project attract? (enter 0 if appropriate)

**Q35** Are there any other key features of the project that you would like to share? (e.g. it's a partnership with another organisation)

**Q36** How many unpaid hours do you estimate volunteers have contributed to the project over the last 12 months? (please include time spent planning, promoting, and delivering the project)

**Q37** How many paid hours have employees of your group contributed to the project over the last 12 months?

**Q38** Please specify the monetary value (based on reduced rates or waived charges) of the following types of in-kind contributions made to the project: (please make as close an approximation as possible for the life of the project)

- Office, event or meeting spaces
- Professional expertise (e.g. engineering, legal, finance/accounting)
- Other goods and/or services



**Q39** What additional outcomes have been generated from the project? (rate on five-point scale - answers can be based on experience and perception rather than figures)

	None at all (1)	A little (2)	A moderate amount (3)	A lot (4)	A great deal (5)
Increased awareness in the community regarding renewable energy and energy issues					
Increased awareness of climate change and the need to take action to reduce carbon emissions					
Reports of behaviour change towards more sustainable behaviour (e.g. energy efficiency at home)					
Skills or capacity of group members enhanced					
Increased sense of community connection and/or social capital					
Increased energy reliability and/or self-sufficiency					
Partnerships with other local initiatives and organisations					
Support (in-kind or financial) to other local initiatives and organisations (e.g. provision of advice, distributing community grants)					
Participation in policy processes relating to energy (e.g. writing submissions, meeting with parliamentary members)					
Increased media and social media relating to energy issues and/or climate change					
Increased local resilience					

**Q40** Are there specific examples of the outcomes identified above that you can share? If so, please briefly outline.

**Q41** Have there been any negative, unintended or unexpected outcomes from the project or your group's activities? If so, please briefly outline.

**Q42** What has been a highlight of the project? Please briefly outline, your stories will help paint a picture of the community energy sector.

