

# BATH & NORTH EAST SOMERSET ENVIRONMENTAL SUSTAINABILITY PARTNERSHIP

## COMMUNITY ENERGY STRATEGY 2015 - 2018



SOLAR PANELS ON BATH & NORTH EAST SOMERSET COUNCIL'S ONE STOP SHOP BUILDING, MANVERS STREET, CENTRAL BATH. THE PANELS (37.5KW<sub>p</sub>) ARE OWNED BY THE COMMUNITY ENTERPRISE, BATH & WEST COMMUNITY ENERGY

## EXECUTIVE SUMMARY

The Bath and North East Somerset Environmental Sustainability Partnership (ESP) is committed to tackling climate change, and increasing the use of renewable energy in order to increase the resilience of the local energy economy and maximise community benefits.

This Community Energy Strategy sets out an approach for how local public and private sector partners can work together in Bath and North East Somerset to accelerate the growth of renewable energy and energy efficiency improvements across the district in a way which delivers maximum local benefit. It supports the Core Strategy target of installing 275MW renewable energy by 2029 (CP3), as well as other Core Strategy targets on retrofitting, sustainable construction and district heating (CP1, CP2 and CP4). It also supports other policy aims such as the provision of lower cost energy, reduction of fuel poverty, local economic benefits and community ownership and involvement, as part of our local target to reduce carbon emissions by 45% by 2026<sup>1</sup>.

Community energy is important for Bath & North East Somerset because:

- A substantial amount of our renewable energy resource potential is relatively small scale and dispersed, which lends itself more readily to a community delivery model within which smaller scale opportunities become more viable.
- A community energy approach will help us retain a greater share of investment, revenue streams and job creation in the local area. It has potential to stimulate economic development, new jobs and social enterprises, while reducing energy costs for residents, businesses and the public sector.
- Enabling local people to participate more actively in renewable energy and energy efficiency through share ownership and governance will increase support for local sustainable energy.
- Changes in the energy markets present new opportunities for residents and local organisations to take advantage of local, decentralised energy generation and supply.

B&NES Council is at the forefront of local authority action on community energy through its Co-operation Agreement with Bath & West Community Energy, which was featured as a leading exemplar in the Government's Community Energy Strategy (2014), and has since been replicated by a number of local authorities.

This document considers how our work can be taken to the next level through a series of innovative approaches that fulfill the vision for the district to be "beautifully inventive". The "Taking Action" section looks at how the community energy approach can be implemented through the following themes, taking into account current action on the ground and suggesting possible future courses of activity:

**1. Generating Energy:** The first strand of this strategy focuses on supporting the development of more local renewable energy generation, in a way that enables as much of the Core Strategy

target as possible can be delivered through community energy. Work to date has included renewable energy being installed on public service estate, the development of supportive planning policies, and work to support the development of community energy projects (including through the Council’s partnership with Bath & West Community Energy). This work can be continued to good effect, and in the future the powers of ESP members as property owners and investors could be further developed.

**2. Managing and Reducing Energy Demand:** The second strand of this strategy focuses on the management and reduction of energy demand. The ESP’s flagship B&NES Energy at Home Scheme, which tackles the domestic sector, marks an important start to this work. The challenge will be to make energy efficiency and retrofitting activity mainstream across all sectors of the community. There are also opportunities to consume energy more efficiently by matching supply with demand (‘demand side management’), including taking advantage of ‘smart’ energy technology. There are a number of local community groups active engaged in energy efficiency activities in B&NES and this work, whose work will continue to be supported through the B&NES Community Energy Forum.

**3. Providing Energy Services:** The third strand of the strategy is to develop opportunities for local energy service provision. Changes to the energy market could enable a local Energy Services Company to be viable at a small, local scale, whilst providing the opportunity for community benefits such as lower energy bills for residents and higher revenues for local renewable energy generators.



*Councillor David Martin  
Chair of ESP Board  
Liberal Democrat Councillor for Bathwick*

*David Martin*



*Bath and West Community Energy Directors, Council Officers  
and Solar PV Installers celebrate the installation of PV panels  
on the Bath One Stop Shop building*

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# PURPOSE AND SCOPE OF THE STRATEGY

*The Community Energy Strategy sets a framework for how we will approach energy issues in Bath and North East Somerset, whilst maximising the local benefits from renewable development, energy efficiency and low carbon energy.*

The Community Energy Strategy is a high level action plan to deliver the Sustainable Energy theme of the B&NES Environmental Sustainability Partnership Board’s over-arching Environmental Sustainability & Climate Change Strategy<sup>2</sup>.

## CONTEXT

### National Context

*The UK energy market is in a period of transition.* Climate change commitments, plus global advances in technology and rising fossil fuel prices have meant that renewable energy is now big business; comprising 19.4% of the UK’s electricity supply in the first quarter of 2014<sup>3</sup>. Changes to the energy system are set out in Table 1:

	Old energy system	New energy system
Fuels	Fossil fuel or nuclear power stations that require constant input of fuel	Renewable technologies, many of which have high upfront capital cost but then require no input of fuel
Centralised or decentralised?	Centralised: power produced in a few massive power stations	Decentralised: power produced by many smaller installations distributed within the built and natural environment
Distribution	One way distribution of energy through national grids for electricity and gas which prevents “smart” and efficient demand management solutions	Smaller power plants feed energy into the system at multiple points. “Smart” grids embed IT to better balance energy demand and supply and achieve efficiency by reducing energy waste
Energy sales	Dominance of “Big 6” energy companies	Shift to smaller energy companies with different innovative business models

Table 1: Changes to the UK energy system

There are many knock-on effects of this shift in the energy system. In particular, the Government’s Community Energy Strategy (2014)<sup>4</sup> recognises the key role communities have played in the countries that lead on renewable energy such as Germany and Denmark. The national Community Energy Strategy outlines a program of action to facilitate community energy and estimates that up to 3,000 MW of energy could be installed through community models by 2020.

