



Renewable energy

A practical guide to developing community renewable energy projects

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Getting started

This Community Guide provides you with information introducing and supporting the development of renewable energy projects in your community. Community owned renewable energy projects represent a powerful opportunity to give communities ownership over their own energy supply. They can help communities to reduce their carbon dioxide emissions, generate income, and act as a catalyst for other community-based projects.

Understanding the possible renewable energy generating opportunities in your community, working with the community to consider which options would be viable and well received, resolving myth and misinformation around some technologies, and using the knowledge and experience available in your community to collectively develop and implement a plan to deliver renewable energy in your area.

Community owned renewable energy projects represent a powerful opportunity to give communities ownership over their own energy supply.

What's involved



What is renewable energy?

Renewable energy is electricity or heat that is generated from natural sources such as sunlight, wind, or waves. Unlike conventional fossil-fuel derived energy (coal, oil and natural gas), the resources that produce renewable energy do not run out if properly managed and so may be considered sustainable.

Renewable energy is often called 'low-carbon' or 'zero-carbon' energy and plays an important role in contributing to a low-carbon future. The UK Government aims to generate 15% of electricity, heat and transportation energy from renewable sources in the UK by 2020. It's worth noting that what the Government considers as 'community-scale' renewable energy, as defined in the 2011 Microgeneration Strategy, actually goes up to 20MW capacity! This could be a project as large as 8-10 commercial wind turbines.

'Community renewable energy' should not be interpreted as meaning 'at the smallest scale'.

Common renewable energy technologies used in community projects include solar photovoltaic panels, solar hot water heaters, biomass boilers, ground and air source heat pumps, hydro schemes, wind turbines and anaerobic digesters. When implemented on a small-scale or individual basis, these technologies can be called micro-generation or 'micro-gen'.

Many factors determine what kind of project is appropriate for a given community. The initial factor to consider is the potential resources that are available in the area for renewable energy generation (e.g. wind, hydro or fuel for biomass projects), as well as potential locations for the technology. Other important factors to consider include the cost and public acceptability

of the chosen technology; the time and expertise people can dedicate to the project; identifying potential sources of funding and a legal form for the group; and the application to the local council for planning permission if applicable.



The Feed-in Tariff and the Renewable Heat Incentive are two incentives provided by the Government that guarantee a certain payment per kWh of electricity – or heat – produced from an installed renewable system. These payments allow communities to own and manage their own renewable schemes, with profits being ploughed back into community initiatives such as energy efficiency schemes, transport or youth facilities.

More information about the Feed-in Tariff and the Renewable Heat Incentive can be found at www.energysavingtrust.org



Why is renewable energy important?

Many people believe that we are facing the end of an era of easy-to-extract and therefore cheap coal, gas and oil. Stiff global competition for dwindling supplies of conventional energy fuels means that prices are likely to rise and stay high for the foreseeable future. High energy prices are quickly translated into higher prices for transport, goods and services, and will have a knock-on effect on the economy as a whole.

**4.75 MILLION
PEOPLE IN THE
UK ARE IN FUEL
POVERTY**

of energy. A renewable energy source may mean you can save money on domestic energy bills, and generate income through the feed-in tariff and/or renewable heat incentive. This can be invested in energy saving measures, which will offer further economic savings.

This is particularly important for people who may be struggling to pay their energy bills - 4.75 million people in the UK are in fuel poverty and spend more than 10% of their income on energy. Generating local income streams has the added benefit of boosting the local economy by providing locally-controlled income that can support other services.

Renewable energy schemes have important environmental benefits. Using renewable energy instead of fossil fuels will reduce your community's carbon dioxide emissions, which in turn can help to mitigate the impacts of climate change. This is important not just for your local environment, but for the planet as a whole.

Developing and owning a renewable energy technology means that your community could be more resilient to price fluctuations and the rising costs of energy.

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Department for Energy and Climate Change: Community Renewables Project

Community renewables refer to community projects which have a geographical basis that financial and other community benefits from the installation flow to local community bodies or investors.

A community renewable scheme may be developed by a non-profit distributing body benefiting its local community or by a profit-distributing body which is a social enterprise. It can also refer to joint ventures between community groups and commercial companies, where some of the control, ownership and benefits flow to the local community.

