Community Heat Conference 2015

TUES 10 MARCH • 9.30–16.00 • BIRMINGHAM

IN ASSOCIATION WITH

Department of Energy & Climate Change

Llywodraeth Cymru
Welsh Government

Forestry Commission England

Community Energy England

ukDEA.org.uk
The UK District Energy Association

regensw
delivering sustainable energy

Is now the time for community heat?

Over 150 representatives of community energy groups, local authorities, renewable energy developers, consultants and government gathered in Birmingham on 10 March 2015 for the first community heat conference for England and Wales.

The conference reported on progress on the heat actions in the UK's Community Energy Strategy, explored the challenges and opportunities for small scale local heat projects using case studies from the UK and Europe, offered break-out sessions to develop a community heat toolkit. It also saw the launch of the Forestry Commission's new Community Biomass Guide.

This short report captures key discussion points and provides a platform to take further collaboration and next steps.

"Great to see so many people at #communityheat conference, the reality of the potential is very exciting!"
@alastairmumford

"It's really inspiring to see so many people wanting to explore community heat. Now we need to work together to make it happen!"
Emma Bridge, Chief Executive, Community Energy England

"Fantastic range of support for communities thinking of district heating"
@ACRE_national

"The UKDEA were delighted to support such a positive event with lots of enthusiasm from delegates for community heat"
Simon Woodward, Chair UKDEA

"#communityheat great examples of brilliant wood district heating schemes, come on UK"
@LaternLatest

Ministerial Speech: Baroness Verma, Parliamentary Under Secretary of state for Energy and Climate Change

Baroness Verma reported on action being taken by the Government to overcome the barriers to community heat. Here some key points from her speech.

Communities and heat

In the UK we cannot operate - as businesses, local authorities or communities without heat –we also need a secure energy future and we must tackle climate change. The scale of these wider challenges is significant – as is the challenge on heat. Our long-term climate change targets are not going to be met without input from communities and consumers changing the way they generate and use heat.

Government activity

- 7,300 non domestic and 6,200 domestic biomass boilers accredited for the Renewable Heat Incentive – with 2.2 terawatt hours of renewable heat generated and paid for by the scheme; enough to heat the equivalent of almost 150,000 homes for a year
- Through HNDU's support for heat mapping, master planning, feasibility studies and detailed project development, up to 115 local authorities are developing heat network opportunities. If 25-50% of this portfolio were built, it would represent an investment opportunity of £400-800m
- In its first full year of operation, DECC's Heat Networks Delivery Unit (HNDU) awarded just under £7 million of grant funding to local authorities to explore heat network opportunities
- Defra and DECC's £15m Rural Community Energy Fund has supported over 50 projects worth £1m including 20 community heat projects
- Its £10m urban counterpart, DECC's Urban Community Energy Fund is providing over £150,000 in funding to community groups across England
- The Hub, a community energy advice and information website, seed-funded by DECC, is under development by The Energy Saving Trust Foundation
- £650,000 has been invested in the up-skilling of existing heating engineers to ensure they have the right skills and knowledge to install renewable heating systems
- The `Water Source Heat Map' has recently been published as a new layer on the National Heat Map to highlight opportunities for deploying water source heat pumps
- An update on the Community Energy Strategy was published in March
- The Renewable Heating Skills and Apprenticeship Voucher Scheme, has issued over 1,600 vouchers. Of these, 843 installers have completed their training and 53 apprenticeships have joined the pilot Apprenticeship scheme
- A further £80,000 is being invested to establish a national forum that will address best practice and quality assurance of renewable heat training
- DECC is also funding a Heat Networks Demonstrator competition – worth £7 million to stimulate innovation and help address the cost and performance efficiencies of heat networks in the UK.

"Heat networks have the potential to decarbonise heat, not only from exploiting waste industrial heat but unlocking the potential of indigenous sources"

"Nearly half of the energy we use is for heating. And over 70% of the heating in the UK is produced from natural gas, which is increasingly imported"

"Communities and heat fit so well together"

"By working together, we can make a real step change on heat"

Launch of the Community Biomass Guide

Baroness Verma launched the Community Biomass Guide, developed by DECC and The Forestry Commission. Broadleaved woodlands in particular are often under-utilised and the biodiversity they support degraded. Bringing these woods back into productive management to provide woodfuel will also improve habitats and increase resilience to pests, disease and climate change.

