

1. PV panels (© BRE). 2. Biomass fuel pellets (ETSU/DTI). 3. PV and solar water heating (© BRE). 4. Solar water heating (Highland Council). 5. Wind turbine (© BRE). 6. Heat exchanger for ground source heat pump (ICE Energy Scotland).

Fossil fuels – what are the alternatives?

The energy we use to heat, light and power our homes produces over 27% of the UK's emissions of carbon dioxide, the key climate change gas. Scottish householders have an important role to play in lowering our greenhouse gas emissions, and in helping to reach Scotland's renewable energy targets. Renewable energy sources are either inexhaustible (like wind, sun and flowing water) or are continually replaced (such as crops or biomass as it is usually referred). Generating energy from renewable sources can help reduce our dependence on energy generated from fossil fuels and therefore reduce our greenhouse gas emissions.

Developments in technology mean that there are now many small-scale renewable energy generating systems suitable for residential premises. They can provide electricity to run appliances, heat water and provide heat for space heating. Below is a short overview of the different types of renewable energy technologies available. How much they can contribute towards your energy needs depends on a number of factors including the suitability of your property and what level of financial investment you are willing to make.

Solar water heating

Solar water heating systems gather energy radiated by the sun and convert it into useful heat in the form of hot water. The system involves solar panels fitted to the roof which transfer energy from the sun's rays to a fluid. This fluid transfers heat to water in a hot water cylinder through a heat exchanger. Solar water heating systems usually work alongside your conventional water heater and can typically provide 40% of the annual household hot water requirement.

Wind

Harnessing power from the wind involves the use of a turbine containing a rotor fitted with aerodynamic blades which utilise lift forces caused by the wind on the blades. The rotor drives a generator which produces electricity. The output from small scale wind turbines vary from a few hundred watts to 5-6kW. The optimum size for a household would be in the range of 1.5 to 3kW and would involve a turbine mounted on a mast. Smaller turbines can be mounted on the property but these typically produce only 600 watts.

Biomass

Energy from biomass is produced from organic matter of recent origin and is often referred to as 'carbon neutral' i.e. the CO₂ released during generation of the energy from biomass (e.g. burning of the biomass) is offset by that absorbed during the fuel's production. Domestic use of biomass usually involves the burning of wood pellets, wood chips and logs. Boilers to provide space heating are generally larger than 15kW and include an automated feed system for the fuel.

Ground source heat pump

The earth absorbs a large proportion of the solar radiation which keeps the UK ground at a stable temperature of about 11C. A heat pump extracts solar heat from the ground by moving heat from one place to another and from a lower temperature to a higher temperature to heat the dwelling. It is essentially the same technology as a fridge but in reverse. Heat pumps are most effective when incorporated with underfloor heating systems but traditional radiator systems can be used.

(continued on next page)

Fossil fuels (cont.)

Photovoltaic (PV) solar electricity

Photovoltaics use cells to convert solar radiation into electricity. The PV cells consist of layers of a semi-conducting material, usually silicone, and when light hits the cell it creates an electric field causing electricity to flow. PV requires only daylight – not direct sunlight – to generate electricity. A PV array is made from many cells linked together and a typical cover 10-15m² of roof space which ideally should be south facing.

GRANTS

Installing a renewable energy technology usually represents a significant financial investment and the payback periods can often act as a deterrent. Therefore to help Scottish householders play their part in protecting the environment, and to encourage development of a thriving renewable energy industry in Scotland, the Scottish Executive is funding the Scottish Community and Householder Renewables Initiative ("SCHRI"). This scheme provides financial support for a range of eligible technologies for communities and individual households. For householders SCHRI provides a grant of up to 30% (capped at £4000 per technology) of the cost of installing renewable energy generation systems. (Grants for Solar PV are managed under a separate programme by the EST.)

Is there another way to use renewable energy?

Making more use of renewable energy does not necessarily involve generating your own. One of the easiest and most effective ways is to choose a green electricity tariff from your energy supply company. Most of the suppliers now offer this option which means that they are obliged to source for you an amount equal to some or all of the electricity you consume from an existing renewable source such as hydro. You may have to pay a small premium for adopting a green tariff but you will be contributing to the demand for cleaner electricity generation.

For more general information on renewable energy, SCHRI and green tariffs contact the HEEAC on FREEPHONE 0800 512 012.



