# Winchester District Renewables Strategy

***Discussion draft from the WinACC Renewable Action Group.***

10 January 2014

*"The challenge is not the technical feasibility of building a low carbon economy but making it happen." Committee on Climate Change (2012)*

Winchester District has made a commitment to reduce carbon emissions by 30% from 2004 levels by the end of 2015. Successive reports locally [Renewable Energy Study for Winchester District Development Framework, (ESD, Dec 2008); Winchester District Renewable & Low Carbon Energy: An Assessment of Opportunities (Ecoup March 2012); Route-map to a Low Carbon Economy (CAG, 2013)] have looked at the potential for developing renewable energy locally. Common themes emerge from that work. It is intended that this strategy should provide a framework to move forward, both reinforcing and enhancing Winchester City Council's route-map and action plan to a low carbon economy.

This strategy is about financial investment and sustainable economic growth as well as carbon reduction. The combination of rising fossil fuel prices, government incentives – Feed-in-Tariffs and the Renewable Heat Incentive – and low interest rates make this an opportune time for judicious investments in renewable energy. A 'virtuous circle' of investments in carbon reducing technologies can be created with successful investments yielding dividends that can be re-invested.

In 2010-11 Hampshire County Council (HCC) had to spend £915,000 in purchasing Carbon Reduction Commitment allowances in respect of 80,000 tonnes reportable GHG emissions. That is on top of an energy cost to HCC on electricity and heating of £15.7m pa, 70% of which is in schools. HCC estimates that its non-transport energy costs will double by 2020 and double again by 2030. In 2011-12, efficiency and other measures are claimed to have enabled energy cost savings worth £500,000pa in future years. Yet in 2011-12 Carbon Reduction Commitment ranked Hampshire 44th out of 66 councils in weighted rate of improvement[1].

A recent commercial study showed that installing PV on the roofs of all suitable Hampshire schools (16MWp, distributed over 500 potential schools) has the potential over the 25 year term of the project both to reduce energy costs by £26m and to bring a further £26m and 20 skilled jobs into the community, just at the time when school and council budgets are squeezed (based on a community funded model).

There is a great deal of potential in Hampshire for using wood fuel. A sustainable harvest of 120,000 tonnes per annum (Forestry Commission 2013) is available in Hampshire through better management of existing forestry, sufficient for 10% of heating needs. If exploited with priority, this has the potential to bring £20m pa into the Hampshire economy and create 250 local jobs over the next 5 years. (The CAG study identifies 10,000 tonnes fuel and 20-25 jobs for Winchester District alone.) This can be used to reduce costs and keep fuel revenues local, saving carbon whilst also enhancing biodiversity in the forests. Wood energy is available now, with existing technology and resources.

For Winchester District alone, an estimated £1.7m of additional revenue would be retained within the county for each 1% of non-transport fuel that is locally sourced.

There is now widespread recognition of the need for Britain to de-carbonise its energy system. A balance will be struck between more centralised and more decentralised solutions; but with new government incentives there is a major opportunity to develop more localised energy economies.

[1] Environment Agency CRC performance league table 2011-12 http://crc.environment-agency.gov.uk/pplt/web/plt/public/2011-12/CRCPerformanceLeagueTable20112012

There will always be specific local questions and resistance to change. As a next step the emphasis must switch from ***whether we do anything, somewhere,*** to ***what we will do, in each area***.

A powerful step towards a greater sense of shared responsibility would be to define zones appropriate to each technology and to set a presumption that each part of Winchester District should host a share of the renewable energy infrastructure as is most appropriate to their situation. Consultation can then take place to find the appropriate solutions for each place, leading to positive collaboration instead of confrontation, resulting in community-led and -owned projects.

This would throw the impetus back to the public and get them to own some of the hard decisions, lifting some of the pressure from the local authorities. This process also serves to reduce confrontation caused by the planning process, to engage positive interest and to entrain support and resources.

## Summary

Overall objectives under this strategy:

- To accelerate the growth of the renewable energy economy in the Winchester District.
- To stimulate the local economy through the transition to a low carbon model through economic development, carbon reduction to address targets and creation of new jobs.

This growth will be based upon:

- Investment in upgrading building stock and developing energy infrastructure.
- Localisation of revenues from energy supply through local generation, energy support services, supply chains and jobs.
- Long term savings to business and consumers in fuel and other life-time costs.
- Development of community energy projects.
- 'Virtuous circle' of investment in renewable energy with surpluses and community funding from successful projects reinvested in new projects.
- Positive positioning of the local economy and of Hampshire as a place with vision and leadership.