The national Community Energy Strategy acknowledges Bath & North East Somerset Council's work with Bath and West Community Energy as an example of how local authorities can support community energy:

***“Bath & North East Somerset Council is committed to community enablement and partnership working, resulting in several successful community energy projects.”***  
*- DECC Community Energy Strategy (2014)*

The Government's Shared Ownership Taskforce has also led the development of a new voluntary approach to increasing shared community ownership of new, commercial onshore renewables developments, as one of the ways to help deliver a step-change for the community energy sector. DECC expects that “by 2015 it will be the norm for communities to be offered the opportunity of some level of ownership of new, commercially developed onshore renewables projects”<sup>5</sup>.

On energy efficiency, the Green Deal framework has created new opportunities for local energy efficiency delivery, for the domestic and business sector. The national accreditation of surveyors, products and installers has made it possible to establish local schemes that can offer a wide range of measures to local residents. Grant funding through the Energy Company Obligation and the Green Deal Communities Fund can be combined with finance through Green Deal Plans or other sources to make measures more affordable for those in hard to treat homes or in fuel poverty. In B&NES, the Council, Curo and Bath & West Community Energy have worked together to establish a community based approach in response to these opportunities.

## Local Context

Bath and North East Somerset Council and our partners have long had a strong commitment to addressing climate change.

In 2009 the Bath & North East Somerset Sustainable Community Strategy set the target of reducing the district's carbon pollution 45% by 2026, in line with national targets. This target and the commitment to a sustainable and low carbon future is reflected in the B&NES Corporate Plan 2012-15<sup>6</sup> and echoed in other key strategies such as the Joint Health & Wellbeing Strategy<sup>7</sup>, the Economic Strategy<sup>8</sup> and the emerging Getting Around Bath Transport Strategy<sup>9</sup>. An innovative approach to achieving a low carbon future for the area is also in line with the Public Services Board Vision<sup>10</sup> for the area (see box).

***Public Services Board Vision: “Bath and North East Somerset will be internationally renowned as a beautifully inventive and entrepreneurial 21st century place with a strong social purpose and a spirit of wellbeing, where everyone is invited to think big – a ‘connected’ area ready to create an extraordinary legacy for future generations.”***

**Renewable energy**

Renewable and low carbon energy is an important part of meeting this overall carbon reduction target. To drive this forward, Core Policy CP3 of the adopted Core Strategy sets a target for installed renewable energy capacity (see box)<sup>1</sup>.

**Core Strategy Policy CP3: Renewable Energy**

Development should contribute to achieving the following minimum level of renewable electricity and heat generation by 2029:

- **110 MW<sub>e</sub>** installed **renewable electricity** capacity
- **165 MW<sub>th</sub>** installed **renewable heat** capacity

The Core Strategy target is based on a 2010 study of the district’s renewable energy resource potential<sup>11</sup>. The map below shows the location of the principle wind and hydro resource potential in the district. It shows that the sites with adequate wind for large turbines are quite small, meaning that large wind farms are unlikely to be technically feasible in our district. Regardless of this, wind has the highest resource potential of any renewable technology, as shown in Figure 2 below.

