Community Energy

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community support case studies

Harlaw Hydro

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Harlaw Reservoir, Balerno, Scotland

Location: Harlaw Reservoir, Balerno, Scotland

Development stage: Operational

Organisations involved: Harlaw Hydro Ltd, Balerno Village Trust, Community Energy Scotland

Technology type: Micro-hydro

Generating capacity and output: 85 kW peak capacity, generating 283,183 kWh over the last financial year (enough to power approximately 105 homes based on average household consumption of 2,700 kWh). Over its projected 40-year lifetime, it will generate 11.3 GWh (equivalent to powering approximately 4,200 homes for a year).

Business model: Industrial Provident Society (IPS) setup for the benefit of the community, now called a Community Benefit Society (Bencom).

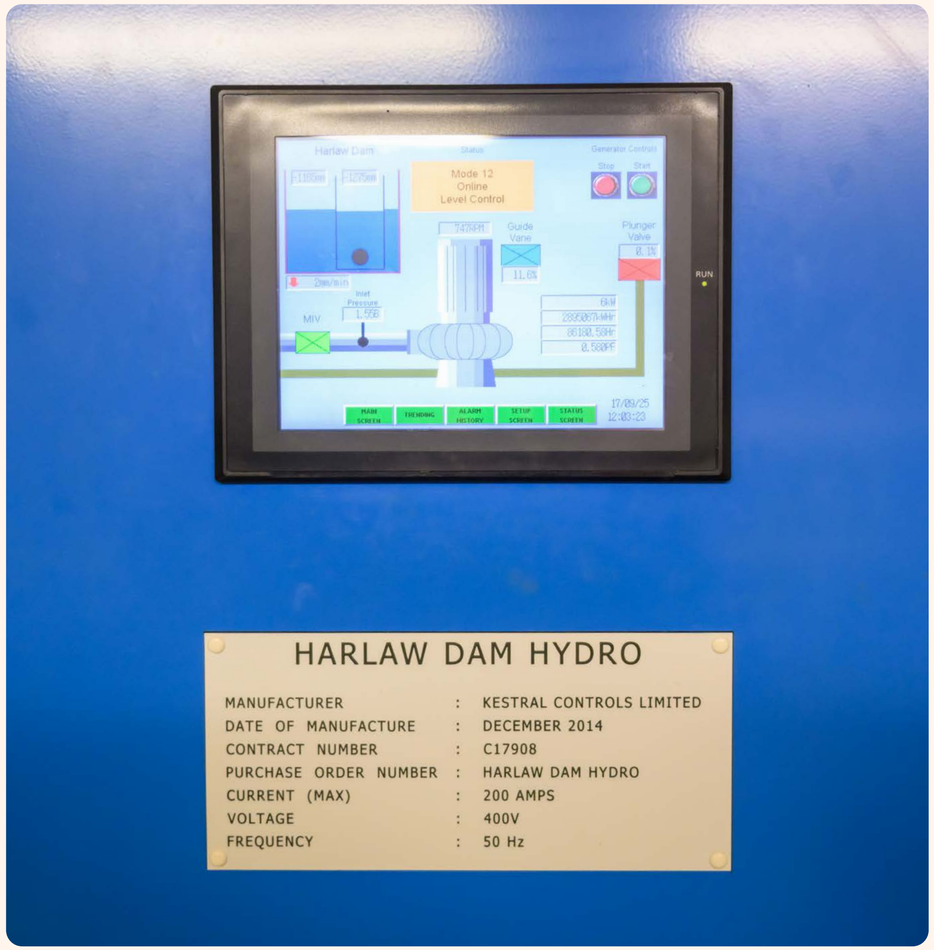
Finance: Raised £403,000 through two community share offers. Community share offers are a form of crowdfunding, allowing people to invest in community projects and receive modest annual returns from project profits.

Community benefit: Generated over £1 million in revenue during its first decade, with over £400,000 going directly to community projects.

What is (micro) hydro?

