4.0 GREEN COMMUNITIES

4.1 BACKGROUND

The role communities can play in reducing CO$_2$ emissions and tackling climate change is an important one. Community energy initiatives can cover various aspects of collective action, with the aims of reducing, managing or renewably-generating energy, or the group purchasing/collective switching of energy providers.

This can have a significant impact on residents and businesses alike, be it the promotion of behavioural changes across an area or the implementation of a community-owned energy generation project.

There are many reasons why a local community may embark on an energy saving project from a mutual interest in reducing CO$_2$ emissions to the lack of gas in their area that has left them reliant on expensive and inefficient heating.

Recent years have seen more and more community-owned energy projects being delivered, predominantly focussed on energy and heat generation enabled through the financial support provided by Government schemes such as the Feed-in Tariff and Renewable Heat Incentive programmes.

4.1.1 COMMUNITY-BASED ENERGY EFFICIENCY PROJECTS

Community projects have a vital role to play in engaging people and helping to deliver real carbon and energy savings on the ground. Projects may include the refurbishment of a community building, the provision of home energy checks in a local area, a community engagement event, or thermal imaging initiatives, to name a few.

The Energy Saving Trust’s Communities programme is no longer in existence, but their website is full of case studies detailing community group achievements and the challenges groups met along the way.

4.1.2 COMMUNITY-BASED RENEWABLE ENERGY PROJECTS

Community renewable energy projects are becoming increasingly popular as, not only can they provide a community group with an income, they also provide a secure energy supply and protection from increasing energy prices.

Renewable energy projects can take two forms: They can consist of a group of individuals all interested in investing in a certain technology e.g. solar PV, who group together to achieve economies of scale and increased buying power.

Alternatively, and more commonly, a renewable heating technology is installed that can supply all properties and buildings in the local vicinity. This is known as district heating or a local energy network.
4.2 THE BENEFITS OF COMMUNITY ENERGY PROJECTS

Community energy projects can deliver a vast number of benefits, both in terms of helping to meet national energy reduction and renewable energy targets, but more so in delivering wider benefits to a local area.

4.2.1 LOCAL AREA BENEFITS

These can include:

- An opportunity to work in partnership with your neighbours and local community members, improving social cohesion.
- Improve the green economy in your area, improving local skills and creating jobs.
- Utilising opportunities that may not have been available or attractive to commercial investors.
- Helping to alleviate fuel poverty in the local area.
- Influencing behaviour change and helping your community make savings on their energy bills.

4.2.2 COMMUNITY ENERGY FUNDS

The Feed-in tariff (FIT) and Renewable Heat Incentive (RHI) have made renewable technologies and district heating networks an attractive investment. These incentive schemes provide an income for varying time periods ranging between 7 and 25 years, which in many cases is utilised to re-pay initial investments to buy and install the plant. However, following payback, this money can be recycled into a ‘Community Energy Fund’ for re-investment into other energy schemes.

The Council has set up a Community Energy Fund to receive the FIT and RHI income from Council-installed energy projects. The fund is currently in its infancy, but will eventually hold enough to invest into further energy projects.
4.3 DELIVERY MECHANISMS

4.3.1 COMMUNITY GROUPS

Community groups are successfully delivering energy projects across the country. Whether it’s a group formed through a mutual interest or a subsidiary group off another e.g. a Parish Council, once established, you will be able to tap into a vast amount of free advice services and potential funding opportunities.

4.3.2 COMMUNITY INTEREST COMPANIES

A Community Interest Company (CIC) is a limited company that is created by a group of people who want to conduct a business for community benefit, and not for private financial gain.

The CIC status is achieved by a ‘community interest test’ which ensures the business will function for, and all profits are dedicated to, community purposes.

The CIC regulator’s website is run by the Department of Business, Innovation and Skills.

4.3.3 ENERGY SERVICES COMPANY (ESCo’s)

An Energy Services Company (ESCo) is a partnership or business that finance, install, and operate energy services. They can be public, private, or a social enterprise venture with community involvement.

There are many variations of ESCo models and roles they can play, which can be developed to suit a particular project. Depending on the partnership and type of ESCo model adopted, profits from energy developments are often available to be recycled into further local energy projects. The successful implementation of a community energy project often relies heavily on partnership working based on an ESCo model.
4.4 DISTRICT HEATING/ LOCAL HEAT NETWORKS

The national grid is a huge network that provides electrical power all over the UK. However, when it comes to heat generation, this is still very much reliant on individual boiler systems. Whilst district heating has been commonplace in many European countries for years, it still only provides roughly 1-2% of the UK’s demand. Analysis shows that in the right conditions, district heating could supply up to 14% of the UK heat demand.