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Case Study

Dr Philip Kiln of Inverness decided that he would like to install some form of renewable technology to both save on energy costs and make his contribution to reducing carbon emissions. With a south facing roof solar water heating seemed the ideal choice plus he was confident that there was well proven technology available. The installation was very quick and simple and used the existing hot water tank. The total cost of the system was £2600 but with SCHRI funding this reduced the net cost to about £1800.

Dr Kiln said "On a sunny day the solar panels provide us with a tank of hot water and there is always that feel good factor that you are

making your contribution to saving the environment."



Watts'on investigates...

Watts'on in your home?

In October the Highland Energy Efficiency Advice Centre launched its latest energy efficiency campaign. The 'Watts'on investigates' campaign was timed to coincide with national energy saving week which was held from the 24th to the 30th October. To promote the campaign the HEEAC has produced a leaflet which encourages home owners to carry out a 'Watts'on investigation' in their own home. The leaflet outlines a twelve point energy efficiency investigation together with simple measures include turning your central heating room thermostat down by one degree, which could reduce your heating bill by up to 10%, not leaving electrical appliances on stand-by and installing reflective panels behind your radiators.

If you would like a copy of the 'Watts'on investigates' brochure of low cost and no cost tips to guide you through your own home energy efficiency investigation give the HEEAC a call on FREEPHONE 800 512 012 and we will send you a copy. Alternatively use the Contact page on our web site to request a copy at www.highland.gov.uk/property/energy-advice.

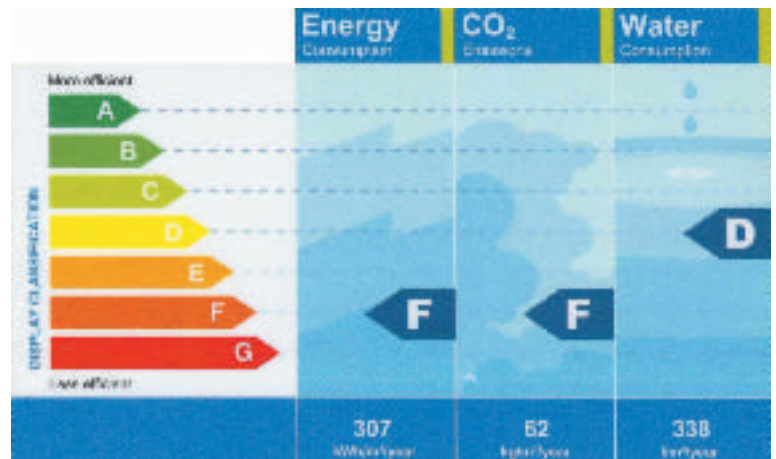
The energy efficiency measures identified in the campaign may seem 'elementary my dear Watts'on' but with even more fuel price rises being announced this winter keeping to them could save you £££'s!



Highland Council Energy Efficiency programme

Energy labels for public buildings

Many of you are probably familiar with the energy label displayed on the front of a new fridge and, more recently, alongside a new car on a dealership forecourt. Due to new EU legislation the forthcoming Energy Performance of Buildings Directive will require that all public buildings such as those owned by the Highland Council will need to display in a prominent position an energy label. This label, or certificate, will provide information on the buildings energy efficiency and is likely to include carbon emissions indicator, A-G banding and cost effective recommendations for improvement. The next issue of the HER will be covering in more detail how the Highland Council is working to meet tough energy efficiency targets for its buildings.



Switching your energy supplier



It was not that long ago that you had no choice as to who supplied your electricity or gas. However competition in the gas and electricity markets now means that you can usually choose from a range of companies who you would like to supply your gas and electricity. The suppliers offer a range of incentives, discounts and different

energy packages, including different methods of payment, which will determine how much you will pay. Some companies are now purely internet only based i.e. paperless billing, and savings can be made if you sign up with one of these suppliers. It is also important to remember that you must give you current supplier at least 28 days notice that you are changing to a new supplier.

When comparing offers from different suppliers here are some important points to consider

- Check if prices quoted for gas and electricity include VAT
- Consider the discounts offered for using different payment methods or for how much fuel you use
- See if you can buy both your gas and electricity from the same supplier and if there is a discount for doing this
- Keep a look out for extra costs such as standing charges or deposits
- Compare special services being offered to elderly, disabled and chronically sick consumers
- Note any charges for servicing appliances and whether you can cancel any contracts you already have

There has been a lot of bad press in recent years on how complicated switching your supplier can be and how difficult it is to make true comparisons. However there is guidance available from Energywatch the independent gas and electricity watchdog. Their web site provides contact details for a range of companies who provide free price comparison information by telephone, post or on the internet. All of these companies have signed up to the Energywatch code of practice for providing this service.