A hydro scheme harnesses flowing or falling water to generate electricity. Water is channelled through turbines, which spin generators to produce renewable power. Micro-hydro is a small-scale project of up to 100 kW in capacity (the amount of electricity it can generate at any one time), which can power the equivalent of over 100 homes annually.

The challenge that sparked action



In 2009, Balerno Village Trust (BVT) – a relatively new organisation – was exploring how best to develop and serve its community. They decided to run a workshop, open to everyone in the community, to discuss and 'brainstorm' a range of ideas. One of the best-supported ideas was the development of a hydro scheme that would utilise the infrastructure built in the 1800s to provide water to the power industry in West Edinburgh. The ambition was to harness renewable energy in an environmentally responsible way while generating funds for future BVT initiatives.

Located at Harlaw Reservoir in Balerno, Scotland, construction began in 2014 and was completed within a year, with the first electricity production in July 2015. The turbine's output is sold to the grid, generating an income stream that supports community development initiatives via the Balerno Village Trust.

The scheme has generated over £1 million in revenue and contributed over £400,000 to the community in its first decade.

What makes a good hydro site?

1. Good energy output: Hydro requires both a steady flow of water and a good height for it to fall (the height is called the head). The higher the drop and the more water flowing, the more energy can be generated.
2. Good site access: easy physical access to the site to deliver, construct and provide on-going maintenance will mean lower development and operational costs.
3. Nearby demand for electricity: sites that use more electricity onsite and limit the export of surplus electricity to the grid are almost always more financially viable.
4. Good grid connection point: if exporting to the grid, the cost of cabling/groundworks will be lower for sites closer to the grid connection point. Sufficient grid connection capacity also limits the need for potentially costly upgrades to existing infrastructure at sites.
5. Sites with single landowners/co-operative neighbours: agreeing terms with a single landowner is likely to be quicker and simpler than negotiating agreements between multiple landowners, which can often be time-consuming and complex.
6. Limited impact on the environment: planning permission and water abstraction licencing will be easier to secure where there are fewer environmental sensitivities/barriers.

