

ENERGY for EDENDERRY

A local community co-operative for the Edenderry people

Around the world, people are realising that climate change is a real and pressing issue. The effects of climate change are already being felt by people and the planet, and if we don't take steps to address the problem, things are only going to get worse. Thankfully, there is something we can all do to help mitigate climate change and the energy crisis.

We recently formed a **community-owned co-operative** based in Edenderry entirely dedicated to find solutions to our energy problems. **Edenderry Village Energy Limited (EVE)** is a not-for-profit enterprise created for the benefit of the residents and wider community. Anyone in the village can join the co-operative and play an active part in this unique community energy project.

As a community co-operative, we abide by the principle of '**one member, one vote**' so that anyone involved has an equal say on how the enterprise will be run and managed. Any surplus made will be equitably and fairly distributed, often re-invested in the enterprise to guarantee its success and in a 'community fund' to support local initiatives.

The enterprise's objectives are

- **to develop, build and run a decarbonised district heating system**
- **to provide affordable hot water and heating to Edenderry residents.**

Our aim is to achieve this together as a community. The project will be owned and run by the members and for the members in the community.

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Who are we?

The story so far...

Edenderry Village Energy Limited (EVE) was initiated by a group of local residents with a common belief in the power of collective action and shared concerns about the impact of climate change. We are passionate about driving locally the just transition to clean energy.

The directors are Andy, Kyle, Rónán and Steve – a mix of old friends and new, long term residents and more recent arrivals who share a passion for the Village.



l-r Ronan Davison-Kernan, Andy Hebdon, Tiziana O'Hara (Co-op Alternatives), Andy Frew (NICE), Colin Dunlop (Edenderry Residents Association), and Karen Arbuckle (NICE)

We believe that this community energy project has a huge potential to reduce our carbon emissions (by a third) while utilising a nearby natural resource, the Lagan.

Early 2021 Kyle and Rónán are engineers in the energy sector, working on heating, grid and renewables projects. Based on work Kyle was doing on projects in GB taking heat from rivers to warm buildings, we asked: why can't we do the same in Edenderry and use heat from the Lagan to heat our homes in the village? Andy and Steve came on board and with help from NI Community Energy (NICE), we applied to the National Lottery for funding and

secured a small grant under the Awards for All scheme.

Mid 2021 We appointed GeoServ Solutions to investigate further the possibility we had while we officially registered a community benefit society with Co-op Alternatives via the Belfast City Council support programme. We also started to engage with DfE, Queens University and Belfast City Council and gauge their support for this community initiative.

Our supporters:



Heating without burning

Edenderry is made up of a mix of old and new houses. Our energy use survey in 2021 showed that the energy efficiency of the houses in the village is quite low.

We all know of the importance of moving away from oil and gas – for the climate, for our air, and because of rising and volatile prices. **We need to find a way to heat our homes without burning dirty and expensive fossil fuels.**

Heat pumps provide a way to do this, and it is expected that air source heat pumps, which concentrate heat from the air to warm a house, will be a solution for many. However, these tend to provide ‘low grade’ heat, and don’t work as well in cold weather, meaning that houses using these systems need a high level of energy efficiency.



Providing this energy efficiency in Edenderry would cost in the region of £20,000 per house and would likely require external insulation to be added, changing the character of houses. It would also require substantial draft proofing work, underfloor heating and installation of new ventilation systems – as well as the cost of the heat pumps.

Our proposed solution

There is another solution: **water-source heat pumps**. Rather than air, these take

Analysis of the energy demand in Edenderry

Based on the overall space needed heating in our homes and the usage of domestic hot water in the village, GeoServ estimated a need of 2.5 GWh of heat per annum.

This means that we would need to burn 250,000 litres of oil to provide that heat.