The Community Biomass Guide will help communities to assess whether to apply for funding for professional advice on developing local woodfuel supply chains. It offers information on sizing boilers, as well as on funding, skills and setting up a community group.

Moving forward

Baroness Verma said that there is the potential for demonstrating all scales of community heat projects – both small-scale community heat networks and larger local authority networks – as well as linking these together.

There is real progress - but we need more. By working together, we can make a real step change on heat. Ultimately, we want heat to become more of a local and community issue so that heat can provide a real boost to the local economy and meet our climate change targets, at the same time.





Morning Session 1

Community-led heat projects in Denmark

Ian Manders from the Danish Trade Council gave the opening presentation illustrating how community heat can work, with inspiring examples from Denmark

"District heating is not a fuel, but an effective system to disseminate a green heat supply in Denmark" **Fjernvarme.info**

- Over 60% of homes are district heated in Denmark, compared to only 1-2% in the UK
- District heat accounts for 17% of Denmark's final energy demand, has an annual turnover of 1.0% GDP and provides direct employment for 7,700 people
- Case study: Assens Fjernvarme Amba – a co-operative society owned by the district heating consumers in Assens, supplies 5,400 inhabitants with heat and power. It is one of the cheapest district heating plants in Denmark and last year made a surplus of 7.4m krone and will give back 5.3m krone to its consumers
- **Case study:** Copenhagen is aiming to be the first carbon neutral capital by 2025. This will mean extensive retrofitting of buildings, the reorganisation of the energy supply and change in transport habits. This will result in in combined growth, development and a higher quality of life along with a reduction in carbon emissions of 1.16 million tonnes. It is estimated that Copenhageners will save DKK 4000 on their electricity and heating bills each year when the plan is implemented

Planning local heat projects

Simon Woodward Chair of the UK District Energy Association (UKDEA) gave an overview of district energy and issues to consider

"Developing a district energy scheme will be challenging but is ultimately rewarding. There are issues to consider but the UKDEA have the tools to support delegates with their Community Heat journey no matter how basic the question or small the scheme"

- Any building can be suitable but the best ones are those with a greater heat load, such as social housing, leisure centres, residential care homes and community buildings in constant use
- Using a network can bring economies of scale that a single building cannot deliver
- Connecting buildings together with differing energy demand profiles, i.e. dwellings and offices, can present a flatter demand profile which is more efficient for most heat sources and can deliver operating cost savings on a whole life cycle basis
- Things to consider :-
  - What heat source should I choose? Is there local waste heat not being used?
  - Which buildings could be connected? Be realistic, think big but start small. You can pump heat for many miles but it has to be cost effective to do so
  - How can I sell heat to new consumers? Pricing, terms, indexation, contract period?
  - Heat is always considered on a whole life cycle basis, i.e. a building connected to a heat network may need no back up boiler of its own and therefore the price for heat should reflect this

Woodfuel and communities

Matthew Woodcock, partnerships and expertise manager – south east England, Forestry Commission provided an insight into the benefits of woodfuel

"Wood: the original sustainable fuel"
The Forestry Commission

- Bringing unmanaged and undermanaged woodlands back into management increases levels of biodiversity; opening the woodland up as a result of appropriate timber harvesting allows sunlight in, enabling a wider range of species to flourish
- The UK Forestry standard provides the reference standard for sustainable forest management in the UK. At the heart of its approach is the importance of balancing the environmental, economic and social benefits of forests and the recognition that our forests serve a wide range of objectives
- DECC's woodfuel advice note helps suppliers of woodfuel and generators to demonstrate compliance with the Renewable Obligation, CfD and Renewable Heat Incentive sustainable forest management criteria for woodfuel
- **Case study:** Hoathly Hill community – installed a 300kW biomass boiler in a new custom built boiler house and woodchip fuel store. It provides heat to 27 houses, along with workshops and a kindergarten
- **Case study:** West Dean district heating - all of the heating and hot water needs of West Dean College and parts of the village are met entirely by using wood fuel grown on the West Dean Estate. The biomass district heating scheme was one of the first, and remains one of the largest of its kind, in the UK
- **Case study:** Mureck, Austria – a partnership project of a biodiesel plant, biomass district heating system, a biogas plant and a photovoltaic plant involving citizens




