

Develop your overarching vision and define success for your project

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**Ara
Ake**

Future
Energy
Development



The what and why of community energy?

Community energy is a concept that has existed even before the advent of modern electricity systems. It involves the local production, distribution, and utilisation of energy within a community, with the project being initiated and managed by the community itself, aiming to deliver benefits to the community as a whole.

Dr. Anna Berka¹ provides a useful definition of community energy as “any clean energy activity that is managed in an open and participatory way, and has positive local and collective outcomes.” This encompasses a wide range of initiatives and actions taken by communities worldwide as part of the transition from carbon-based energy sources to renewable energy sources. These initiatives can include activities such as collective bulk purchases of solar panels, energy efficiency measures, renewable energy generation, energy storage, flexibility services, and even distribution and supply arrangements.

In this guide, the focus is primarily on community energy projects related to self-generation of electricity and energy storage. These projects involve communities owning and operating their own electricity generation and/or storage systems. Typically, the electricity generation comes from renewable resources, and there is a clear social or community purpose or benefit associated with the project.

Community energy projects go beyond just environmental outcomes and also deliver social value to the community. This can include increased accessibility to clean energy,

promoting energy equity by addressing disparities in energy access, empowering communities to have control over their energy sources, and fostering community engagement and cooperation.

Increased awareness of Community Energy Projects

The availability of distributed energy resources presents exciting opportunities for communities to explore options for “behind the meter” electricity generation and usage. Governments also recognise community energy projects as a means to increase renewable electricity generation without necessarily adding strain to local electricity distribution networks.

In some cases, communities may have an electrical connection but require more power than the existing connection can provide. In such situations, implementing a community energy project may be a more cost-effective solution compared to upgrading the power line infrastructure to accommodate higher power demands.

There are instances where distribution lines are fragile or vulnerable, leading to frequent outages for residents located at the end of these lines. In these cases, businesses or communities may choose to generate and store their own electricity while remaining connected to the grid. This allows them to continue operating, albeit at a reduced capacity, during grid failures.

¹ Explaining inclusivity in energy transitions | Local and community energy in Aotearoa New Zealand | Elsevier Enhanced Reader

For many communities, having control over their essential needs such as water, education, or electricity is crucial. Energy independence can be driven by various factors, including resilience and the desire to avoid reliance on entities that may not align with the community's values. Some communities seek independence from mainstream infrastructure and the organisations that control it.

It's important to note that achieving full energy independence can come with higher upfront and ongoing costs compared to being part of the grid. It also requires the community to possess, learn, or outsource a specific set of skills to effectively manage their energy systems.

Lower cost or stable cost of electricity

Self-generation of electricity through community energy projects can offer long-term cost benefits, particularly as electricity prices may increase over time. While the initial investment and installation costs of self-generation systems may be higher compared to relying solely on the grid, the stable and predictable pricing of self-generated electricity can provide advantages in the long run.

The price of electricity from the grid can be influenced by various factors such as transmission and distribution charges, and market fluctuations. In contrast, self-generated power from renewable sources, such as solar or wind, has relatively stable costs once the initial investment is made. This stability can provide financial certainty and protect against future price increases in grid power.

Furthermore, as technologies for self-generation and energy storage continue to improve and become more cost-effective, the overall costs associated with self-generation projects are expected to decrease, making them an even more attractive option for communities.

Economic payback or return on investment

Financial viability is an important consideration for energy projects, including community energy initiatives. Evaluating payback periods is one way to assess the economic feasibility of a project.

The payback period refers to the length of time it takes for the financial savings or benefits generated by the project to equal or exceed the initial capital investment. It provides an indication of how quickly the project will recoup its upfront costs.

A simple way to calculate the payback period is by dividing the capital cost of the project by the annual savings it generates. If the payback period is shorter than the expected lifespan of the project (typically taken as 25 years or the estimated

operational life), it indicates that the project is financially viable and will likely provide positive returns.

However, it's important to note that payback periods alone do not capture the full financial picture. Other factors such as ongoing operation and maintenance costs, financing arrangements and available incentives or subsidies should also be considered. *(More about this in Section 7 on Finance and contract options.)*

Building local capacity, upskilling, job training and new business opportunities

Energy projects, particularly community energy initiatives, can have significant long-term benefits for the local community beyond just financial returns, including:

- **Economic Development:** Successful energy projects can generate revenue streams that contribute to the local economy. The income generated can be reinvested in critical infrastructure, education, and other economic activities, fostering growth and development within the community.
- **Job Creation:** Energy projects often require a diverse range of skills during the development, construction, and operation phases. These projects can provide employment opportunities for community members, including the development of new skill sets specific to the energy sector. This can lead to job creation, capacity building, and the potential for new career paths within the community.
- **Community Empowerment:** Engaging in energy projects helps community members gain a better understanding of energy systems, renewable technologies, and sustainability principles. This increased knowledge and awareness can empower individuals and communities to take more active roles in shaping their energy future, leading to increased self-sufficiency and decision-making power.
- **Knowledge Transfer:** As community members participate in energy projects, they acquire valuable skills and experience that can be transferred to other initiatives within the community. This knowledge sharing enables the community to develop its own resources, processes, and abilities related to energy generation, management, and efficiency. It also enhances the community's resilience and ability to tackle future energy challenges.
- **Innovation and Entrepreneurship:** Energy projects can spark innovation and entrepreneurship within the community. As individuals gain expertise and identify opportunities in the energy sector, they may start new businesses or initiatives, creating a supportive ecosystem for sustainable energy development. This can lead to the growth of local industries, the attraction of investments, and the establishment of a renewable energy hub within the community.