Equivalent to releasing in the air 850 tonnes of CO2!

heat from water to warm houses. Water is denser than air and holds more heat; it also doesn’t get as cold in Winter. This means that water source heat pumps produce more ‘high grade’ heat, and work better when they are most needed. **This means there is less need to do work to homes.**

Rather than every house in the village having its own connection to the river, we think that **the best approach is to join forces and build a single, efficient system that supplies the whole village.**

A District Heating System, built in phases, can reach out all the residential homes in the Edenderry Village.

Flow data from the River Lagan demonstrates that even at low flow levels, the river has the ability to sustain a heat pump based district heating network that can deliver heating and hot water to the individual residences. This will allow us to implement a technology that is not reliant on gas and can easily integrated with other renewable sources of energy such as solar panels, to generate the required heat.

District heating systems are growing in popularity. As of 2019, there are more than 17,000 heat networks in the UK delivering heat to almost 500,000 consumers – 11,500 are community heating systems. Considering that in 2013 there were an estimated 2,000 heating networks in the UK, this shows rapid growth. Most of these networks are located in England, with 25% in London. With targets in place to reduce carbon emissions, this number could be set to increase as the UK government wants 17% of heating to be provided through district energy by 2030.

In Northern Ireland, the Department of Economy has shown some initial interest in our project and new funding is becoming now available to explore further this type of solution.

GeoServ has provide us with a possible layout for the district heating network that would comprises the 4 main areas of the village and this will require 2.7 km of

pipework to be lay down in a phased approach.

Through the feasibility report, we realised that we can build the system in two ways. We can build a central heat pump near the Lagan, use thermal storage and PVs to operate it, and deliver hot water to individual residences through the pipe network. Alternatively, we could circulate the source water from the Lagan through the network to each residence that will have their individual heat pumps to convert the source into heat for their homes.

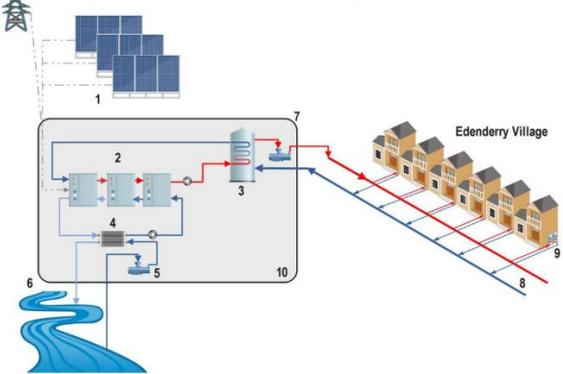
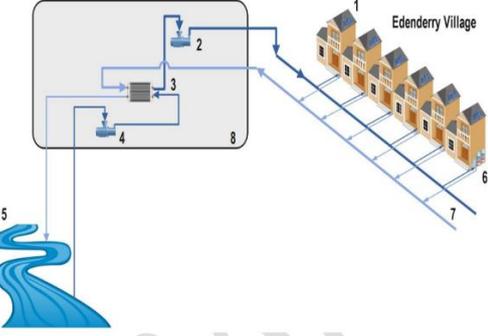


This system would be owned and operated not-for-profit by EVE for the benefit of the village, and all revenues would be used to minimise operating cost.

Our studies show that this will provide long term reliable heating to the village at a lower cost than oil or gas.

The System could look like either

From the initial feasibility study, we have estimated some costs. These costs are indicative only, at this stage.

Option A	Option B
 <p><i>Figure 8. Edenderry DHN with centralised plant room and heat pumping using the River Lagan as a source (Option A) - 1) EVE Community PV plant; 2) Cascade High Temperature Heat Pumps; 3)</i></p>	 <p><i>Figure 9. Edenderry DHN using the River Lagan as a centralised source and plant room pumping station for use by individual residential heat pumps (Option B) -1) Residential PV Installations; 2)</i></p>
Centralised system, closer to Lagan with large water source heat pumps and hot water pumped to houses.	Single water source, cold water pumped to houses and individual heat pumps in each household.
Estimated Capital costs	
£4.8 million	£5.7 million
Annual costs per household (terrace houses)	
£933	£983
Annual saving to residents compare to gas	
£458	£408
Main Advantages	
<ul style="list-style-type: none"> • Lower overall cost • Less equipment in houses • Can be integrated with solar panels 	<ul style="list-style-type: none"> • Decentralised • More flexible and easier to manage • Less capital cost upfront

The full Feasibility Study can be accessed here with the QR code.