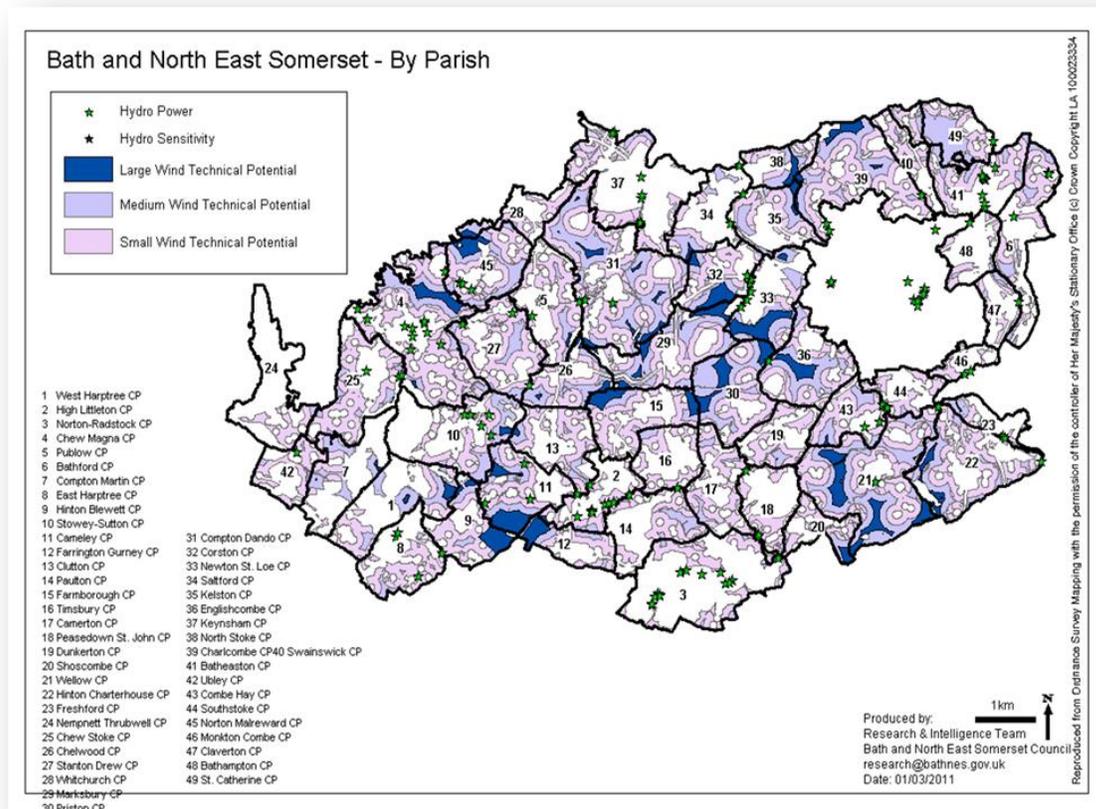


Figure 1: Map of B&NES district renewable energy resource potential

<sup>1</sup> MWe means Megawatt electricity, while MWth means Megawatt thermal

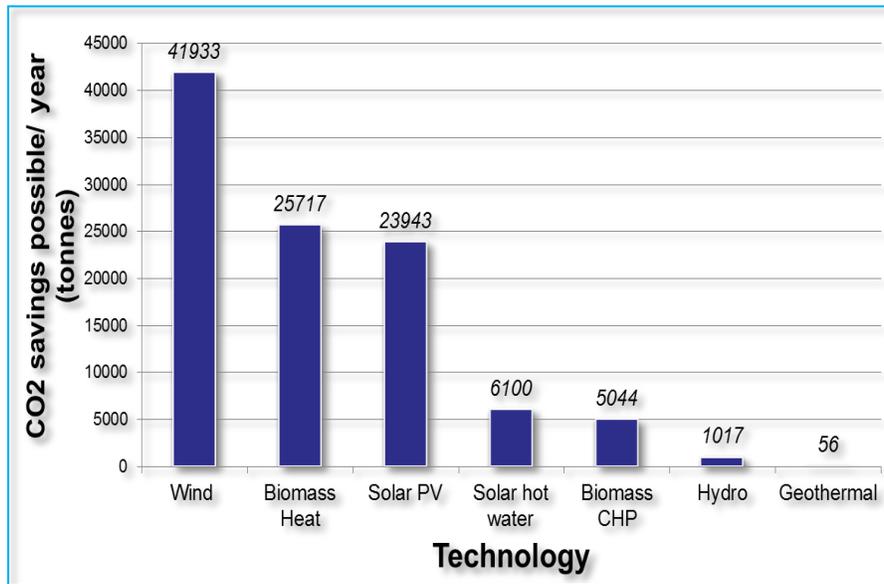


Figure 2: Carbon reduction potential of B&NES district renewable energy resource

Figure 3 illustrates the amount of renewable energy installed in Bath and North East Somerset to date, and shows that the greatest amount of renewable energy potential developed to date has been solar PV, whilst the district’s substantial wind resource has yet to be utilised. *Note: all figures for charts taken from the Regen SW Progress Report<sup>12</sup>.*

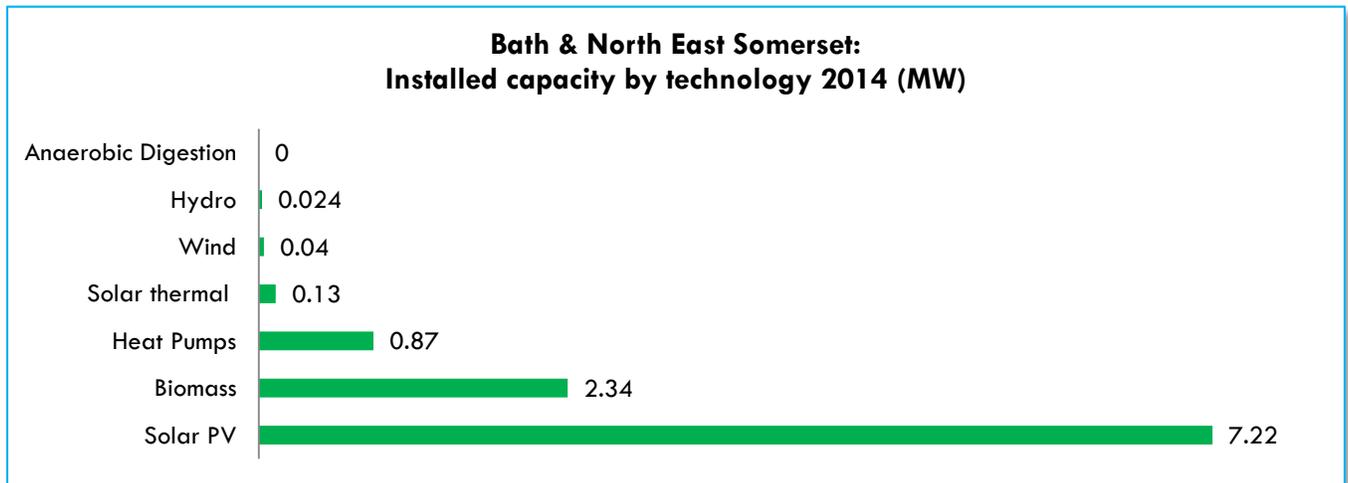


Figure 3: Installed renewable energy capacity in B&NES district to date by technology

Figure 4 shows the rate of growth of renewable energy in the district over recent years. If we are to meet the Core Strategy target (CP3), an average of around 11MW of renewable heat and 7MW of renewable electricity will need to be installed each year between 2014 and 2029.