Morning Session 2: Community Heat Case Studies

Narbeth Swimming Pool

Ben Ferguson Walker, technical development officer, Severn Wye Energy Agency

Narbeth Pool passed from local authority responsibility into the control of a community led group, Swim Narbeth, in November 2014. As part of a programme of fundraising, efficiency measures and identifying sources of income, the need to install a new woodfuelled heating system was established. Ynni'r Fro, Carbon Trust, Renew Wales and the Wales Cooperative Centre came together to support this. Grant aid and key donations were received from Waterloo Foundation, Town Council, Civic Week and Princes Gate Water. Huge volunteer and fundraising efforts were also made, a Community Benefit Society called Narbeth Energy Ltd was created and a share offer was launched with consultancy support from Sharenergy. The share offer raised £103k and RHI was secured before the December regression point and with Enterprise Investment tax relief, which was critical to their business plan. The fact that the swimming pool is not on the gas grid and has a high heat demand made it easier at Narbeth to stack up a business case which may not be as easy to replicate with other schemes. An ongoing challenge will be that it is a swimming pool first, as opposed to an energy business and so will continue to need massive volunteer effort, and ongoing community support.

Suggested learning: Get the community behind you from the earliest opportunity and ensure that you have ongoing volunteer support. Robust financial planning is also key.

National Trust's water source heat pump at Plas Newydd

Keith Jones, environmental advisor, National Trust

Plas Newydd in Anglesey is Britain's largest marine source heat pump and will provide 100% of the heating needed by the National Trust's Plas Newydd country estate and historic house. The buildings used a lot of oil, consuming as much as 1,500 litres per day, the same as n average house would use in 10 months. From now on Plas Newydd will be heated with a new local and clean energy system, which pumps a small amount of sea water from the Menai Strait in Anglesey, through pipes to and from a heat exchanger on the shore, and then up 30 metres of cliff face to the mansion's boiler house. The 300kW marine source heat pump cost £600k to install in total and is expected to save the National Trust around £40,000 a year in operating costs. It was a challenging project with it being the first of its size in the UK. These challenges were helped by them working closely with Sustainable Expansion of the Applied Coastal and Marine Sectors, led by the School of Ocean Sciences at Bangor University. Conservation experts from the University ensured that the best technology for the site was chosen whilst protecting the site's fragile environment and archaeology.

Suggested learning: Don't be afraid to aim high but make sure that you have experts engaged to make sure that the scheme works for the chosen site.

Achieving a Buchkirken – making the leap to customer owned heat networks

Alastair Mumford, Senior Project Manager, Regen SW Panel

In Buchkirken in Austria, four farmers came together with the idea to develop a community heating system. As Buchkirken was made up of 10.9% forest and 76.9% farmland, it seemed like an ideal place to undertake a woodchip district heating system. They raised £700,00 through a mixture of a bank loan, government grant, connection fees and from the farmers themselves. They now have two biomass boilers which produce 650 thermal kW and 150 kW respectively, for a total of 2.2 MMBtu/hour and 500,000 Btu/year. It provides hot water heat to 25 local customers - the town's kindergarten and school, its municipal hall and other public buildings, an events hall, some multi-family housing, and several single-family homes. Their system uses 3,500-4,000 cubic meters (1,200-1,400 US tons) of woodchips per year.

Suggested learning: You don't need to wait for ESCOs or installers or suppliers, it can be YOUR network.

