

BISHOP'S CASTLE HEAT & WIND Project

Concerns over climate change are growing rapidly and reducing carbon emissions is particularly important in Bishop's Castle as we are not on the gas grid, so most of our heating comes from oil and LPG. The need to reduce carbon emissions has been set out in the *South Shropshire Climate Action Plan* which Philip Dunne MP presented to Parliament recently. It also features heavily in the work of local organisations, including the Shropshire Hills AONB. Both Bishop's Castle Town Council and Shropshire Council have declared that we are in a Climate Emergency. We can reduce our carbon emissions in two ways, by saving energy and by generating renewable energy.

One way of reducing carbon emissions is by using Heat Pumps instead of oil, LPG or electric boilers. Heat Pumps work like a fridge, extracting a large amount of low-grade heat from a heat source and concentrating it into a smaller amount of higher-grade heat where it is needed. Most Heat Pumps are air source. The outside units for these are identical to air-conditioning units. Ground source Heat Pumps are also available. These are more efficient and don't need the external 'air con' unit but are considerably more expensive and need space to fit 'slinky's' or a borehole for gathering the heat.

Heat Pumps need electricity to run them but Ground-Source Heat Pumps generally supply around 3 to 4 units of heat for every unit of electricity used. The heat provided is therefore at a reasonable price with considerable carbon savings. In Bishop's Castle however there is limited space for individual Ground-Source Heat Pumps, and not every house has space for an air source heat pump unit.

Lightfoot and *Sharenergy* are proposing a *Community-Owned Heat Network* for Bishop's Castle, using Ground-Source Heat Pumps. Building owners could connect to the network relatively easily, with no capital outlay and without having to arrange an installer, get multiple quotes, etc., and it would remove the need to fit multiple external 'air con' units. The details of the Heat Network are still to be developed but it could supply houses, schools, SpArC, Enterprise House, etc. Assistance to use less energy will also be provided by *Lightfoot*, using their considerable experience in this area. Shares in the project will be available to buy and any profits made from this scheme after paying back capital, interest, maintenance, etc. would go to community projects.

If a heat network is developed locally then ideally it would be powered by a wind turbine. This way, every unit of electricity from the turbine could be turned into 3 or 4 units of heat by the Heat Pumps. This would increase the carbon reductions and reduce costs. After extensive research the best locations for a wind turbine within the Bishop's Castle Neighbourhood Plan area are;

A: NE of the Business Park (E of Love Lane), or
B: WSW of the Conery (E of the B4385).

We are thinking of a turbine of up to 1MW (1,000kW) output. This would be about 50m tall to the hub. The output of a Wind Turbine goes up substantially as the blade length increases, so a 1MW turbine is much less than twice the size of a 500kW turbine. Also, it is now very difficult to buy a new turbine under 1MW capacity and insurance can be difficult on second-hand turbines.

The wind speeds at the sites available are at the lower end of those normally thought viable for a wind turbine. A 1MW turbine in these sites should deliver around 2,000 MWh of electricity in a year, (2 million kilowatt hours). However, as we have a direct use for most of the electricity produced the viability is improved.

We are not proposing solar panels to power the heat pump as the annual output profile of solar panels is not really suited to heat pump usage, with a high proportion of solar energy coming in the summer months when the heat pump load will be at its lowest. A Wind Turbine would be a much better match.

You would also need 2 MW of solar panels to give the same output as a 1MW turbine, which would cover around 10 acres of ground.

We are putting forward both sites at this stage to give us options in case one site is found later to be unsuitable. One site is just inside the Shropshire Hills AONB, the other just outside it. The AONB Partnership is concerned about Climate Change and is supportive of community energy, though generally at a smaller scale than this proposal. We are hoping that local people, the AONB Partnership and the Shropshire Council Planning Committee will recognise the importance of taking community action to reduce carbon emissions and support this proposal. The only way to find out for certain is to submit an application through the normal planning process which we hope to do in due course.

A similar sized turbine has been fitted by the Small Wind Co-op at Prouts Park in Pembrokeshire, *see www.communityenergypembrokeshire.org/projects*.



A good reference site re wind turbines can be found at www.renewablesfirst.co.uk/windpower

If the heat network and wind turbine proposal is taken forward, then full details and a chance to comment will be available through the planning process. We are just looking for initial reactions in this survey. Thank you for taking part.

Yrs, Mike Watkins, Lightfoot

Find out more, and tell us what you think, at the
Bishop's Castle Heat & Wind Public Meeting
Three Tuns, Thurs 16th Sept, 7.30pm

With Dave Green, Development Manager, Sharenergy
& Martin Crane of Carbon Alternatives.

Sharenergy is a co-operative specialising in developing and supporting Community Energy schemes. See www.sharenergy.coop

*Carbon Alternatives are Heat Network specialists based in Oxford.
See <http://carbonalternatives.co.uk/>*

This work has been funded by a Next Generation grant. See www.powertochange.org.uk/get-support/programmes/next-generation-community-energy-programme

Arranged by Shropshire and Telford Community Energy. See www.stcenergy.org.uk

For more information about how a Heat Network functions see www.cambridgeshire.gov.uk/residents/climate-change-energy-and-environment/climate-change-action/low-carbon-energy/community-heating/swaffham-prior-heat-network/