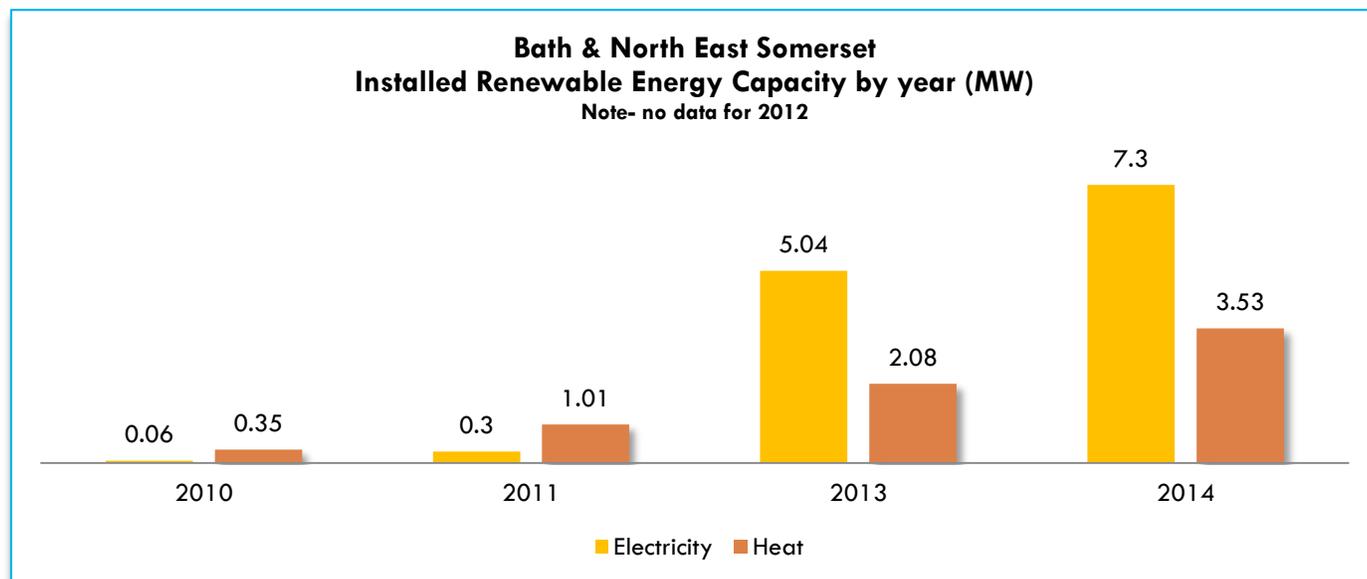


Figure 4: Installed renewable energy capacity in B&NES district to date by year

B&NES council and partners have been recognised for their innovative approaches to sustainable energy, most notably through the Council’s receipt of the “Most Proactive Public Sector Body” award at the South West Green Energy Awards 2013.

### **Reducing energy demand**

Reducing energy demand through energy efficiency also has a vital role to play in achieving our carbon emission target. Currently around 41% of Bath & North East Somerset's carbon emissions come from domestic properties and 34% from commercial premises (DEFRA 2007). Improving energy efficiency in our buildings is therefore clearly a key priority.

It also offers clear benefits to residents and local organisations. In Bath and North East Somerset, energy expenditure is around £157m a year. Most of this expenditure leaves the district, with profits accruing to the ‘big six’ energy companies. Reducing our expenditure on energy through energy efficiency can help improve profitability for our local businesses and reduce budgetary pressure for the public sector and local residents, and build local resilience against future fuel price rises. It is especially important for those vulnerable households in, or at risk of, fuel poverty.

There are a number of Core Strategy policies relating to reducing energy demand through retrofitting, sustainable construction and district heating, which are shown in the box below.

Meeting the local carbon emissions reduction target of 45% by 2026 (as set out in the B&NES Corporate Plan 2012-2015<sup>13</sup> and the B&NES Environmental Sustainability & Climate Change Strategy 2012-2015<sup>14</sup>) will require carbon emissions savings of 482,000 tCO<sub>2</sub>/yr to be delivered by 2026. Just over one fifth of this (104,000 tCO<sub>2</sub>/yr by 2029) would be achieved if we met our Core Strategy target on renewable heat and electricity. This leaves 378,000 tCO<sub>2</sub>/yr (or two fifths of

B&NES' total carbon emissions in 2012<sup>2</sup>) to be reduced through a combination of energy efficiency and cuts in transport related emissions.

Achievement of this will be equally dependent on national government, for instance as a result of centralised policies, regulations and decarbonisation of the electricity grid, and the extent to which we can maximise these opportunities through local activity in the district.

Minimising energy demand locally through energy efficiency also increases the relative proportion of our local supply we can generate through renewable energy.

***Core Strategy Policies on Energy Efficiency: CP1, CP2 and CP4***

Policy CP1 on Retrofitting Existing Buildings sets out the approach for all existing buildings, including historic buildings, and states that retrofitting measures to existing buildings to improve their energy efficiency and adaptability to climate change and the appropriate incorporation of micro-renewables will be encouraged.

Policy CP2 on Sustainable Construction sets out the approach to sustainable design and construction for all buildings, and requires that all planning applications include evidence that energy efficiency and opportunities for renewable and low-carbon energy have been maximized, and are accompanied by a B&NES Sustainable Construction Checklist

Policy CP4 on District Heating states that combined heat and power and district heating will be encouraged, and that within the three identified "district heating priority areas" (Bath Central, Bath Riverside and Keynsham High Street), development will be expected to incorporate infrastructure for district heating.

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<sup>2</sup> Carbon emissions from B&NES district were 1,072,000 tCO<sub>2</sub>/yr in 2006 and 945,400 tCO<sub>2</sub>/yr in 2012 (DEFRA local authority carbon emissions statistics)

## AIMS OF THE STRATEGY

The approach set out in this Strategy aims to achieve the following:

1. **Increase low carbon, renewable energy and energy efficiency** to meet the area's carbon reduction targets and address climate change.
2. **Increase local control over energy costs** for residents, businesses and public services.
3. **Retain economic benefits locally** to make sure that money and jobs stay in the area.
4. **Increase community involvement** so that local people have more ownership, governance of, understanding of, and direct benefits from renewable energy and energy efficiency in their locality.



*Figure 5: The 2014 Annual General Meeting of Bath & West Community Energy, at BWCE's community owned Hartham Park solar PV array near Corsham, Wiltshire*

# STRATEGIC APPROACH: WHY COMMUNITY ENERGY?

Community energy is important for Bath & North East Somerset because:

- A substantial amount of our renewable energy resource potential is relatively small scale and dispersed, which lends itself more readily to a community delivery model within which smaller scale opportunities become more viable.
- A community energy approach will help us retain a greater share of investment, revenue streams and job creation in the local area. It has potential to stimulate economic development, new jobs and social enterprises, while reducing energy costs for residents, businesses and the public sector.
- Enabling local people to participate more actively in renewable energy and energy efficiency through share ownership and governance will increase support for local sustainable energy.
- Changes in the energy markets present new opportunities for residents and local organisations to take advantage of local, decentralised energy generation and supply.