District heating networks can offer a cost effective, viable, and low carbon solution to local heat demand. They supply heat to buildings and homes through a network of highly insulated pipes similar to a conventional boiler; however, all pipework is fed from a single decentralised energy centre as shown in Figure 4.2 below.

Ideally, a district heating system will supply large energy consumers with a mix of uses and peak demands. For example, a mix of homes and businesses requires energy at different times of the day, therefore enabling the system to smooth out demand and run efficiently at a relatively constant level. Every building is fitted with a heater meter to monitor how much heat is used.

Heat networks can be supplied from a diverse range of renewable heat technologies, commonly including biomass boilers, combined heat and power (CHP) units, and energy from waste facilities.

Figure 4.2: Diagram of local energy network showing potential components including district heating system.
The advantages of a heat network are provided from the efficiencies and economies of scale that are achievable through such a system, providing an effective tool against fuel poverty. The ability to consolidate heat supply, together with the ability to bulk buy fuels, means that district heating can often provide cheaper energy, thus reducing consumers energy bills. Maintenance costs of the plant will also be reduced and usable space within the buildings supplied will increase. Such efficiencies provide a significant reduction in associated carbon emissions as a single piece of equipment determines the CO₂ output for multiple end users.

District heating networks can be applied at a variety of scales, from a few buildings to whole cities. A network also has the ability to incorporate low or zero carbon technologies, which are often not efficient or effective at smaller scales. Also, district heating pipes are not specific to one technology and can therefore connect to a range of sources of heat supply including CHP, biomass, energy from waste, ground source heat pumps, geothermal heat, or large power stations.

In most cases, a mix of energy use with a high density demand is helpful in justifying the installation of a district heating scheme. If a scheme is not connected to the natural gas grid, the carbon and cost savings can be significant. The use of large-scale renewable technologies also means there is less reliance on gas supplies and less impact from rising fuel prices, thus providing greater security in energy supplies.

### 4.4.1 HEAT MAPPING

Heat mapping is an ideal tool to identify areas that have a high heat demand and may benefit from a district heating system. DECC have recently released national heat maps showing the total heat density in any selected area.

The heat map produced for the West Lancashire area is shown opposite, highlighting, as expected, a higher energy demand in the denser urban areas of Skelmersdale and Ormskirk. The renewable energy capacity study also identified Ormskirk town centre as a potential energy priority zone for district heating. This is primarily due to large energy consumers such as the leisure centre, all located within close proximity of each other.
4.4.2 DISTRICT HEATING PIPEWORK

District heating pipework is critical to the success of any system. Depending on the scale of the heat network, pipework is usually the most expensive element of any scheme and can account for around a third of the overall cost.

There are two main types of pipework: plastic and steel. Plastic is cheaper to install and its flexibility lends it to areas where there are difficult ground conditions. Steel is more commonly used for larger commercial installations due to its strength and durability.

Thermal insulation of the pipes is critical. Heat loss from district heating schemes is usually found to be between 5 and 20% and can be affected by a number of factors such as the length of pipework from the energy centre and the standard of the material used. Thickness of pipework insulation will also need consideration prior to trenching works to bury the pipes; this can affect construction costs.

4.4.3 THE ADVANTAGES OF LOCAL HEAT NETWORKS

- Significantly reduced capital costs for energy plant, especially if connecting to an existing heating network or provision through an ESCo model, in partnership with an investor.
- Significant contribution towards compliance with future building regulation standards and local planning policy.
- Greater fuel efficiencies than that delivered through the national grid. District heating has the ability to generate heat at low costs, helping to reduce fuel poverty.
- Reduced requirement for plant room space.
- Significant CO₂ savings, reducing the carbon footprint of the development.
- Reducing plant management and operational risks.
- Improved energy performance certificate / display energy certificate ratings.
- Good reliability as most systems are built with stand-by heating capacity to ensure heat is always available.
- Comfort and confidence for tenants that they will have controllable heat on demand, and only pay for what they use.
4.4.4 THE DISADVANTAGES OF LOCAL HEAT NETWORKS

- If not already present, a full wet system will need to be installed into each property.
- Disturbance when laying pipework, although steps to reduce this are available.
- Pipework distances can significantly increase costs so long pipe runs could make a scheme unviable.
- Space required for the location of an energy centre, including fuel storage.
- Physical barriers such as crossing major roads etc with pipework, can often cause delays and be an added expense to an installation.
- Access for fuel deliveries by large vehicles is required on a regular basis.