This paper focuses on renewable energy sources and lifetime carbon reduction through new energy projects, rather than on energy savings and efficiency retrofits which are already well documented. It sets out a strategy which will enable the district to capture the principal opportunities from implementing renewable energy sources over the next 3-4 years and beyond, including the methods to achieve this.

Success in implementing this strategy will be driven as much by leadership, culture and vision as by the projects themselves. The leadership required is not solely that of the local authorities though their role is of special importance.

Section 1 deals with key principles and key issues. Section 2 looks at specific opportunities and their impact.

## Vision

To transform the energy economy of Winchester District through appropriate implementation of renewable energy, thereby creating new local jobs, reducing the carbon footprint, building communities, saving money, developing local ownership and increasing the proportion of energy spend that is retained within the district.

## Section 1: Principles and key issues

The following key issues need to be addressed in order to underpin the delivery of a Low Carbon, Growth Economy in Hampshire:

### 1.1: Promote and enable existing incentives.

Central Government incentives exist to encourage generation of renewable energy (Feed-In Tariff, Renewable Heat Incentive etc). The Winchester Low Carbon Board, and in particular HCC and Winchester City Council (WCC) - should streamline the uptake of these by:

- publicising them
- setting clear and consistent messages of support (including planning guidance)
- designating areas appropriate for installing each large-scale technology
- seeking opportunities for their use
- encouraging their application at larger scale in public works
- making it easy for them to be taken up by the private sector
- working in partnership with others to deliver effective investments.

### 1.2: Build it right first time.

New building developments present a huge opportunity to reduce lifetime carbon use, reduce energy costs and embed low carbon technology (active and passive) at minimum extra cost, if designed into projects from the start. But short term pressures for "least capital cost" in development will always frustrate this, because energy costs are not part of the development contract.

This should be addressed through clear planning and procurement guidance supporting best practice in effective energy efficiency and use, including district energy wherever possible in order to build in the efficiencies that this can achieve.

### 1.3: Emphasis on whole life costs.

Planning authorities – and other public bodies - should require building projects, whether new or refurbishment, to consider whole life costs and benefits (i.e. including those incurred after the property is occupied) and to integrate this thinking in all projects, tenders and planning guidance. Policies should be put in place to drive this, requiring transparency in the criteria and assessment on which decisions are made. Such a policy is generally appropriate, but is particularly important in the financial case for building and energy projects.

### 1.4: Criteria for selecting and prioritising renewable energy projects.

Investment in renewable energy technologies and carbon reduction initiatives should be focused on those that have the greatest local potential in terms of:

- local jobs and revenues created
- lifetime carbon reductions
- lifetime reductions in costs to users
- speed and risk in payback
- potential for community benefit societies to have a significant ownership stake.

Priority projects that satisfy these criteria locally include:

- large scale onshore wind
- CHP/district heating using renewable energy
- solar PV on large roofs and on marginal land
- wood and other biomass-powered heat
- anaerobic digestion for gas or electricity.

**1.5: Enable appropriate funding support:**

HCC and WCC should make use of the potential of public sector bodies for intelligent borrowing and lending at low cost in order to enable and accelerate investment in this sector, to the benefit of the community.

Traditional lending bodies seek quick payback and ignore lifetime benefits. Carbon projects rely in their business case on a broader and longer term view. They often also require set-up funding which can then be recycled once the project is completed. The council should seek to borrow and lend in order to enable community benefits in this way. This may include the planned development of the Hampshire Community Bank but this is not the only way to achieve this objective. Provision of funding resources by the council will:

- Provide a commercial return for the council.
- Stimulate the local economy.
- Enable parallel community investment.
- Provide a service to the community.
- Enable funding of schemes that have a strong community benefit but do not satisfy normal banking requirements.

**1.6: Provide support for community initiatives and plan for a diversity of projects.**

The local authorities should work actively with communities to stimulate a vision for low carbon initiatives, both large and small, and provide supporting resources to take these forward.

There is potential at all scales for community-based renewable energy projects. In Germany, where there are more than 600 energy cooperatives, an estimated 15% of renewable electricity generation is owned by local communities. In Denmark about 86% of wind energy generation is owned by local communities. In the UK communities that wish to generate their own energy using renewable technologies can form a big part of the solution. A number of renewable energy cooperatives have already been formed in Hampshire.

Community projects are very effective ways to entrain public support and leverage resources of many kinds including large scale funding, but they need support to get them off the ground: clarity of policy, simple planning processes, expert support, seed-corn funding, resources and mentoring . This should be enabled by a go-to person with authority and reach, supported by an appropriate team, expertise and resources and with a reporting structure that enables effective action – see the proposals for a partnership approach below.