Any community structure is eligible for feed-in tariffs, but there are some additional benefits for some community groups. These tariff guarantees which fix tariff rates for a period and an exemption from certain energy efficiency requirements (for solar PV only), only apply to Community Interest Companies (CIC), cooperatives and Community Benefit Societies.

Ofgem website has more on FITs arrangements for eligible community groups. www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx

Who benefits from different types of community renewable energy projects?

Some confusion arises about the distribution of benefit from community-owned renewable energy projects. There are some important distinctions to make, depending on the scale and scope of the project:

Large-scale, grid-connected, electricity-generating projects – e.g. 2MW wind turbine, 1MW AD plant

These projects will be selling all their electricity output to the National Grid, via a utility company. They can generate significant sums of money (in the hundreds of thousands per year). Unless your community is very remote indeed, it's unlikely that the electricity from the turbine would be delivered directly to your homes, and that you would get reduced individual household electricity bills as a result. Instead, the benefits are in significant annual income to be re-invested in broader community initiatives. These could include insulation and home improvement schemes, or grants for household-scale renewables such as solar panels, which would indirectly reduce the bills of individual householders. In addition, there are likely to be shareholders who bought shares to raise the equity for the project – they will receive an annual dividend payment or at the very least, interest on their dividend, depending on the business model used.

Small scale electricity



generating projects – e.g. 10kW wind turbine, domestic solar PV (2-4kW) or solar PV on a school (e.g. 40kW)

These projects will be connected directly to the building(s) they serve. Therefore, when there is a demand for electricity from within the building (during daylight hours for solar), they will first draw on the renewables output and only use grid electricity as a back-up when the output is not high enough. As well as generating income from the feed-in-tariff, such systems will also directly save the building user money by not paying for grid electricity. If the systems were paid for by a community fundraising or share initiative, then the Feed in tariff payments would probably go back to the broader community, rather than the individual building user.

Small scale heating systems – e.g. solar thermal, individual

biomass boilers

These projects will again serve single buildings and will give a direct saving on heating fuel bills to the building user. If the projects were installed via a community fundraising initiative, then the Renewable Heat Incentive payments could go back to the community fund.

Large-scale district heating systems – e.g. a biomass woodchip boiler linking 40 homes, a school and a GP surgery

Since there is no 'National Heat Grid', all the output from big heat projects has to be delivered and used by individual buildings. A big project like this would get significant income from Renewable Heat Incentive payments, and the rest of its income from selling heat directly to end users. It would, in effect, be a small energy company selling heat – these are often known as ESCOs (Energy Service companies).



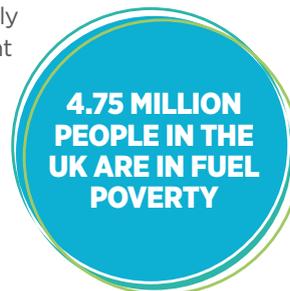
Top tips: Developing a community renewable energy project



- When starting out, it's advisable to interest as many people, organisations and service providers in your local area
- Develop a steering group to help shape the overarching goal of the project and how you will reinvest profits generated in the community e.g. to fund other low carbon projects
- Find out what skills and knowledge the community has to ensure that realistic and well-supported ideas are suggested from the start
- When making plans about potential opportunities in your area, considering the resources you have available and suitable sites for the technology. Contact your local authority, local energy agency and other established energy groups for support, technical advice, survey data, maps or finance
- At an early stage, provide information on the relative outputs of different sizes

and ensure that the whole range of renewable is put up for consideration. For example, you could provide comparative costs, energy outputs and income generated for a 50kW solar PV system, a 2MW wind turbine and a 1MW anaerobic digester: people are frequently surprised at different scale of return on investment, energy generated, and carbon emissions avoided that these projects achieve