Watch our video on the Belfast City Council website:

<https://youtu.be/SrwUkgDqIhE>

Any questions send an email to Ronan, Andy, Kyle and Steve. Email

edenderry.village.energy@gmail.com.



What stage are we at now?

We have completed our feasibility study and are now engaging with the Department for the Economy on potential support for the project.

Before we take it forward, we would like your support and to hear from you about your views on the project.

Why should you join?

Residents joining the project will have the opportunity to:

- Be part of a unique community energy project in NI and work alongside your neighbours to make it happen
- Save money on energy bills (expected savings of £200 - £500/yr)
- Decarbonise heat and lower carbon emissions by one third
- Employ new technologies like heat pumps and utilise natural sources
- Experience a sense of empowerment from the ownership of the renewable energy project.
- Attract investment in Edenderry and boost the local economy, potentially create jobs
- Generate income to fund more local projects in Edenderry
- Inspire the community to tackle other local issues
- Show everyone – young and old – that change is possible



Interest form

If you are interest in joining, please complete the form below and return to the Edenderry Village Energy today.



Name

Surname

Address

Email

Mobile

I am interested in (tick as appropriate)

Join EVE e-mail list only

Join as a member of Edenderry Energy Village with £1 share

By provide this information I agree to all the information disclosed here being held on a database in compliance with EU General Data Protection Regulations (GDPR). I understand that this information will be used by Edenderry Village Energy Limited only and will not be passed to third parties.

Signature:

Return this form to the Ronan, the Secretary of Edenderry Village Energy, at edenderry.village.energy@gmail.com or drop it to St Ellens Tower, Edenderry.

Additional benefits of membership

1. **Support** the community energy project and the just transition to clean energy. Actively participate in the design of potential solutions.
2. **Connect** with like-minded members in your community
3. **Campaign** for the project and put Edenderry on the map of change
4. **One member, one vote** at General Meetings, including Board elections
5. **Opportunity** to stand for election to the Board

Edenderry Village Energy Limited is a community benefit society registered with the Financial Conduct Authority (Reg. no. 8725) under the Co-operative and Community Benefit Society (NI) 1969 Act since Sept 2021. Our governing documents (Rules) are public and accessible through the Mutual Public Register.

What is a district heat system?

District heating systems deliver energy, that's generated in a single location, for central heating and domestic hot water to a number of residential and commercial buildings in a particular area.

What is a heat pump?

A heat pump is a device which uses electricity to take low-grade heat from the environment and concentrate it. A fridge is a form of heat pump. Heat pumps can take heat from air, water, or the ground. When powered by renewable electricity, heat pumps provide heat with no associated CO2 emissions.

What is decarbonisation?

Decarbonisation is the process of reducing or eliminating carbon emissions from a particular process or sector of the economy. Decarbonisation might involve changes in technology, behaviour, or policy, with the ultimate goal being to reduce carbon emissions and take the necessary steps to limit global warming.

Why the water of the Lagan?

The Lagan is on our doorstep and provides a reliable source of heat for heat pumps. Because it is always flowing, the heat we take out of it will be constantly replenished. The Lagan powered and nourished the original linen mill that Edenderry was built for, and can now do the same for the village again.

What is a community benefit society?

A community benefit society (also referred as BenCom or Community Co-operative) is the legal entity set up under the Co-operative and Community Benefit Societies Act (NI) 1969. Regulated by the Financial Conduct Authority, they are enterprises owned by the members and benefiting the community at large.

What is community energy?

Community energy is all about a group of people coming together, taking action and using local resources to reduce, manage or generate their own energy.

Any questions to send an email edenderry.village.energy@gmail.com Visit our website at www.edenderryvillage-energy.com .