Morning Session 3: Raising Funds for community Heat Projects

An Introduction to Community Shares

Andrew Jackson, digital manager, Community Shares Unit

Community shares are a form of share capital unique to co-operatives and community benefit societies. If you are interested in financing your project through community shares, Andrew recommended taking the following steps:

- Engage the community – the community has a wealth of skills and resources for you to draw on and can tap into a network of supporters, members and investors
- Read the Community Shares Handbook – this will help you to understand whether community shares are the right funding model for you
- Don't be afraid to ask for help - There are organisations which can help you to register you society, develop your business plan and engage the community
- Get the compliance mark – launching summer 2015. Aims to raise confidence in investors by showing that you have worked to best practice standards
- Use microgenius.org.uk – a not-for-profit online crowdfunding platform dedicated to best practice community share offers

Community Shares Case Study: JCC Community Woodheat
£400k was raised in community shares for a biomass boiler at John Cleveland College in Hinkley, £280k of this was raised online with Microgenius. A total of £500k was reached with Resonance Land & Finance's Community Share Underwrite Scheme and The Key Fund. 407 tonnes of CO2 will be saved each year from the scheme, and local community benefit fund has been created for environmental initiatives

Rural Community Energy Fund (RCEF) and Urban Community Energy Fund (UCEF) and Ynni'r Fro

David Rogers, programme area manager - renewable energy, WRAP

- The Rural Community Energy Fund (RCEF) has a £15m budget, is jointly funded by DECC and Defra and managed by WRAP. It provides pre-planning development finance for community renewable energy generation projects in rural areas of England. It provides grants of up to £20k at Stage 1 for early scoping studies and loans of up to £130k at Stage 2 for detailed feasibility, planning applications and the finance raising process. Applicants must be legally constituted entities delivering a community benefit e.g. parish council, Community Interest Company (CIC), Bencom or charity. Twenty RCEF heat projects are being undertaken. Some of the heat projects are campus-style heat networks
- The Urban Community Energy Fund (UCEF) has a £10m budget, is funded by DECC and managed by the Centre for Sustainable Energy and supports community heat projects meeting the same criteria as RCEF. It has already funded £200,000 worth of projects
- You can check whether your project would be classed as urban or rural at: http://www.cse.org.uk/information/community-groups/ucef-map

Updated information since the Conference on Ynni'r Fro and its successor from Welsh Assembly Government:

- Ynni'r Fro is a 5 year Welsh Government and ERDF funded programme that aims to promote community scale, renewable energy generation. Although Ynni'r Fro ended in March 2015, the Welsh Government is continuing to support groups to develop community energy projects through providing preparatory grants and technical support, as well as capital loans and grants. The programme is currently supporting 58 projects
- The Welsh Government is currently developing a successor programme to Ynni'r Fro, to support the continuing development of small and medium scale renewable energy projects

- As part of this programme, Welsh Government intends to provide support to communities to increase their participation in renewable electricity and heat developments. Welsh Government envisages that this will support district heating both through continuing support for renewable energy projects, and through area-based energy efficiency programmes

Renewable Heat Incentive

Ruth Richmond, domestic Renewable Heat Incentive policy lead, DECC on Panel

- The RHI is the world's first long-term financial support programme for renewable heat. It provides financial incentives to install renewable heating systems
- It's a quarterly payment, over 7 years for the domestic scheme and 20 years for the non-domestic scheme, with different tariffs for different technologies
- Non-domestic RHI is open to commercial, industrial, public sector, not-for-profit and heat networks. Domestic RHI covers single domestic buildings and is open to homeowners, landlords and self-builders
- Both schemes may be suitable for community projects, the non-domestic for systems with more than one property on the same heating system, and the domestic where groups of householders club together to bulk buy heating systems
- Appreciate the RHI requires upfront capital, which can be a barrier for some, however it is becoming easier to finance renewable heat installations. Providers of private finance are becoming more aware of the non-domestic RHI in particular. On a domestic scale many homeowners can extend their mortgage and companies are offering innovative finance products
- RHI can also be combined with Green Deal Finance, Green Deal Communities or ECO. Any public grants received for the heating kit need to be repaid to claim non-domestic RHI and will be taken from domestic RHI payments

Afternoon session: Developing a Community Heat Toolkit

This session consisted of break-out groups to help communities assess the key drivers and challenges for local heat projects and to discuss what would be most useful in a community heat toolkit. Delegates were split into three groups: Local Authorities; Starter Community Groups and Experienced Community Groups.