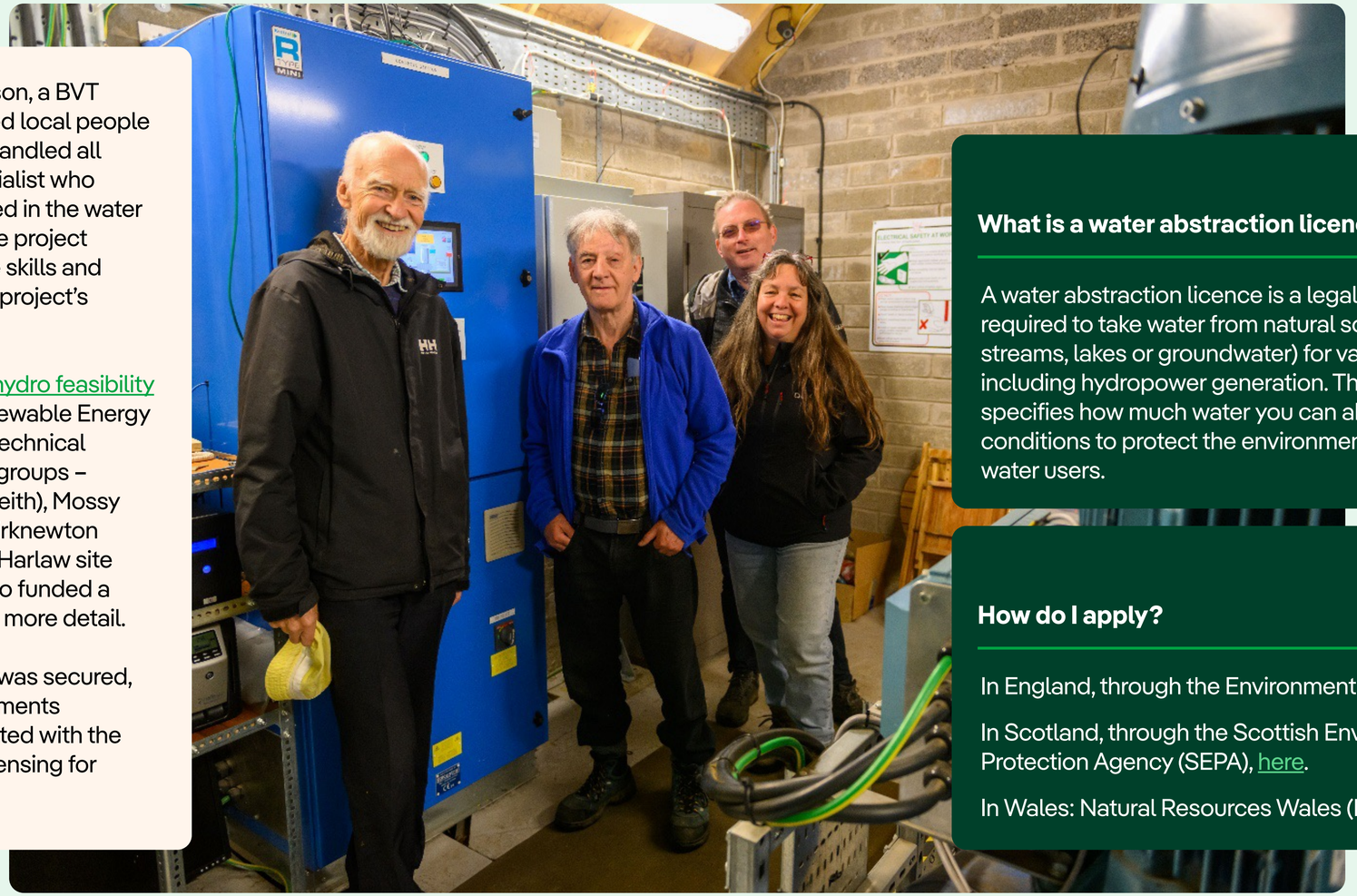
For more detailed guidance see the British Hydropower Association's guide to mini-Hydro developments.

Building from the ground up

The project's success began with local expertise. Lynn Molleson, a BVT member whose knowledge ignited the whole project, gathered local people she knew had professional skills, including a draftsman who handled all the work on the planning permissions, an environmental specialist who arranged the environmental studies, and someone who worked in the water sector who arranged the water license. Martin Petty, one of the project leaders, notes that within every community, there are valuable skills and expertise. Identifying these local resources was critical to the project's success.

In 2009, Community Energy Scotland (CES) initiated a micro-hydro feasibility along the Water of Leith using a CARES (Community and Renewable Energy Scheme) grant of £30,000. The study involved exploring the technical and commercial viability of five potential sites, with four local groups – Harlaw (led by BVT), Redbraes (led by local charity, Greener Leith), Mossy Mill (led by the City of Edinburgh Council), Harperrig (led by Kirknewton Development Trust) and Dean Village. After analysis, only the Harlaw site was deemed commercially viable. The same CARES grant also funded a follow-up feasibility study on the Harlaw site to confirm this in more detail.

From there, the project evolved steadily. Planning permission was secured, a water abstraction licence was granted, environment assessments completed, and the heads of a lease agreement were negotiated with the City of Edinburgh Council (see an overview of hydropower licensing for England, Scotland and Wales).



What is a water abstraction licence?

A water abstraction licence is a legal permission required to take water from natural sources (rivers, streams, lakes or groundwater) for various purposes, including hydropower generation. The licence specifies how much water you can abstract and sets conditions to protect the environment and other water users.

How do I apply?

In England, through the Environment Agency, here.

In Scotland, through the Scottish Environment Protection Agency (SEPA), here.

In Wales: Natural Resources Wales (NRW), here.