**1.7: Leadership.**

As the low carbon economy route map and action plan sets out, leadership is required to create a low carbon Winchester: in setting direction, in consistency of delivery and in clear and unambiguous messaging; through example, through the planning processes, through supporting prospective opportunities and in practising what is preached.

In Winchester, HCC and WCC have the prime responsibility for this. The refreshed community strategy reiterates Winchester City Council's commitment to work towards a lower carbon Winchester District. Working with Hampshire County Council which also has a commitment to carbon reduction, the local authorities need to give clear and consistent leadership, supported by their own energy management and reduction plans.

In relation to renewable energy, the clear direction, expectations and policies that result from the action plan for a low carbon economy will reduce delays and uncertainty, avoid expensive, inefficient disputes around renewable energy, and remove the need for separate justification of planning decisions on every project. Good communication and constructive engagement will reduce costs and risks. Building on "*Winchester District Local Plan Part 1: Joint Core Strategy*", examples of positive actions include the explicit designation of districts suitable for large scale renewables, the early consideration of low carbon energy in every project plan, and building links between projects so that they support each other, for example through District Heat and CHP. These practical steps could be supported by:

- A requirement to assess any WCC project against the principles above in order to maximise benefits and carbon reduction
- A training and professional development programme for members and officers to learn from best practice elsewhere.

**1.8: A partnership approach**

Developing renewable energy in Winchester District is not the sole responsibility of the local authorities: it requires a team approach. It is therefore proposed that the Winchester Low Carbon Board should create a partnership subgroup (e.g. Winchester Renewable Energy Partnership_– to take forward work on renewable energy in the District, through the development and implementation of a strategy and action plan. The members of this partnership will be responsible for mobilising and committing the resources necessary to implement the plan from within each of their own organisations. It could include representatives from WCC, HCC, South Downs National Park, the Universities of Winchester and Southampton, Sparsholt College, Solent and Enterprise M3 LEPs, the Forestry Commission, Hampshire Chamber of Commerce, WinACC and Hampshire Renewable Energy Co-operative.

## Section 2: Technologies and Projects

This section summarises the technologies and projects currently most appropriate and significant for the district, and suggests what is necessary to move them forward. It builds on prior research and on professional reports already published locally. These identify the natural and material resources available, the characteristics of the technologies available to exploit them and the potential benefits.

WCC and HCC need to demonstrate consistent support for a portfolio of practical projects of appropriate scale distributed across the district, reflecting the physical resources in each area. Many schemes have geographic constraints since, in many cases, the resource can only be harnessed where it occurs.

The most important and effective renewable options for Hampshire are:

- large scale onshore wind
- district energy networks
- CHP
- solar PV on large roofs and on marginal land

- biomass-powered heat
- anaerobic digestion.

A strategy must address the structural barriers if appropriate renewable energy projects are to be developed in the district without unnecessary delay, conflict and overhead. The major generic barriers - many of which apply across most, if not all, the renewable energy technologies - and some actions that can help to overcome them, are:

- Lack of political leadership.
- Uncertainty, delay and risk generated by the planning process. There is a need to set clear plans, guidance and expectations for the siting and scale of large scale renewables, thereby reducing uncertainty and resistance.
- Failure to consider renewable options at an early enough stage of the design and planning process on major projects.
- Failure to develop an overall plan and to involve the public in the transition to renewable energy.
- Inability to bring together projects fragmented between multiple partners. There is a need actively to identify opportunities for shared schemes and to bring partners together, for example for District Energy, biomass, anaerobic digestion and CHP.
- Inexperience, and hence insufficient expertise, in local authorities and some developers. There is a need for practical training and professional development in renewable energy technologies for local authority officers and members, developers and the construction industry.
- Failure to take a “lifetime costs” view of projects. All projects should be assessed against lifetime costs.
- Limited expertise in community ownership and in setting up local Energy Supply Companies (ESCOs). There is a need to identify, train and support groups who can lead, focus and enable renewable projects, community ownership and local ESCOs.
- Difficulty in raising finance. The local authority should actively support and enable new ways to raise appropriate finance and to fund initial development prior to operations.
- Misinformation. The local authorities should actively publicise and uphold good practice and exemplar installations, thus reducing the perceptions of risk.

## 2.1: Large scale onshore wind

Onshore wind is one of the most developed and well understood of the large scale technologies. It is fast to implement, has very fast energy payback, is sustainable, proven and commercially viable. It is also the lowest cost solution that can provide large scale energy. It is one of the few technologies of sufficient scale to be able to make a significant impact on carbon intensity within the timescales required to build our renewable capacity and reduce carbon emissions.