The afternoon sessions prompted lively discussions. Despite the many challenges discussed, overall the sessions were very positive with lots of enthusiasm for taking forward community heat. The idea of a toolkit was warmly welcomed. The following is a summary of these discussions focussing on key drivers, challenges, risks and what would be most useful to include in a community heat toolkit

Summary of key drivers for community heat

There was a broad range of key drivers identified in the group sessions. These varied from **environmental** concerns such as reducing fossil fuel dependency and supporting biodiversity and habit generation to **financial** reasons such as saving money, avoiding the closure of local services and buildings and creating a local circular economy. **Local governance** and creating **local jobs** were also important.

Key drivers for district and borough councils

The key drivers for undertaking heat projects for smaller local authorities (LAs) were largely related to **efficiencies**. It was felt that community heat could help to address challenges related to managing big buildings, particularly high energy usage buildings and off gas grid locations. **Fuel poverty** was seen as an important issue and the ability to ensure direct **local benefits**. The availability of waste heat e.g. from mine water in former mining areas was also highlighted.

Benefits of Partnering

There is considerable motivation for finding partners for community heat. This could be categorised as follows:

- **Funding** – access to crowdfunding platforms, investment opportunities and other funds such as LAs partnering with community groups to access RCEF and UCEF. Ensuring that funding goes to benefit the local economy
- **Technical expertise and knowledge sharing** – LAs sharing skills with community groups; LAs can lack technical expertise whereas local community energy groups often have volunteers with technical expertise and skills, such as retired engineers
- **Community engagement** – this can build community support as community groups are more trusted even than LAs;
- **Shared ownership** – an opportunity for buy-in by LAs
- **Community energy fits with local authorities' wider roles,** such as supporting sustainable businesses and creating local wellbeing; laying heat network pipes can make the most of digging up roads

Key Challenges

Each group put forward perceived challenges from conception of a scheme through to commissioning and the supply of heat. A number of **technical** challenges were discussed, such as assessing the energy demand of a building, how to choose the right technology and heat losses. **Relationship management** was also a difficult issue; in particular getting community buy-in, agreements with stakeholders and landowners, dealing with a single supplier, getting collective agreements among heat customers and supply chain contracts. **Misconceptions** about biomass related to environmental impact were also discussed.

The **longer timescales** of community heat projects could cause some difficulties, particularly when negotiating contracts added to the perceived uncertainty about financial incentives (Renewable Heat Incentive) in the future.

Dealing with **consultants** and assessing the various options in technical reports was a concern for smaller local authorities; how to select the right consultant and risk involved; how to access ongoing support to deliver and manage the scheme once the consultants were no longer involved.

The main challenge for **local authorities** related to a **lack of confidence and knowledge** related to assessing the technical aspects of the schemes, challenges which were echoed by some of the starter community groups. Solutions put forward included awareness of simple online tools relating to heat demand and building assessment; guidance and training on topics such as U values and access to accurate energy data for buildings. A key need was support in interpreting feasibility studies. Future heat load was also an issue, with most new buildings need less space heating.

In general, LAs sought access to more advice, case studies and trusted technical assistance and examples of legal structures. Peer-to-peer mentoring among LAs were seen as the best way to overcome most of these barriers. Advice on legal issues and procurement from providers with experience in the field was particularly highlighted. There was quite low awareness of The Huddle provided by HNDU as a collaboration platform facilitating peer-to peer collaboration between HNDU supported LA projects.

Risks

The current economic climate meant that local authorities (LAs) in particular were generally **risk averse,** keen to ensure that there was no margin for making mistakes on the ground, due to low quality technical advice. It was thought it might be useful to investigate how the early Danish models had managed risk issues.
Alongside **technical** and **operational** risks, a key risk was seen to be **engaging key stakeholders** at the beginning and then carrying their support through to completion. Keeping LA finance officers regularly updated on the developing project was considered useful.