- Use an open consultation process when developing a renewable energy project. It is important that you involve as many people as possible in a discussion about the local area. Generally, it is not a good idea to develop a fixed plan within a small core group and then try to 'sell' it to the rest of the community: you could end up creating a win-lose scenario against other



members of your community

- You will need to clearly communicate your ideas and proposals to gain the support and backing of others. This film from CSE's PlanLoCaL resources can help you think through your consultation approach. www.planlocal.org.uk/videos/videopages/running-a-community-consultation.html
- Research finance options and loan funding programmes that are available nationally and locally to help implement renewable energy technology. More information about funding your project is available in PlanLoCaL's suite of film resources, available here: www.youtube.com/user/csebristol#grid/user/EF5CB5EBC8419E11
- Plan for additional costs including administration, project management, communication, planning, testing, community share offers, land ownership/leasing, insurances, legal advice, installation, grid connection, ongoing maintenance, repair and taxes and decommissioning
- Link up with independent advisors and experts in the field. You may also be able to link up with community representatives who have energy, building, legal, finance or engineering experience to help guide projects. You also have to temporarily employ external consultants with technical expertise and provide independent advice...

Top tips: Continued

- Draft a renewable energy action plan based on community feedback to help progress ideas into reality. Incorporate some visible 'quick wins' actions to maintain momentum and encourage wider community engagement
- Be aware that capital expenditure on technologies that are very expensive per unit of energy generated (such as solar PV) can drain away investment from longer term, more productive projects such as AD, wind or biomass. Larger projects may need targets set around different stages to move forward
- Obtaining planning permission can be the most difficult part of getting a project off the ground. This can be time consuming and costly. Defra is developing the Rural Community Renewable Energy Fund providing funding to communities for feasibility assessments (please see Defra section under Further Information and Support)
- Find experienced and reliable installers to avoid the risk of badly installed equipment. Depending on the chosen technology, you might need to connect to the national grid and establish contracts with energy suppliers once system gets underway and is generating heat or electricity. Remember to plan and budget for this
- Remember to broadcast news of your success and progress as you implement the renewable energy project. Good PR can generate interest even before the project is finished and can also help attract funding



How to plan a biomass district heating system

Steps for planning a biomass district heating system for a small rural community might include:

- Developing an action plan within the core energy group (possibly involving the parish council)
- Providing information about the plan to the wider community, showing how much energy will be saved, how much heating costs will be reduced etc, and asking for opinions and feedback on the plan
- Conducting a biomass feasibility study for the area under consideration - including an identification of the sources of wood fuel
- Establishing the funding mix for the project (probably a mixture of shares, debt finance and grants/donations)
- Setting up a legal structure for the group to deliver heat, probably as an Energy Service Company (ESCO)
- Deciding on the boiler technology, possibly using outside consultants to advise on the boiler type and design of boiler house
- Obtaining any relevant reports from the Environment Agency or local authorities
- Gaining planning permission for the boiler house (if applicable)
- Installing the technology and connecting individual buildings to the heat supply
- Arranging contracts with wood fuel suppliers for delivery of woodchip
- Measuring energy savings
- Re-investing your profits in further energy saving measures such as pipe, loft or cavity wall insulation for homes or installation of solar PV panels on the local school roof



Case studies. The following examples are good practice of community-led projects in the UK that have used renewables to fund other local services and projects surrounding energy use.

Case study 1: Sustainable Hockerton, Nottinghamshire

Hockerton is a small, rural parish in Nottinghamshire. In 2006, villagers in Hockerton wanted to bring the community together, and held a series of meetings to discuss the idea of reducing the village's carbon footprint.

The outcome of these meetings led to a decarbonisation action plan to install a wind turbine that would provide ongoing revenue to fund other projects in the area.

The aim was to install a turbine that had an output equivalent to the energy consumption of the parish, selling this electricity to the grid and using the profits to invest in other projects that would benefit the community and represent the community's efforts to tackle climate change.

Sustainable Hockerton put their success down to the extensive community meetings.

As a result of the community meetings, the group set up Sustainable Hockerton Limited (SHL), an industrial and provident society, to raise capital to fund the wind turbine. SHL sold shares to 75 investors to pay for the turbine and £235,250 was raised via the website, email marketing and publicity in the community.

Navigating the planning system was a significant challenge for the Hockerton wind project.