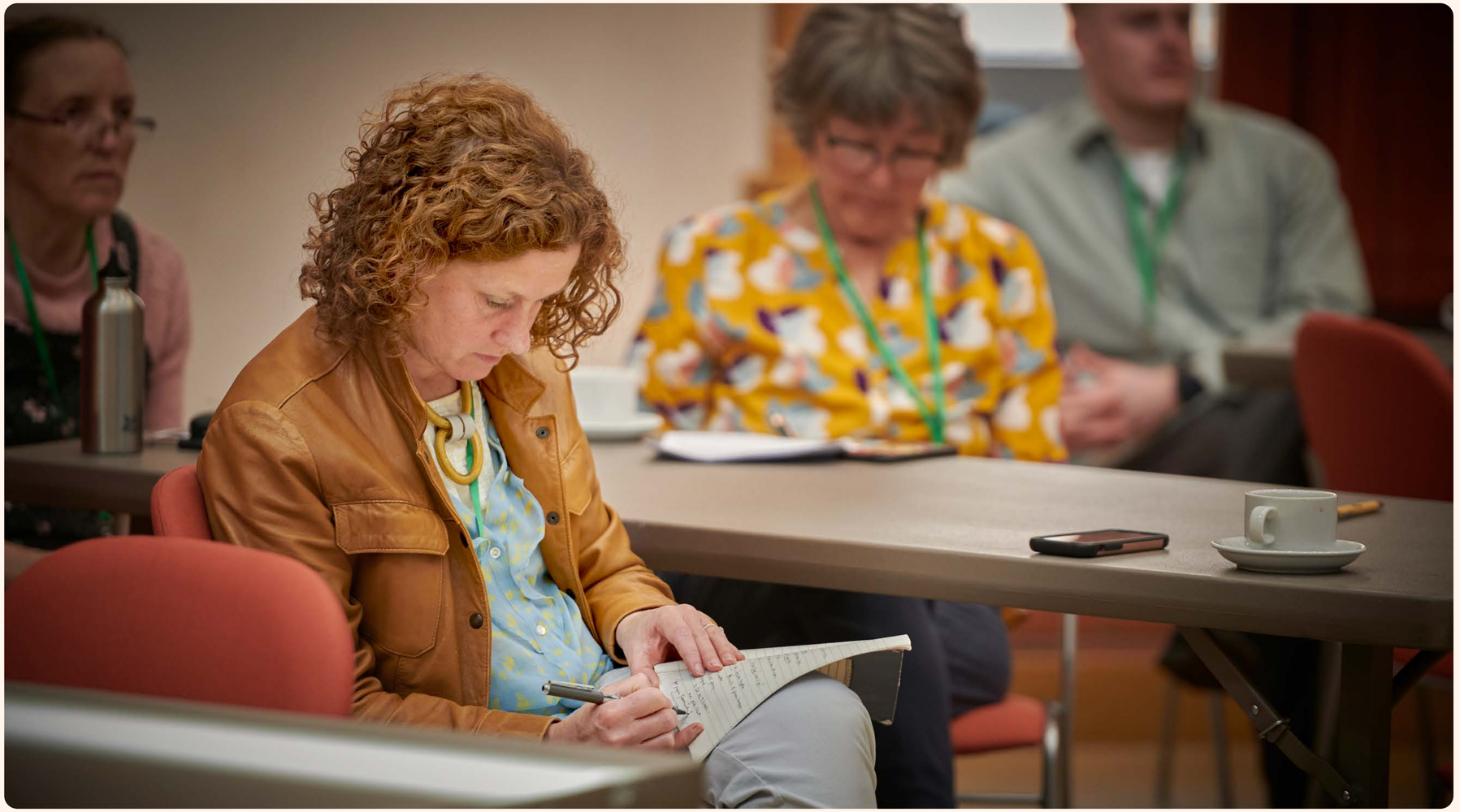
Raising finance – a surprising success

Securing funding became the project's biggest hurdle. Efforts to secure funds from traditional banks proved challenging. Community shares were introduced as a potential solution. With help from Community Energy Scotland, they were put in touch with the Cooperative Enterprise Hub, which explained that while BVT could not sell shares directly, it could create a community benefit society (BenCom) to do so. Harlaw Hydro Ltd was constituted in 2012 and launched its share offer in April 2013.