Financial risks were discussed in most detail and included:

- Price of woodfuel increasing
- Continuity of demand/closure of high end users e.g. swimming pool or school
- How to set the heat price
- Ensuring minimum heat usage, to mitigate risk
- Legal action

What should be included in a Community Heat Toolkit?

Pre-planning
Free pre-application advice Early indicators for whether a project is worth pursuing and key barriers
General advice on project management
Step-by step guide to planning a project including customer journeys for each technology Governance structures; how to set up a community energy company and different models e.g. shared ownership Drafting business cases, project plans including business model for supplying heat to customers
Developing a business case
Advice on explaining benefits of community heat Calculating carbon savings from heat projects Communicating the opportunities of woodland management Demonstrating jobs that would be created
Technical support
Access to HNDU case studies from similar projects, with lessons learnt at each stage Expertise to calculate energy efficient and heat demand of buildings Support on identifying heat demand, heat loss and heat load Sizing heating systems Independent information on technologies Impact assessments Environmental studies
Legal
Examples of legal contracts for retailing energy/fuel purchase contracts Information on IP rights and non-disclosure agreements Understanding permissions

Consultant and planning stages
Selecting consultants Interpreting technical options supplied by consultants Questions that consultants should be asked Pros and cons of working with consultants
Delivery stage
List of information that installers need to know to ensure that local authorities share all relevant information Guidance on dealing with developers
Stakeholder management
Guidance on which stakeholders to involve and what evidence to produce at each stage of the project Schedule of key questions to engage stakeholders Understanding a local authority's role and skills and how to engage them (for community groups) Working with community group and their expertise (for local authorities) How to work with Local Enterprise Partnerships (LEPs)
Skills
Basic training on community heat and assessing feasibility studies Training on community heat for councillors and local authority planners Training for Ofgem staff on boiler systems Peer-to-peer support for local authorities developing projects Support and skills for community heat champions across UK
Finance & funding
Easy guide to RHI accreditation Guidance on assessing financial risk such as RHI degression Guidance on modelling of costs Database of local authority heat schemes by funding model Guidance on other funding available and possible funders
General
Case studies of high and low quality heat projects FAQs
Contacts
Community led contracting companies Independent facilitators to support groups

Actions and next steps

- Forward actions on a Community Heat Toolkit rest with DECC. There is no set date for its publication
- HNDU's Huddle is already providing local authorities with peer-to-peer discussion. Access is restricted to HNDU supported projects
- HNDU bids cannot be made available (HNDU helps local authorities develop bids). HNDU case studies and learning are potential next steps

Useful links

The Huddle for HNDU supported projects (peer-to peer mentoring)
http://www.huddle.com/

Community Biomass Guide
http://www.forestry.gov.uk/Communitybiomass

Rural Community Energy Fund
http://www.wrap.org.uk/content/rural-community-energy-fund

Urban Community Energy Fund
http://www.cse.org.uk/projects/view/1249

Update on the Community Energy Straetgy (published in March)
https://www.gov.uk/government/publications/community-energy-strategy-update

National Heat Map
http://www.cse.org.uk/projects/view/1183

Water Source Heat Pump Map (launched in late March)
https://www.gov.uk/government/publications/water-source-heat-map

Information on assessing the energy performance of buildings
https://www.gov.uk/government/publications/display-energy-certificates-and-advisory-reports-for-public-buildings
https://www.gov.uk/government/consultations/improving-the-display-energy-certificates-regime-for-public-buildings

There are toolkits available to download free which assist in the production of Display Energy Certificates. To assess building energy use, smart meters are useful in reviewing energy demand over a period of time.

Plan Local website on heat
http://www.planlocal.org.uk/pages/renewable-energy

British Geological Survey online tools
http://www.bgs.ac.uk/research/energy/geothermal/gshp.html

Regen SW – communities
http://www.regensw.co.uk/communities/

Further useful information

- The CIBSE-ADE Code of Practice supported by DECC, will launch shortly – useful to communities which are developing heat projects

- 'The Hub' – advice and information for community groups is being developed by the Energy Saving Trust with seed-funds from DECC. This will offer toolkits, links and interactive social networking tools to enable peer-to peer learning

Exhibitors

Community Heat Conference 2015

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