A great deal of effort was put into drawing up a detailed application that covered the following:

- noise
- shadow flicker
- Ministry of Defence and Civil Aviation Authority requirements
- TV aerial disturbance
- wildlife and landscape impact
- electro-magnetic disturbance

THE VILLAGE ESTIMATES IT WILL GENERATE AROUND £60,000 A YEAR PAYBACK

Full planning permission was given in June 2008, and after arranging a grid connection the 225kW wind turbine started exporting electricity to the grid in February 2010. The village estimates that it will generate around £60,000 a year payback, and saves the village 136 tonnes of carbon dioxide per year.

Sustainable Hockerton put their success down to the extensive community meetings and consultations that they held within the community right from the start of their plan, resulting in a whole range of people working together.

Their advice is to find out what the community wants to do first, and to use that vision to move forward, rather than having a pre-determined plan of action.

They recommend spending a lot of time consulting with residents and local groups to find out where synergies lie between different projects.

The success of the project has been such that Sustainable Hockerton now runs training courses for other groups looking to embark upon a similar project.

More info at:
www.sustainablehockerton.org



Case study 2: The Fintry Development Trust, Scotland



Fintry Development Trust

Fintry Development Trust (FDT) is a community development trust formed in 2007 in the village of Fintry in Scotland. There is no mains gas supply to the village and the bulk of domestic heating is done through expensive heating oil or LPG. A survey in 2008 found that nearly half of the households in Fintry suffered from fuel poverty and, like many rural areas, it suffers from rural economic decline.

They estimate that once the capital cost of the turbine is paid off, this will be closer to £400,000 per year.

In 2006, a private developer proposed to build a wind farm of 14 turbines on nearby land in Fintry, later to become the Earlsburn Wind Farm. Local people entered into negotiations with the developer to expand the wind farm by one turbine, to be owned by the local community. The 'Fintry Renewable Energy Enterprise' (FREE) - a trading

subsidiary of Fintry Development Trust - was then set up by four residents to take this plan forward.

After extensive community consultation through leafleting, a series of public meetings and a survey, FREE found that local people were very supportive of the initiative. Because of this, the Community Council felt able to reject a community benefit payment offered by the developer in favour of pursuing the local ownership of a turbine and reaping the benefits of the significant income that it would create.

This resulted in the development company providing the capital for the installation of a community turbine in 2007 alongside the other 14 on site, with the village to pay the capital cost back to the developer over the first 15 years of operation.

The village now owns 1/15th of the total output of the wind farm, which provides around £30-50,000 profit for the village each year. They estimate that once

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the capital cost of the turbine is paid off, this will be closer to £400,000 per year.

The profits from the turbine are distributed by FDT. Income raised from the community turbine has funded several other energy-saving initiatives in the village.

The first project was to provide insulation to old, poorly insulated properties in the village. The trust surveyed over 300 rural properties in the Fintry Community Council area to establish the energy efficiency of the households and to determine whether they were eligible for free cavity wall or loft insulation funded by the trust.

Over half of the surveyed properties benefited from the free insulation measures on offer, saving on average £600 annually on their fuel bills. This represents a total increase in annual disposable income for the community of £91,352, and a reduction in carbon dioxide emissions by 464 tons each year.

The development trust has also funded new radiant heaters in the village hall, and a number of energy saving measures as well as a biomass boiler in the local Sports Club, representing over £6000 in savings from fuel bills.

The Fintry Trust puts its success down to linking the opportunity and money generated from the community wind turbine to other community issues.

More info at:
www.fintrydt.org.uk

Case study 3: Biomass heating in Gulworthy Cross, Devon



Efficient: A wood pellet boiler

St Paul's church is a Grade II listed building in the leafy parish of Gulworthy Cross, Devon, which is located in the Tamar Valley Area of Outstanding Natural Beauty. Between April and November 2008, the church replaced its worn-out storage and radiant heaters with a new radiator system coupled with a 50kW wood pellet biomass boiler standing in a 'pod' outside of the church.

The idea was to improve the heating systems of the local buildings and to utilise the surrounding woodlands.