They held a public meeting to launch the community share offer, originally aiming to raise around half of the required funds and borrow the rest. At least 250 people turned up to the local church hall, which could technically only seat 150, to hear about the share offer. Within three weeks, they had raised the initial £313,000 from 250 local investors.

This response was the result of months of careful planning. Early in the project, the team had spent considerable time building awareness. Then, when they launched the share offer, they used every available communication channel. They sent information sheets to local families via the school, advertised in the local newspaper, attended the local farmers' market and hung banners in the community.

A second share offer in December 2014 raised the total to £403,000, fully funding the project through community investment alone.

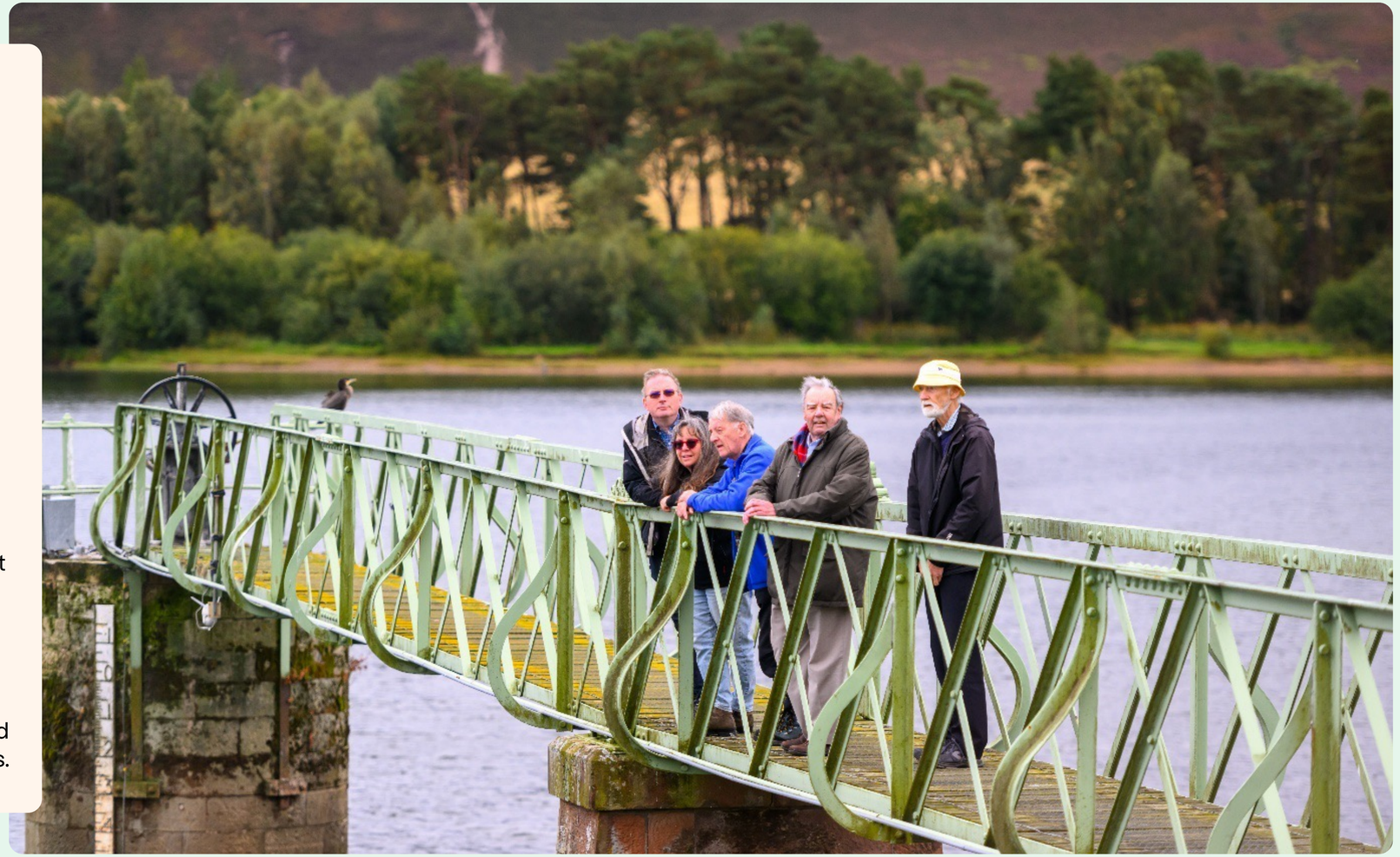


A bureaucratic hurdle

Even with funding secured, the project faced significant delays from the council in finalising the lease agreement, preventing construction from commencing. While the council was supportive in principle and provided an outline of what the lease would entail, BVT found themselves in a cycle of correspondence for months with limited progress.

One issue caused delays for some time. The project team wanted to have one contractor responsible for the design and build of the scheme, a common approach to streamline delivery and reduce risk. However, the council required detailed design specifications before finalising the lease, which made it challenging for the team to appoint a contractor. To solve this challenge, the project team engaged an experienced micro-hydro designer to provide the necessary details. This helped progress, but a year after the share launch and inflow of funds, the lease agreement was still not finalised.

Following Harlaw Hydro's first AGM, and in hopes of moving the project forward, many of the members present emailed the council leader, deputy leader and chief executive. By the end of that week, a senior official from the estates department had been specifically appointed to resolve the issue. Two months later, all necessary paperwork was complete. The project leader described this successful resolution as demonstrating "the power of the people" – showing how organised and strategic communication can help move along bureaucratic timescales.