We have developed this approach in response to community demand. In B&NES we have a strong base of community groups and parishes who are active on energy issues. Some examples of the

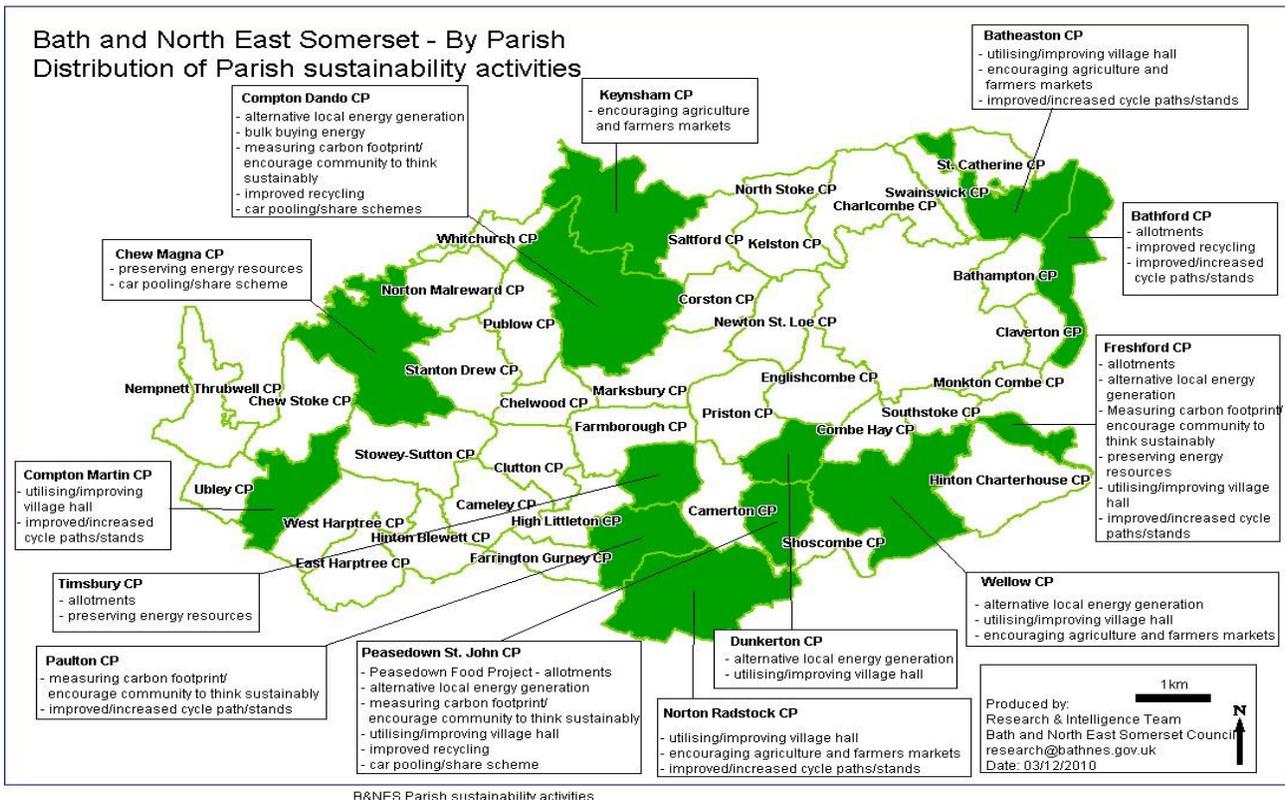


Figure 6: B&NES Parish Plans which feature sustainability aspirations (2010)

work they have delivered to date are included under Themes below. Figure 6 also shows rural Parish Plans which feature sustainability aspirations. The skills, interest and experience which local communities can harness can play an important role in helping deliver our local objectives.

The Government has recognised the importance of the role that communities can play in meeting our national carbon and energy targets, and defines community energy as outlined in the box:

*‘Community Energy’...is defined as projects or initiatives focused on the four strands of reducing energy use, managing energy better, generating energy or purchasing energy. This included communities of place and communities of interest. These projects or initiatives share an **emphasis on community ownership, leadership or control where the community benefits...stay in the local community**... This includes shared ownership or joint ventures where benefits are shared by the community” - DECC Community Energy Strategy 2014*

Our local view of community energy also extends to local businesses and the public sector, which also have an important role to play in terms of delivering smaller scale energy solutions as part of a localised and decentralised approach to generation and supply. ESP partners have already delivered a range of projects (see Themes below) and there is potential for all of us to build on this work in the future.

Sustainable energy installed through a standard commercial model will also be important for meeting our local targets. However, in line with the ESP’s Environmental Sustainability & Climate Change Strategy, which sets ‘Community Enablement’ as a strategic approach (alongside ‘Leading by Example’ and ‘Partnership Working’), the focus of our work will be on supporting community energy, while ensuring the local planning policy framework enables commercial developers to play their part as well. The new voluntary approach to ‘shared ownership’ developed by the Government’s Shared Ownership Taskforce provides new opportunities for commercial developers to offer opportunities for community investment and co-ownership of renewable energy projects.

## TAKING ACTION

Changes to the energy system in the UK have created new ways for districts like Bath and North East Somerset to get involved local energy generation and supply. Similarly, new approaches to energy efficiency and smart energy management are creating new possibilities for community action. For the purposes of this Strategy, the energy system is broken into the themes below:

**Theme 1: Generating Energy:** *Increase the production of low carbon energy*

**Theme 2: Managing and Reducing Energy Demand:** *Reduce use and take a “smart” approach to managing demand*

**Theme 3: Providing Energy Services:** *Develop a local energy services model*

Existing actions being taken and possible future actions in these themes are outlined below. In all cases, success will involve continuing existing activity whilst adding more innovative actions in the future.

### THEME 1: GENERATING ENERGY

*One of the aims of the strategy is simply to install more renewable energy and meet the Core Strategy target.*

#### Existing Action

**1. Renewable energy installations on ESP partners’ estate:** Much progress has been made. Table 2 shows some of the accomplishments of public service partners:

<b>Avon Fire &amp; Rescue</b>	<ul style="list-style-type: none"> <li>• 30 kW Solar PV installed on existing stations</li> <li>• Target of 20% renewable energy generation on all new builds</li> <li>• Review of entire estate underway with a view to further Solar PV</li> </ul>
<b>B&amp;NES Council</b>	<ul style="list-style-type: none"> <li>• 243kW PV on Keynsham Civic Centre, helping the building to achieve its target of a Display Energy Certificate rating “A”</li> <li>• Solar PV installed on 6 school roofs through a roof-rental lease with BWCE</li> <li>• 37.5kW PV installed on One Stop Shop building in Bath, working with BWCE</li> </ul>
<b>Bath Spa University</b>	<ul style="list-style-type: none"> <li>• 500 kW biomass system for Commons building - to be expanded to serve other academic and residential buildings via a district heating scheme</li> <li>• 500 kW biomass system for new "Gardens" residential development - also to be expanded to serve other academic buildings via a district heating scheme</li> <li>• Investigating solar PV to approx 350 kW over 2 sites</li> </ul>
<b>University of Bath</b>	<ul style="list-style-type: none"> <li>• 2 solar PV systems installed for a total of 74kWp currently installed plus several new systems planned on new and existing buildings</li> <li>• 6 solar thermal systems comprising around 22,000kWh heat each year</li> <li>• Various renewable studies completed/under investigation either through new builds or at campus level.</li> </ul>