But wind is severely compromised by the uncertainty, long timescale and cost for securing of planning permission. This is a severe disincentive to investors and causes significant public and political controversy with every application. The problem is enhanced by the fact that wind turbines must be in exposed places and will therefore be highly visible.

Yet areas that have good wind profiles, and that are not otherwise specifically protected, are valuable assets. Such areas should be identified and there should be a presumption for their development for renewable energy generation for 25 years unless there is strong reason otherwise.

A district plan should urgently be defined, clarifying the council's commitment to onshore wind as an element of its low carbon policy and setting out, ahead of development applications, how much wind is proposed and the initial zones where this wind will be permitted. The National Planning Policy Framework (para. 97) guides councils to identify suitable areas for renewable and low carbon energy sources and supporting infrastructure, where this would help secure the development of such sources. Further areas can be added if and when the need arises. This will make it possible for project developers and community groups to focus their resources effectively, and will remove the high level of controversy which accompanies every application.

Actions:

- Clear policy statement in favour of onshore wind as a valuable and significant element of the overall carbon reduction strategy.
- Explicit designation of zones where wind is expected to be sited. This will simplify and shorten planning consultations, shorten project development times, keep communities aware and informed and control the up-front planning risks and costs of developers.

## 2.2: District Energy Networks

District Energy Networks (DENs) distribute heat rather than raw fuel such as gas or electricity. They enable more effective use of energy and of capital plant, reduce costs to energy users and simplify maintenance for landlords and homeowners. They are suitable for local ESCO ownership, with benefits in retaining value in the community. They can also open the way to more complete use of input energy through combined heat and power (CHP). A mix of boiler types enables flexibility in fuel types over time including renewables, wood- or waste- fuelled boilers/engines, further reducing carbon emissions and incorporating further benefits in the local economy. When combined with anaerobic digestion, a district heating system can also reduce "waste miles" and provide a constructive load for the harnessed biogas.

District heat requires a different, holistic approach to project design, committed at a very early stage and considering opportunities to incorporate (pre-existing) neighbouring premises. It needs a mixture of use types, ideally incorporating anchor loads from premises with commercial and leisure demand profiles alongside domestic estates. It will only happen if planning authorities and large public bodies give a lead and there is a proven process for funding, owning and operating the heat network. A framework of explicit support and enabling mechanisms will hugely reduce risk and make commercial funding easier.

Actions:

- Strong planning direction for district heat in all significant new developments.
- Make all appropriate public buildings available to join such networks.
- Identify or create a lead body to pull projects together, with clarity of council support.
- Provide support and expertise in setting up of local (community) ESCOs to run these.
- Make public funding (at mutually beneficial rates) available to set up the infrastructure.

## 2.3: Combined heat and power (ideally combined with District Energy).

Combined heat and power (CHP) makes maximum use of fuel burned by redirecting the waste heat from electricity generation (typically 30-50%) to other uses. The carbon benefit comes from productive use of the heat inherently wasted in generating electricity. There is further financial benefit if the electricity can be used on site by the ESCO, rather than being exported.

CHP plants need to be sited near users with a consistent requirement for heat or cooling power, ideally a mix of domestic, leisure and commercial through a district energy network. CHP is usually scaled to match the base heat demand (using heat storage to spread the load throughout the day), and the balance of demand is made up from other sources. CHP energy can come from a number of sources but gas is the most usual. Wood fuel may also be appropriate for very large installations where there is a sustainable local source of wood fuel.

Actions:

- Proactive approach by council to find appropriate sites, to build partnerships to develop them and to commit the heat demands of appropriate premises.
- Planning guidance regarding use on all significant developments.

## 2.4: Solar photovoltaic on large roofs and on marginal land,

There is good potential to implement large scale solar photovoltaic (PV) on roofs of commercial and public buildings. This has relatively low landscape impact, allows simple connection to the grid, and enables a better business case if a proportion of the electricity can be used locally. National incentives (FIT) have made this attractive, but uptake in public and commercial buildings is sporadic, partly because many occupiers are not owners, and the benefits are greatest when owners and occupiers are brought together.

Many public buildings are appropriate, but implementation is often hindered by complex ownership and uncertainty of rights. Large scale rooftop PV merits a policy of co-investment from public funds where there is a positive case. In general large scale roof systems are twice as cost effective as domestic installations.

HCC and WCC should urgently set clear guidelines and objectives to enable rooftop PV on premises they control where there is a positive business case, thus showing a lead and making good use of public money. They should make a clear policy commitment to allow communities to invest in schemes in public buildings in their local areas (e.g. PTAs and schools).