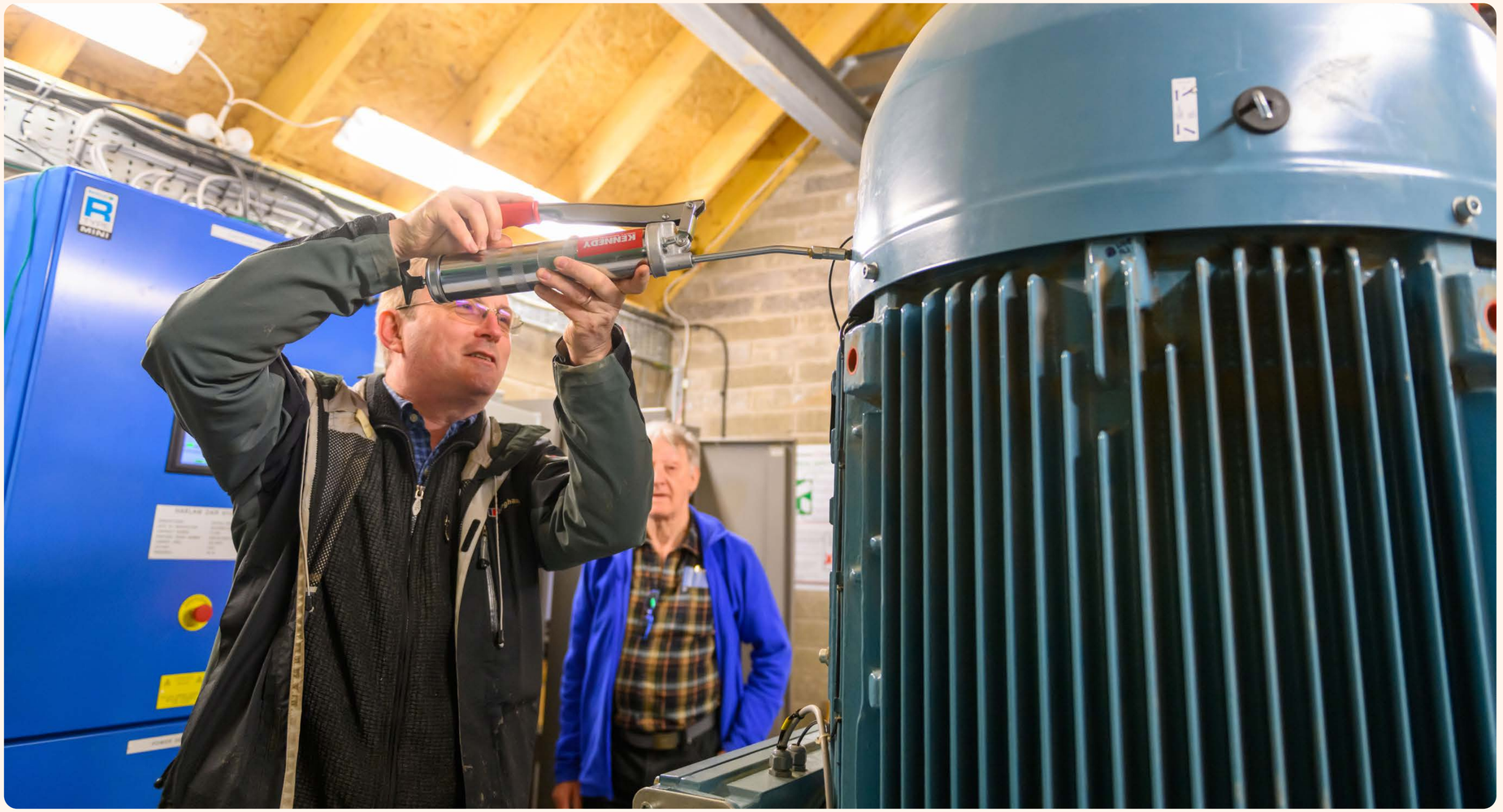


Key lesson for community energy groups

The Harlaw Hydro project highlights the crucial importance of early and frequent communication with the local community. By spending months building awareness through local channels before launching their share offers, the team fostered trust and community buy-in, which was essential to their fundraising success. As the project leader advises, when people are caught by surprise, their instinct is often to say no, so giving stakeholders time to absorb information and engage early makes all the difference.

Harlaw Hydro also shows how tapping into local expertise and maintaining clear communication helps community energy groups overcome obstacles and deliver meaningful renewable projects. Its success provides a practical blueprint for others seeking to build sustainable, community-owned energy solutions.

Want to see Harlaw Hydro in action?
Visit their live dashboard which tracks generation in real-time on their website here.



Glossary

Name	Definition
Community benefit society (Bencom)	A legal structure designed for social enterprises that exist to benefit the wider community. The organisations can raise money through community share offers and pay dividends to investors, though these are capped to ensure most profits flow to the local community.
Co-operative	A legal structure owned and controlled by its members. Unlike a community benefit society which serves the wider community and is typically more local in nature, a co-operative is controlled by members who are the main recipients of any benefits. These can be local people, organisations or investors.
Feasibility study	A detailed assessment to understand whether a project is technically possible, financially viable and worth pursuing before committing to full development.
Grid connection point	Where energy projects connect to the electricity network to send power to homes and businesses.
Head	For hydro projects, this is the height water falls from the water source to the turbines, which determines how much power the hydro system can create.
Industrial Provident Society (IPS)	The former name for community benefit societies and co-operatives before 2014. These organisations were set up to benefit their members or the wider community rather than just make profits.
kW (Kilowatt)	Measures how much electricity something uses or produces at any moment, like a speedometer shows how fast you are driving. A kettle uses about 3kW when running.
kWh/GWh	Measures energy use over time, similar to how kilograms measure weight. A **kWh (kilowatt-hour)** is what you see on your home electricity bill. If you run a 3kW kettle for 20 minutes, it would use 1kWh. A **GWh (gigawatt-hour)** is much larger (one million kWh), or enough to power over 300 homes for a whole year.
Lease agreement	A legal contract between a land or property owner and a community energy organisation, allowing use of land or water rights over a specified period.
Planning permission	Official approval from local authorities, usually required before you can build or develop a project.
Water abstraction licensing	Legal permission required to take water from natural sources (rivers, streams, etc) for various purposes, including hydro.

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