Defining success for your project

After the initial excitement of the project completion, it is essential to evaluate the outcomes and assess whether the Community Energy Project (CEP) has met its intended goals and aspirations. Here are some considerations to help define success:

- **New capabilities and benefits:** Identify the specific benefits that the CEP provides to the community that were previously lacking. These could include increased energy access, reduced energy costs, improved energy resilience, environmental benefits, and community empowerment. Assess whether the CEP has successfully delivered these benefits and if they align with the community's motivations for creating the project.
- **Stakeholder satisfaction:** Engage with stakeholders involved in the project, such as community members, supporting organisations, and partners, to assess their satisfaction. Seek feedback on their expectations and whether the CEP has met them. Address any concerns or areas of improvement to ensure stakeholder satisfaction and ongoing support.

By considering these aspects, the community can assess the success of their CEP and identify areas for improvement, ensuring that the project aligns with the community's needs, aspirations, and capabilities. Regular evaluation and adaptation are crucial for maintaining the CEP's long-term viability and maximising its benefits for the community.



Initial Scoping and Project Feasibility Assessment

Conducting an initial scoping and project feasibility assessment is crucial for defining the vision of the community energy project and ensuring its successful implementation. Here are some key points to consider:

- **Defining the Vision:**

- Use the initial scoping process to document and consolidate the ideas and aspirations for the project.
- Engage stakeholders and community members to contribute their input and ensure alignment with community objectives.
- Clearly articulate the desired outcomes and long-term vision for the project.

- **Developing a Step-by-Step Plan:**

- Break down the project into manageable steps or phases to effectively allocate time, effort, and resources.
- Create a project roadmap that outlines the key milestones, tasks, and timelines.
- Establish a mechanism for tracking progress and adjusting the plan as needed.

- **Assessing Feasibility:**

- Conduct a comprehensive assessment to determine the feasibility of the project, considering technical, economic, social, and environmental factors.
- If necessary, seek professional assistance to conduct the assessment, with a budget typically around 10% of the total project costs.
- Leverage existing skills and expertise within the community to reduce costs, but ensure that the assessment is thorough and comprehensive.

- **Evaluating Alternatives:**

- Explore different options and scenarios during the feasibility assessment to identify the most viable and beneficial approach.
- Consider alternative solutions, technologies, or financing models that may offer improved outcomes or cost-effectiveness.
- Be open to adjustments or modifications to the initial project scope based on the findings of the assessment.

- **Time and Money Well Spent:**

- Investing time and resources in the initial scoping and feasibility assessment is a wise decision, as it helps avoid potential pitfalls and ensures informed decision-making.
- Identifying challenges, risks, or opportunities early on can save significant time and money in the long run.
- If the assessment indicates that the project should be delayed or reconsidered, it is better to make that decision early rather than investing in an unviable project.

By conducting an initial scoping and feasibility assessment, the community can develop a clear vision, create a realistic plan, and make informed decisions about the project's viability and potential alternatives. This process lays the foundation for a successful community energy project.

Additional key elements, which are covered in this guide, that are also important to consider include:

- **Community:**

- Clearly identify the community's objectives and desired outcomes.
- Understand the connection between community activities and energy.
- Determine if the project originated from the community or was brought to them.
- Assess the overall community sentiment towards the project.
- Identify the types of support the community can provide.
- Determine the long-term involvement of the community, such as being customers or investors.
- Consider any stakeholders who may be reluctant to support the project.
- Assess whether the project will have a net positive impact on the community.

- **Sizing and Siting:**

- Understand the local context, including location, topography, utility connections, and community systems.
- Explore energy-saving and energy efficiency measures to reduce energy demand.
- Determine the appropriate scale of the project based on local energy demand or commercial benefits.
- Assess the feasibility and cost of connecting the project to the grid.
- Consider the grid's capacity and potential upgrades required at the interconnect point.
- Understand the legal requirements related to land use, such as lease, purchase, or community agreements.

- **Project Type:**

- Identify suitable energy generation and storage options that align with community energy demand.
- Assess the current and potential energy use within the community.
- Determine the generation technology to be used.
- Define the power generation profile and capacity to deliver services to the grid.
- Determine the relationship with the grid in terms of visibility and control.
- Consider the existing and future infrastructure required for electricity distribution.

- **Energy Trading:**

- Define how the electricity generated will be utilised.
- Explore options such as on-site consumption, selling to a retailer or wholesale market, or power purchase agreements.
- Consider the potential for peer-to-peer energy trading arrangements.

- **Consents and Studies Required:**

- Identify potential constraints, including consents, regulations, geotechnical considerations, and heritage factors.
- Determine the necessary council and resource consents.
- Assess the requirement for environmental impact assessments.
- Consider the need for a grid integration study.

- **Project Economics and Funding:**

- Conduct options analysis to evaluate viable project options, including the "do nothing" option.
- Assess whether the electricity produced will generate sufficient value to cover project costs.
- Identify potential funding sources and evaluate the feasibility of funding the project.
- Determine the distribution of financial benefits, such as reduced energy prices or dividend sharing.

- **People:**

- Evaluate the skill sets available within the community and the need for hiring external expertise.
- Consider the technical capabilities required for the project.
- Assess the commercial acumen needed for project management.
- Identify community leadership and engagement skills.
- Consider the requirements for legal knowledge and accounting.

Considering these elements during the initial scoping and feasibility assessment will help ensure a comprehensive understanding of the project's viability, community support, financial aspects, and necessary skills for successful implementation.



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