Some of the considerations listed in paragraph 3.5 of Chapter 3: Renewable Energy, are also applicable, e.g. planning requirements, and will need to be given attention during the design stages.
4.5 COMMUNITY ENERGY: STAGES OF DEVELOPMENT

Researching the feasibility of a project is the first step towards progressing any project idea, no matter how small. An initial scoping assessment to identify suitability and overall viability is essential. This may include data gathering, project definition, options appraisals, financial business modelling, procurement and delivery, and maintenance issues, to name a few.

There is a wealth of information readily available to take you through the stages of development, with experiences and case studies from those who have already achieved it. The links below provides a list of helpful documents and websites for further information:

Local Energy Networks has been developed by Cheshire and Warrington Councils, in association with CLASP.

Community Energy: Planning, Development and Delivery has been developed by the Town and Country Planning Association.

The Department of Energy and Climate Change’s Community Energy Online portal, including a range of ‘How to’ and good practice guides on all aspects of community energy projects.


The Energy Saving Trust’s Community Energy Toolkit

Ashton Hayes CIC website, full of stories, tips, and advice on how they are working to become England’s first carbon neutral village.

Planning for low carbon living: toolkit on all aspects of community energy

CLASP Factsheet
An introduction to District Heating
4.6 SUPPORT PROGRAMMES

4.6.1 RENEWABLE HEAT PREMIUM PAYMENT COMMUNITY SCHEME

This is a new and innovative fund to assist community projects across the country, supporting communities to deliver clusters of domestic renewable heating systems. The Scheme is funded by DECC and implemented by the Energy Saving Trust.

DECC state that the fund is ‘targeted at making renewable heating affordable for middle to low income households, and aims to maximise carbon reduction by reaching homes with high carbon and expensive to run heating systems, especially those off the gas network’.

For more information, eligibility criteria, and application details, please visit the Energy Saving Trust website.

4.6.2 THE RURAL COMMUNITY ENERGY FUND

The Department of Energy and Climate Change has announced a £15m fund open to rural communities that aspire to generate their own clean, green power. Launched in June 2013, the fund aims to help rural communities to carry out feasibility studies into renewable energy projects and fund the costs associated with applying for planning permission. More information can be found on the Gov.UK website.

4.6.3 THE COMMUNITY GENERATION FUND

This National fund aims to help deliver widespread development of community-owned renewable energy infrastructure. More information can be found on the Community Generation Fund website.

4.6.4 COMMUNITY ENERGY CHALLENGE

The Community Energy Challenge is an initiative from The Co-operative, working in partnership with the Centre for Sustainable Energy. They look to support small, ambitious community energy projects across the UK, offering mentoring, technical advice, and facilitation services. More information can be found on the Community Energy Challenge website.

4.6.5 CORE FUNDING FOR LOCAL ENTERPRISE PARTNERSHIPS

£25m of Government funding has been made available to support local enterprise partnerships in their pursuit of sustainable economic growth.

4.6.6 OTHER FUNDING OPTIONS

To ensure you remain up-to-date and hear about any new funding options that become available that your community group may qualify for, keep an eye on the Community Energy page of the Gov.UK website.
4.7 CASE STUDIES

4.7.1 BURSCOUGH RENEWABLE ENERGY COMMUNITY INTEREST COMPANY (CIC)

Initially formed as a working group of Burscough Parish Council, the Burscough Sustainability Group has had many years of experience in delivering energy efficiency projects. These include initiatives such as public education campaigns for residents, working with schools, and lobbying supermarkets to adopt greener policies.

In November 2010, the Group formed the Burscough Renewable Energy Company, a Community Interest Company with the main aim to support and promote the use of renewable energy technologies.

Since this time, the group has successfully delivered two renewable energy projects: installing solar photovoltaic installations at Burscough Cricket Club and the Stanley Institute. Financed initially by grants from Burscough Parish Council, the CIC has successfully utilised this money to secure an income for the next 25 years from the Government’s Feed-in tariff.

The solar installations are less than 4 KW in size and the energy they produce is being used on site by the community buildings, providing them with free electricity and noticeable savings on their yearly bills.

The income received from the Feed-in tariff will be used to develop further renewable energy projects in the future for the benefit of the community. The systems are also invaluable in terms of educating and promoting the benefits of renewable technologies to the surrounding communities.