The church group was originally approached by the Tamar Valley AONB office to see if they were interested in joining up with the local primary school and parish hall to undertake

a biomass project. The idea was to improve the heating systems of the local buildings and to utilise the surrounding woodlands to provide woodchips that could fuel a central boiler and supply piped hot water to the various properties.

The school was to house the large wood chip boiler but unfortunately had to drop out of the project, leaving the church with a newly installed radiator system but no efficient heating system. Tamar Valley encouraged the church to continue with the project on their own, as an alternative to installing an expensive oil furnace and also as a pioneer project for the area.

Grants and private donations were found to cover 100% of the boiler's installation cost, including the EDF's 'Green Fund', the

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Tamar Valley AONB's 'Sustainable Development Fund', and also the Building Research Establishment's 'Community Sustainable Energy Programme'.

After site surveys by two different installers, they realised that it would be difficult for large lorries to deliver woodchips to the area and that a large fuel store was not suitable for the church. A wood pellet boiler was instead considered a feasible option, but even this was too big for the boiler room in the vestry. The solution was to build a freestanding wooden 'pod' at the side of the church to house the wood pellet boiler and hopper.

As the church is a listed building, planning permission was needed from West Devon Borough Council before the freestanding pod could be constructed. This was gained by working closely with the church architect and the Secretary to the Diocesan Advisory Committee. The design of the wooden pod is in keeping with the building, and is tucked away out of the sight of the front of the church. The boiler now runs for about two hours a day and all morning for the Sunday service.

PlanLoCaL has a video about the project available at: www.youtube.com/watch?v=2CuLIWnz-wY&feature=player_profilepage

For more information please see: www.exeterstf.org.uk/document-library/Casestudy-WoodpelletboileratStPaul%2CGulworthy.pdf?attredirects=0

Case study 4: Endurance Wind Power - Wold Top Brewery

Tom and Gill Mellor are the owner-operators of a Yorkshire farm who have diversified to create a beer brewing company. The brewery produces 12 varieties of bottled beer and 18 different cask brews.

Aside from the environmental benefits, the Mellors decided to use wind power to expand the revenue stream of their business. The introduction of the Feed-in-Tariff (FIT) scheme in 2010 made the economics of installing a wind turbine more feasible and financially rewarding.

Steve Milner, from Earthmill, successfully assisted the Mellors with their planning application, calculating their economic return, the complete E-3120 installation, and the service/maintenance of the wind turbine from installation through the 20+ years of the wind turbines' operation. They ordered two 50kW turbines and over its first four months, the first turbine recorded 16,828kWh during one month alone.

The brewery consumes large quantities of energy due to the heating of water for bottle cleaning and sterilization. In one month, the brewery and the farm, combined, use approximately 20,000kWh. With a 6.5m/s wind speed, each Endurance E-3120 wind turbine will generate 194,300kWh annually.

This equals a total annual revenue generation and savings for both wind turbines of approximately £121,974.

Overall, the Mellors are expecting a five year return of 20% annually on their two turbines. Earthmill occasionally holds open houses at the Mellors' brewery and farm, where people can come and see the turbines first hand, witness their performance and directly ask questions.

The clean and renewable production of energy only contribute to national renewable energy and carbon emission reduction targets, but through the Feed-in-Tariffs it has also diversified and created a stable revenue stream for the Mellor's brewery.

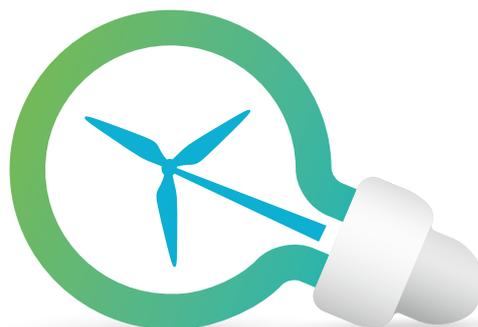
For more info: www.endurancewindpower.co.uk

**OVERALL,
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ANNUALLY**



Tom and Gill Mellor with the turbine installed on their Yorkshire farm which brews its own beer

Endurance[™]
wind power
we power the future



Further information and support

Information and help is available on renewable energy.