Energywatch operate a consumer helpline on 08459 06 07 08. The web site address is www.energywatch.org.uk. Alternatively contact the HEEAC on FREEPHONE 0800 512012 for further information.

Renewable Energy Strategy consultation launched

The Council has commissioned a number of reports to examine the potential for exploiting different forms of renewable energy (both on-shore and off-shore) in the context of various technical constraints and planning safeguards. In



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particular, a draft Renewable Energy Strategy and Planning Guidelines has been drawn up to help stimulate discussion of the issues associated with renewable energy development in the Highlands. The public have been invited to express their views on the strategy and planning guidelines during a consultation period which will close on Friday 13 January, 2006.

It is intended that the strategy will be finalised and approved, taking on board representations made during the consultation period, at a special meeting of the full Council on the 22 March 2006, when a range of interests, who have responded during the consultation period, will have a chance to air their views directly to councillors.

The Highland area has a particularly abundant renewable resources and a large geographical area over which they could be exploited. The potential is well recognised and the area is now attracting considerable development interest. By actively engaging in the renewable energy sector, the Highland area is supporting the wider aspirations of Scotland to be a world leader in the development and deployment of renewable energy technologies.

Copies of the Highland Renewable Energy Strategy and Planning Guidelines together with supporting Resource Assessment (RERA) and draft Environmental Assessment (SEA) have been deposited at all Council Area Offices; All Area Planning & Building Standards offices; all Public Libraries; and all Highland Council Service Points. They are also available through the Highland Council web site on http://www.highland.gov.uk/plintra/planpol/ren/ren_wg.htm

Representations should be sent in writing to John D Rennilson, Director of Planning & Development, The Highland Council, Glenurquhart Road, Inverness IV3 5NX.

Fuel Poverty Strategy published

Following a consultation process earlier this year the Highland Council Fuel Poverty Strategy 2005-08 has now been published. Being in fuel poverty means that someone can't heat their home to a comfortable level at a cost that is reasonable for them. This strategy demonstrates the Council's commitment to working towards eradicating fuel poverty in the Highlands by 2016 across all households in all housing tenures. Fuel Poverty is not a new issue for the Highlands. It is an issue that the Council and other agencies have been aware of and have been dealing with in a number of ways for many years. What is new is the creation of a formal strategy that makes the links between the various activities of a range of Council Services and other agencies.



Copies of the strategy are available from Housing Services, The Highland Council, Glenurquhart Road, Inverness, IV3 5NX. Tel: 01463 702888. E-mail: housing@highland.gov.uk

Tell us what you think and get a chance to win a wind up radio.



This is the fourth issue of the Highland Energy Review. So far the Review has covered a mixture of topics including Highland Council

energy initiatives, energy advice for the home and the latest in renewable energy initiatives in the Highlands. However, we would like to find out what **you** think. Let us know what you have, or have not, found interesting and of value, and if there are any topics you would like the HER to cover in the future.

Please use the form opposite, a photocopy will be fine, and we will enter all those received into a free prize draw for a wind-up radio. Very useful for the garden, or during a power cut! Five runner ups will each receive four energy efficient lightbulbs. Please post your completed form to the FREEPOST address at the bottom of this page.

Highland Energy Review – Comment and free prize draw form

Name:

Address:

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Post code:

Tel no:

Your comments:

Thank you for your comments. We will use the information received to improve the HER and make it more relevant to its readers.

Terms and Conditions: Closing date for entries 31st January 2006. The first form drawn out of the post bag will win. The next five drawn will be runners up. Winners will be notified by 10th February 2006. There is no cash or other alternative to the prizes stated. No responsibility can be accepted for prize draw forms lost, delayed or damaged in the post. The promoter is not liable for any of the prizes. Promoter: Highland Energy Efficiency Advice Centre.

Our next newsletter will be published in May 2006.

Highland Energy Efficiency Advice Centre, FREEPOST IV 163, The Highland Council, Glenurquhart Road, INVERNESS, IV3 5BR, Tel: FREEPHONE 0800 512 012.

www.highland.gov.uk/property/energy-advice

The Highland Energy Review is funded by the (Energy Saving Trust) **Local Energy Support Programme** which provides resources to councils to achieve their targets under the Home Energy Conservation Act obligations.