There is further potential to implement commercial scale solar arrays (over 10s or 100s of acres) at ground level. Large scale farmland-based PV is often relatively simple to install and commercially attractive, but is less easy to integrate with the grid and tends to have a far greater impact on landscape and community. Central government incentives and planning guidelines currently exist to support the development of such solar farms where they are appropriate.

Actions:

- Statement of policy, and presumption in favour of, roof-top PV on public premises and public sector housing.
- Investment in resources and expertise to facilitate schemes for public and community premises, including guidance on how to work with an ESCO, model structures for management and pump-priming funds.
- Capital funding at mutually beneficial rates to support PV projects where appropriate.

## 2.5: Biomass fired heat

Locally sourced biomass from forestry provides both a carbon-neutral fuel substitute and enables creation of new local enterprises and jobs in management of woodlands, processing and supply chains.

Wood fuel heating is most suitable for larger installations, such as public or commercial buildings, multiple occupancy buildings, small estates or district heat. It is especially beneficial in replacing existing oil fired installations and anywhere that mains gas is not available. Fuel is usually supplied in the form of wood chips or pellets for easy handling. The commercial Renewable Heat Incentive makes this very attractive commercially. A domestic RHI scheme is to follow. All council buildings on oil could be converted to biomass. There is potential for wood fuel to grow to provide 10% of UK heat needs.

Management of existing woodland provides multiple benefits: it creates sustainable fuel, supports local jobs, improves the growth rate of remaining trees and improves the quality of the woodland for wildlife and for recreation.

DECC's 'UK Renewable Energy Roadmap' (July 2011) identifies Biofuels as having the highest potential of all renewables for creating new employment, with 35-50,000 new jobs across the UK. Hampshire is well placed to benefit from this, being both large and highly wooded.

Concerns over switching to wood fuel centre on security of supply/demand, fear of price escalations, local storage space and local truck movements. These supply chain issues are typical of an unfamiliar and underdeveloped market. They can be addressed through positive action and example and an understanding of the "whole life cycle benefits" from wood to warmth. Actions:

- Publicise existing successful installations and the whole 'wood to warmth' supply chain.
- Actively prioritise and promote to all premises with high heat loads and without gas.
- Make biomass (and District Heat) the "default" source of heat in significant new projects.
- Enable high quality independent expertise to help facilitate good quality installations.
- Support and build local partnerships and supply chains, especially where wood can be supplied from nearby sources.
- Actively support the local wood fuel economy, involving local training agencies (Sparsholt), the council's land resources, large energy users and local landowners.

## 2.6: Anaerobic digestion for gas or electricity

Many waste streams, especially those with wet organic materials, are suitable for anaerobic digestion to create methane gas and compost for fertiliser. The resulting methane is either used for on-site energy needs or to generate electricity. The most effective anaerobic digestion plants work with a defined range of materials, since mixed materials can lead to poor digestion performance.

Because exported electricity receives a low price compared to grid prices, it is beneficial to site an anaerobic digestion plant where there is a local use of the arising energy, either as heat or electricity.

Anaerobic digestion provides a positive approach to dealing with food and other green waste, enabling benefit where currently there is significant cost both to business and to authorities. For this reason Eastleigh Borough Council already has separate arrangements for collection and disposal of food waste. In Hampshire, it may be time to review how 'Project Integra' – the County-wide arrangement for waste management and recycling - operates in respect of food and organic waste. It may be appropriate to initiate a project involving commercial food waste in Winchester. In addition action should be taken to optimise the energy recovery from incineration, ideally by redirecting all high energy value waste to dedicated energy conversion facilities and offering any excess incineration capacity to neighbouring councils.

The compost and digestate resulting from anaerobic digestion preserves many of the original nutrients and provides a further significant carbon benefit in that, used appropriately, it can displace

fuel-hungry artificial fertilisers and supplement the limited global reserves of phosphorous and other nutrients.

Actions:

- Work with identified sources of waste appropriate for anaerobic digestion, to build partnerships and facilitate appropriate schemes.
- Review current arrangements for collection and disposal of food and other organic waste across Hampshire.
- Support the creation of anaerobic digestion plants where there are sources of appropriate waste and support the development of supply chains with appropriate applications for the digestate as fertiliser.
- Identify sites for AD plants where arising heat and electricity can be locally used.
- Set clear planning principles for scale and location of anaerobic digestion plants.
- Review current waste streams in order to optimise the use of energy-bearing materials, whether through redirection to anaerobic digestion or burning in dedicated energy conversion plant.