Table 2: Renewable energy installations on ESP partners’ estates

**2. Developing new frameworks to support community energy:**

The Cooperation Agreement between the Council and Bath and West Community Energy (BWCE) sets out a way for the two organisations to work together, invoking the Well Being powers in the Local Government Act 2000 and the wide-ranging General Power of Competence in the Localism Act 2011<sup>15</sup>. The Cooperation Agreement is an innovation in relationship management and has been used as a template for other working arrangements, and by other local authorities.

**3. Enabling Community Enterprise:**

The Council has taken a range of action to facilitate the development of BWCE, such as the provision of a pump-priming grant, sites on Council estate for projects and investment through the Council’s Green Investment and Jobs Fund.

**4. Community enablement:**

To support community energy groups at an earlier stage of development, the Council convenes a B&NES Community Energy Forum, and the online B&NES Environmental Sustainability Network<sup>16</sup> which facilitates collaboration and resource sharing. The council also provides individual support to groups with training, signposting, resource sharing and grant funding when available.



Figure 7: The B&NES Environmental Sustainability Network: The ESP’s social network with over 400 members and many interest groups



BWCE is unique in our area, as a not-for-profit enterprise set up by local people. BWCE keeps economic benefits from renewable energy in the area through a local share-ownership model and the reinvestment of surplus revenues into the BWCE Community Fund, an independent Charity for local low carbon projects.

As of March 2015 BWCE has raised nearly £10m through 7 community share offers for its own and partners’ projects, with 1.7MW of solar PV installed and a further 4.5MW mid-construction. BWCE is also in negotiation with developers about a further 20MW of solar PV as well as hydro and wind energy projects.

BWCE also provides mentoring and support to other community groups including Wiltshire Wildlife Community Energy, Low Carbon Gordano and Kennet Community Energy.

BWCE’s recognition has grown and they have won a number of awards, including Community Energy Organisation of the Year at the UK’s first community energy conference in September 2014 (see photo). For more information: [www.bwce.coop](http://www.bwce.coop)



**5. Using planning powers to support renewable and community energy:** Council planning policies to support renewable energy have been developed based on extensive studies<sup>17</sup>. These policies, summarised in the table below, have resulted in some notable achievements, for example the installation of district heating at the Bath Riverside development:

Planning Policy	Policy Summary
Core Strategy <sup>18</sup> : Core Policy CP3 Renewable Energy	In addition to setting targets, this policy states that: Proposals for low carbon and renewable energy infrastructure, including large-scale freestanding installations, will be assessed under the national policies and against the following: <ul style="list-style-type: none"> <li>• potential social and economic benefits including local job creation opportunities</li> <li>• contribution to significant community benefits</li> <li>• the need for secure and reliable energy generation capacity</li> <li>• environmental impact</li> </ul>
Core Strategy: Core Policy CP4 District Heating	<ul style="list-style-type: none"> <li>• Within “district heating priority areas” (Bath Central, Enterprise Area and Keynsham) developments are <b>expected</b> to incorporate district heating infrastructure and connect to existing systems where available</li> <li>• Within 12 “district heating opportunity areas”, developments are <b>encouraged</b> to incorporate district heating infrastructure</li> <li>• Thermal Masterplanning should be undertaken e.g. anchor loads, density, heat demand profiles etc and the heat hierarchy should be followed</li> </ul>
Bath Western Riverside Supplementary Planning Document <sup>19</sup> (SPD)	<ul style="list-style-type: none"> <li>• 10% reduction in carbon emissions is required through use of renewable energy – as established by an Energy Use Assessment</li> <li>• Requirements for Code 4 and BREEAM</li> <li>• At least one zero carbon building</li> <li>• Buildings to be future proofed to allow for conversion to full renewable or zero carbon energy as technology develops</li> </ul>
Sustainable Construction and Retrofitting SPD <sup>20</sup>	A guide for residents on installing energy efficiency and renewable energy technologies on the main building types in the area. Includes Listed Building guidance and case studies of renewable energy on listed buildings.
Renewable Energy in the Green Belt: Informal Guidance <sup>21</sup>	National policy designates renewable energy development in the Green Belt as inappropriate development. Developers must demonstrate Very Special Circumstances in order to get planning consent. This guidance sets out how this test might be met, including detail on social, economic and community benefits.
Placemaking Plan <sup>22</sup>	Currently in draft, new policies are proposed on energy efficiency, allowable solutions, 20% on-site renewable energy requirement, domestic scale solar, ground mounted solar, community renewable energy and community involvement and water efficiency. Evidence to support these policies will continue to be refreshed alongside the Plan-making process.