Good places to start:

- **PlanLoCaL**
www.planlocal.org.uk
PlanLoCaL is a suite of resources including films, a resource pack and website which aims to support communities and groups that are 'planning for low carbon living'
 - **Renewable Energy Association**
www.r-e-a.net
The trade body for a range of renewable energy companies in the UK
 - **Department of Energy and Climate Change's Community Energy Online Portal**
www.ceo.decc.gov.uk
A government website designed to provide advice and support to groups wanting to develop community energy projects
 - **Department for Environment, Food and Rural Affairs - Rural Community Renewable Energy Fund**
www.defra.gov.uk/rural/economy/services-transport/renewable-energy/
Defra will be launching a Rural Community Renewable Energy Fund to provide loans to rural communities to help them undertake the initial development work for renewable energy schemes
 - **Centre for Alternative Technology**
www.cat.org.uk
Offers a free information service answering enquiries on all aspects of sustainable living alongside well informed information sheets and publications
 - **The Energy Saving Trust - The National Energy Advice Service**
www.energysavingtrust.org.uk
The Energy Saving Trust is a non-profit organisation that provides free and impartial advice on how to save energy at home. Call 0300 123 1234
 - **Local Authorities**
Your local authority is likely to have officers who have specialisms in energy efficiency, renewable energy, transport and housing planning. They may be able to help communities looking to develop sustainable energy initiatives
 - **Planning Renewables**
www.planningrenewables.org.uk
Planning Renewables provides useful information to help councillors and local authority planning officers in dealing with planning applications for renewable energy developments
- Included on the website is some useful guidance around energy saving in the home, advice and the organisation provides advice and support to communities close to Bristol. It is worth checking whether you have a similar energy agency closer to home



This resource was produced for Action with Communities in Rural England (ACRE) by the Centre for Sustainable Energy - www.cse.org.uk

Reliable, renewable energy



Endurance Wind Power is a manufacturer of advanced wind turbines bringing efficient and reliable renewable energy to land owners, communities, businesses and institutions across the UK.

There are many challenges for communities interested in developing renewable energy projects including securing finance and finding a suitable manufacturing partner that can supply the relevant technology.

Endurance can offer a range of turbines from the E3120 50kW turbine and X-29 225kW turbine upwards. We offer a land rental scheme to individual landowners and communities to reduce the cost and risk of installing a wind turbine.

We can lease a small portion of land to install and run a turbine giving guaranteed

rental and a production bonus for producing electricity above a certain threshold which depends on the turbine and the wind speed on site.

Landowners can also get their local community involved by encouraging households to invest in the wind turbine to establish a Joint Venture and receive a return of the proceeds.

Communities can raise funds to cover the cost of planning, installation and connection to grid and Endurance will supply the turbine. The amount of proceeds returned depends on the amount of capital raised and the size of turbine installed.



Joint Venture allows the community to part-own the turbine and receive an income to spend on community projects, for example a community minibus. By working directly with Endurance as the manufacturer of the E3120 and X-29, there are no middle men and we manufacture our towers and turbines in the United Kingdom, supporting jobs and the economy.

If you would like to discuss the possibility of your local community generating income from a small portion of land then please contact Edward Young, the community liaison point.

Edward Young
- Endurance Wind Power
eyoung@
endurancewindpower.com
07818 068102



Who we are

Action with Communities in Rural England is the national umbrella body for the 38 charitable local development agencies who make up the Rural Community Action Network (RCAN).

Our vision is to champion vibrant, sustainable, inclusive and diverse rural communities by working in partnership with our members.

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Advice and support is available on projects relating to housing; Neighbourhood and Community-Led Planning; transport, facilities and services; fuel poverty and energy generation; broadband; and community assets, such as village halls.

For more information, or to find out how to contact your local RCAN member, please visit our website at www.acre.org.uk



The Network

- employs approximately 1,000 staff with a variety of specialist skills
- engages in 1,300 different partnerships, including working with 58 different higher-tier local authorities
- has over 12,000 fee-paying members and
- reaches 40,000 grass roots contacts and organisations in the 11,000 rural communities across England

Our members have years of experience in finding innovative solutions to the challenges facing rural communities.



**Centre for
Sustainable
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