4.7.2 GROUNDWORK PENNINE LANCASHIRE

In 2010, West Lancashire Borough Council teamed up with Groundwork Pennine Lancashire to deliver community-based energy projects across the Borough. Whilst this partnership has now come to an end, some of the projects undertaken are detailed below:

- Delivery of a workshop for the rural business community regarding sustainable farming practices.
- Various energy surveys conducted on Parish Council buildings, village halls, and community group buildings.
- Successfully writing bids and securing funding for energy efficiency works and renewable energy installations on community buildings, including the Scout group, Hut on the Hill, and Asmall Primary School.
4.7.3 COLLECTIVE ENERGY SWITCHING

Councils across Lancashire, including West Lancashire Borough Council, recently launched a collective energy-switching scheme called ‘People Power’.

To get a good price for your energy, you need to regularly check the market to see if you can save by switching to another supplier. Many people do not or are unable to switch meaning they could be paying too much for their energy. The People Power scheme was introduced to help Lancashire residents find out if they can save money by switching energy providers.

The first round of registration with the scheme took place in March 2013, with an auction to find the best deal being held on 8th April. Despite local press coverage, advertising, and registration drop-in sessions, numbers participating in the scheme were far lower than expected.

The results of the scheme are currently being evaluated and a decision will be made as to whether another round of registration is held later in the year. Please visit the Council webpage for further information.

In the meantime, should you wish to see if you can make savings through changing your supplier, the following gas and electricity comparison websites may be of interest:

- USwitch
- Confused.com
- Compare the Market
- Money Saving Expert - Cheap Energy Club

4.7.4 BIOMASS DISTRICT HEATING SCHEME – OAKGATE CLOSE, TARLETON.

West Lancashire Borough Council is nearing completion of its first biomass district heating system. This is a small pilot scheme that serves 21 sheltered housing flats located in Oakgate Close, Tarleton.

The 60KW biomass pellet boiler is located within an energy centre a few metres from the building, together with a fuel storage unit and backup gas boiler. Previously on old, inefficient electric storage heaters, the residents’ flats are now fully fitted with wet radiator systems, and will be provided with heating and hot water on demand as and when they require it.

Each flat is fitted with a heat meter so residents’ consumption can be monitored remotely and they will only be billed for what they use. Once the system is commissioned and registered with Ofgem, it will also generate an RHI income for
20 years, providing an impressive payback period and contributions to the Council’s Community Energy Fund for recycling into further projects.

At the time of writing, the system isn’t fully up and running, but details on consumption, energy costs, performance and maintenance, and tenant satisfaction will be included in due course.
### 4.8 FUTURE ACTION

#### 4.8.1 OBJECTIVE 4: SUPPORT AND AID THE DEVELOPMENT AND INSTALLATION OF COMMUNITY ENERGY PROJECTS

<table>
<thead>
<tr>
<th>ACTION:</th>
<th>MECHANISM:</th>
<th>POTENTIAL PARTNERS:</th>
<th>TIMESCALE:</th>
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</thead>
<tbody>
<tr>
<td>Target community groups to promote delivery of energy projects.</td>
<td>- Provide leadership and encourage community action to install energy efficiency measures. &lt;br&gt;- Provide energy information events to community groups. &lt;br&gt;- Engage community groups to motivate residents and join forces to take action. &lt;br&gt;- Promote the benefits achieved through community economies of scale and improved buying power.</td>
<td>WLBC Interested community groups Local installers and funders</td>
<td>Medium term</td>
</tr>
<tr>
<td>Aid development and provide support to potential energy projects.</td>
<td>- Increase local knowledge of required energy efficiency improvements on an area by area basis and develop community projects to suit e.g. a community solid wall insulation programme. &lt;br&gt;- Provide support with feasibility investigations to establish projects and help get them off the ground.</td>
<td>WLBC Interested community groups Local installers and funders</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Improve the energy efficiency of Council-owned community centres working in partnership with local community groups.</td>
<td>- Promote and raise awareness of behavioural measures to save energy in the local community. &lt;br&gt;- Lead by example by implementing energy-saving measures and ensuring Council-owned community centres are as efficient as possible. &lt;br&gt;- Seek funding to develop further projects initiated by local community groups. &lt;br&gt;- Produce a community centre guidance document on reducing energy consumption.</td>
<td>WLBC Interested community groups</td>
<td>Medium term</td>
</tr>
<tr>
<td>Provide leadership to encourage energy efficiency in private community centres and community group buildings.</td>
<td>- Promote action on Council-owned buildings and encourage action Borough-wide. &lt;br&gt;- Initiate contact with community groups with building ownership e.g. the Scouts group. &lt;br&gt;- Provide support with project development.</td>
<td>WLBC Interested community groups West Lancashire Council for Voluntary Service (CVS)</td>
<td>Medium term</td>
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