Table 3: Summary of B&NES planning policies relating to renewable energy

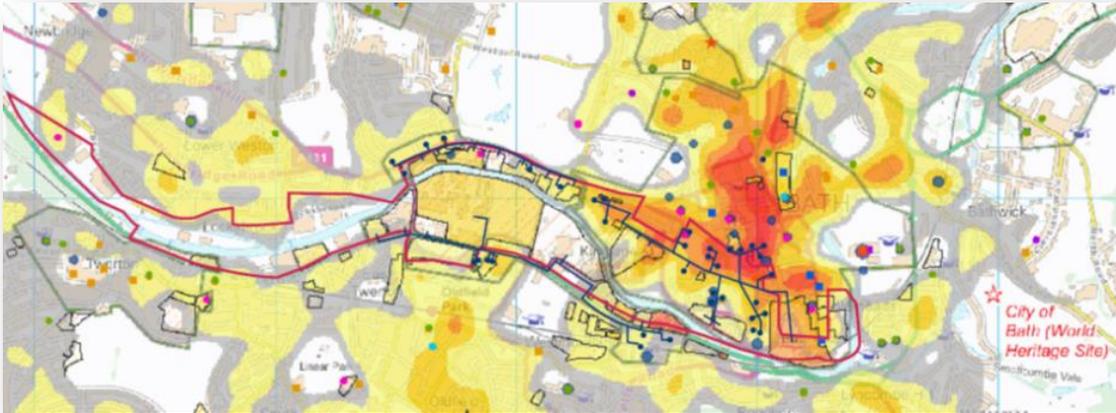


Figure 8: Potential heat network routes in the Bath Riverside Enterprise Area 'District Heat Priority Area', taken from the 2010 AECOM District Heating Study that formed the evidence base for policy CP4

**6. Investment in renewable energy and community projects:** A policy loan of £500k was made by the Council into the Wilmington Farm Solar Array, a BWCE community energy project. The loan supported the community share offer for Wilmington Farm by helping to overcome the current market barrier of banks being unwilling to lend to community energy projects of this scale.

**7. Influencing key stakeholders:** The Council and partners can help to unblock issues that affect renewable energy. For example, the Council is in discussion with BWCE and Bristol Airport about radar mitigation for wind turbines to reduce the risk to aviation in the Airport's airspace, and will facilitate discussions with the District Network Operator, Western Power Distribution, to find less costly solutions in places where the grid doesn't have the capacity to carry more renewable electricity.



Figure 9: The 243 kWp solar PV array being installed on the Council's Keynsham Civic Centre. The array will bring a financial benefit of around £50,000 and saves 125 tonnes of CO<sub>2</sub> per year

## Potential Future Action

**1. Renewable energy development:** There is scope for public sector and private sector partners to develop renewable energy on their existing buildings, as part of new developments, and on land where appropriate. This can involve developments on their own estates, or could equally involve influencing other stakeholders to install renewable and community energy, for instance as part of the leasing or disposal of land and property.

**2. Investment in community renewable energy:** The Partnership will encourage continued investment in community energy, and continue to look for ways to overcome barriers to investment in community energy projects.

**3. Supporting and nurturing community groups:** The Council will continue to convene the B&NES Community Energy Forum and the online B&NES Environmental Sustainability Network, to help community energy groups to co-ordinate activity and to bring forward new renewable energy projects in the district.



*Figure 10: Solar array on Oldfield Park Infants School, one of six solar arrays installed by Bath and West Community Energy in the B&NES district. The school gets free electricity and the panels are used as an educational resource. Image credit: Bath Chronicle*

## THEME 2: MANAGING AND REDUCING ENERGY DEMAND

*This theme falls into two areas: reducing energy use and using energy more efficiently by matching supply with demand through “demand management”.*

### Existing Action

**1. Energy efficiency on ESP partners’ estate:** The table below shows some of the accomplishments of public service partners:

<b>B&amp;NES Council</b>	<ul style="list-style-type: none"> <li>• Keynsham Civic Centre has been designed with a target of Display Energy Certificate rating “A” (75% less carbon than a standard compliant building, with &lt;math&gt;&lt;18\text{ CO}_2/\text{m}^2&lt;/math&gt;), through a combination of well insulated and airtight design, natural ventilation, waste heat recovery, low energy appliances and renewables, all for less than the original cost estimate for a Building Regulations (Part L) compliant building.</li> <li>• Support has been provided to our 78 schools to help them improve their building fabric, monitor &amp; target energy use via smart meters, run annual switch-off campaigns and receive classroom behaviour support. In 2013/14 the school’s estate reduced carbon emissions by 965 tonnes with savings of £140,000 across the estate.</li> <li>• Street lighting LED replacement programme, 4000 LEDs cut energy use by 1.5 million kWh, 780t/CO<sub>2</sub> p/a, with savings of c.£200,000 saving p/a.</li> </ul>
<b>University of Bath</b>	<ul style="list-style-type: none"> <li>• Energy consumption continues to fall even though the University has grown. Energy efficiency improvements mean the University is consuming roughly £1m worth less annually compared with usage eight years ago. Electricity usage is down 10%, while gas is down 20% (weather-corrected).</li> <li>• The University also has two gas-fired Combined Heat and Power 250kW units that will generate 2 million units of electricity annually (enough for 600 houses)</li> </ul>
<b>Bath Spa University</b>	<ul style="list-style-type: none"> <li>• Achieved Platinum Eco Campus status for their continued and long-term commitment to sustainability. Carbon emissions have fallen by 21.5% since 2005-8, despite new academic and residential developments at Newton Park.</li> </ul>
<b>Avon Fire and Rescue</b>	<ul style="list-style-type: none"> <li>• Energy efficiency refurbishments have resulted in a 30% carbon reduction over the last 5 years, achieved through a range of activities across their estate including upgrading boiler controls for better management, loft and ceiling insulation, double glazing, server virtualisation and lighting upgrades with day/night occupancy and presence detection.</li> </ul>

*Table 4: Energy efficiency improvements on ESP partners’ estates*

**2. B&NES Energy at Home Scheme:** Domestic carbon emissions form 41% of the district’s total, and for this reason B&NES Council has launched its Energy at Home scheme, designed to provide a local framework for delivery of energy saving advice and installation of measures for residents’ homes. The scheme will be able to draw in government funding for low energy retrofit measures for instance through the Green Deal and Energy Company Obligation, helping residents get the best deal and find local installers they can trust. The scheme has been developed in partnership with Curo and Bath and West Community Energy.

**3. Bath Green Homes:** This community partnership between Transition Bath, B&NES Council and Bath Preservation Trust has run for three years, opening the doors of residents homes in order to showcase their low energy measures and share their experiences of installing and living with them. ‘Open Home’ events like these have been growing nationally and experience has shown they can be a very effective way of encouraging local people to take action on their own home. In 2014 Bath Green Homes opened 19 homes and buildings across Bath, which received over 700 visits and involved more than 70 community volunteers. In addition a Home Improvement Fair at the Guildhall attracted a further 300 visitors, while a series of over 20 events and workshops provided further opportunities for community learning.

**4. Community action on energy efficiency:** Community group activity such as neighborhood advice, community awareness raising, thermal imaging and draught proofing projects all offer powerful ways in which to engage residents in reducing energy use as well as enabling other benefits such as tackling fuel poverty. We are fortunate to have a number of local community groups in the B&NES district which are delivering valuable and innovative activity on energy efficiency. The Community Energy Forum, convened by B&NES Council, provides an opportunity for these groups to meet and share experience and ideas. Examples of activity include:

- **Transition Bath Energy Group** - has been running a pilot project to train local volunteers to offer thermal imaging surveys in their neighborhoods, to highlight energy saving opportunities such as simple DIY draught proofing. It has also developed a LED spotlight ‘try before you buy’ kit, now available from Bath Central Library, to encourage people to make the switch away from halogen spotlights, saving up to 90% electricity.
- **Energy Efficient Widcombe** – has been working with schools in the local area to provide workshop opportunities for children on energy saving, and cascading this learning to parents. It has also delivered free thermal imaging surveys, and is piloting a ‘smart thermometer’ approach, which could be used to help reduce cold-related health risks.
- **Bathford Energy Group** – has provided energy efficiency advice to residents, including free energy surveys, air pressure testing, and workshops in its community café. It has helped establish neighbourhood support groups for residents with similar housing types to share experience, and along with Energy Efficient Widcombe and Transition Bath is also offering thermal imaging surveys by trained volunteers.

## Potential Future Action

**1. Continued investment in energy efficiency:** ESP partners will continue to pursue energy saving opportunities, including reducing demand through behaviour change, building fabric improvements, more efficient lighting, appliances and controls.

**2. Investigation of opportunities for “smart” demand reduction** to enable greater energy efficiency and reduce costs. Opportunities include:

- Demand management on our own properties
- Smart grids on regeneration sites
- Electric vehicles as part of a “smart grid”

**3. Energy at Home Community Marketing:** The Council is keen to develop opportunities for maximum community engagement in all aspects of the scheme over time. The growing Energy at Home Stakeholder Forum will continue to be developed.

**4. Energy at Home for Business:** In the longer term, it is also envisaged to be able to offer the Energy at Home retrofitting advice and delivery service to business customers in the area. This will partly depend on the Government’s time table for expanding the Green Deal scheme into the business sector.

**5. Continue to support opportunities for community engagement on energy efficiency:** including through the B&NES Community Energy Forum and the Environmental Sustainability Network.



*Figure 11: An electric pool car in use by a Council employee*

### What is a “Smart Grid”?

Our current electricity grid was built in the 1890s. We are now stretching its patchwork nature to its capacity. A “smart” grid could better handle the variability of renewable energy and the increasing complexity of electricity in the 21st Century.

### What Makes a Grid “Smart?”

The Smart Grid will enable two-way communication between the utility and its customers. The benefits of Smart Grid include:

- Increased integration of large-scale renewable energy systems meaning that renewable energy is not wasted in periods of low demand
- More efficient transmission of electricity
- Quicker restoration of electricity after power disturbances
- Reduced operations and management costs for utilities, and ultimately lower power costs for consumers
- Reduced peak demand, which will also help lower electricity rates
- Better integration of customer-owner power generation systems, including renewable energy systems

### Demand management

“Demand management” refers to using technology to match power supply and demand. This includes smart meters which relay information about energy use between the grid and the user. DECC is planning a full national rollout of smart metering by 2020. Smart appliances and industrial processes communicate with smart meters, giving the option to shut off when power is expensive (e.g. when the wind isn’t blowing). Energy storage is part of this; e.g. electric vehicles can act as batteries, storing and releasing energy, or surplus renewable electricity can be converted to hydrogen.

## THEME 3: PROVIDING ENERGY SERVICES

*Buying and selling energy can be linked with efforts to generate and save energy in order to form a comprehensive local approach to “energy services” that encompass all or most aspects of energy in our area.*

In Bath and North East Somerset, energy expenditure is around £157m a year, most of which leaves the local area, with profits accruing to the Big 6 energy companies. If these revenues could be captured locally, they could potentially create an economic multiplier effect, income for participants and/or delivery of policy objectives e.g. lower cost, lower carbon energy.

Some large local authorities, for example, Birmingham and Bristol City Councils are opting to set up “Energy Service Companies” (ESCOs). In the past, we have rejected the idea of forming a local ESCo because it was difficult to see how it could support community energy and the only models in the UK involved high levels of investment and risk. However the changes to the energy market may now enable an ESCo to work at a smaller scale with less risk. These changes provide the potential for community benefits such as lower energy bills for residents and higher revenues for local renewable energy generators. In short, the development of a local ESCo may provide the ESP with the ability to step up our work on energy, win greater local control and increase the community benefits arising from the energy system.

### Potential Future Action

- 1. Energy Services Project:** The Council has set up an overarching Energy Services Project which is looking at (a) the potential for local energy service delivery across the district (identifying different potential business models as well as the community benefits such an approach could bring), and (b) the feasibility of decentralised heat networks in Keynsham town centre and Bath City Riverside Enterprise Area (building on previous studies that have identified these as district heating priority areas).

#### What are Energy Networks?

Energy networks supply an area with heat and sometimes electricity or cooling from a central plant through local network of pipes/wires. This replaces the need for plant in individual buildings, e.g. boilers or air conditioning units.

Energy networks can reduce CO<sub>2</sub> either through use of low carbon technologies such as biomass boilers, or through more efficient use of fossil fuels, e.g. gas-fired combined heat and power engines (CHP) which generate electricity and use the heat from generation as district heating, unlike centralized power stations which usually waste the heat. At best, gas power stations are 50% efficient with 50% of the remaining energy lost as heat. By using the heat, CHP systems can be up to 90% efficient.





*Figure 12: The energy centre at Crest Nicholson's Bath Riverside development, which contains gas CHP and biomass engines which supply heat to this residential development through a network of pipes.  
Image credit: Transition Bath*

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