

COMMUNITY RENEWABLE ENERGY AT LOCAL LEVEL

Castle Eden Dene Nature Reserve



Castle Eden Dene is the largest area of semi-natural woodland in north-east England, renowned for yew trees, and is managed by Natural England (English Nature). One of Natural England's priorities is to promote the natural environment through reducing greenhouse gases, and the installation of renewable energy at the Natural England offices at Castle Eden Dene reflects this, and is designed to be used as an educational tool. The visitor centre installed solar water heating panels on the toilet block, and also a rainwater harvesting system. The success of these renewable and sustainable technologies on the site generated the necessary impetus to pursue the installation of solar photovoltaic (electricity producing panels) as well.

The photovoltaic panels need to be installed so they face as close to south as possible. Panels can be mounted on the roof or on frames attached to gable ends of buildings or on the ground. Daylight stimulates a reaction within the panels to produce electricity and, although they generate more in summer, they do not need bright sunlight to function. PV panels can be connected to the National Grid, so that any excess electricity produced can be sold to the grid, and mains electricity is used as a back-up to the panels. Alternatively, PV panels can be used in off-grid situations, in conjunction with a battery bank, to provide power to places where there is no mains supply.

Solar water heating requires a different type of panel. When sunlight falls on these panels it heats a liquid inside them, which passes through the heating coils in a well-insulated hot water tank to heat the water inside. These tanks also have an immersion heater or second heating coil, powered by a standard boiler, to bring the water up to temperature if necessary for washing purposes.

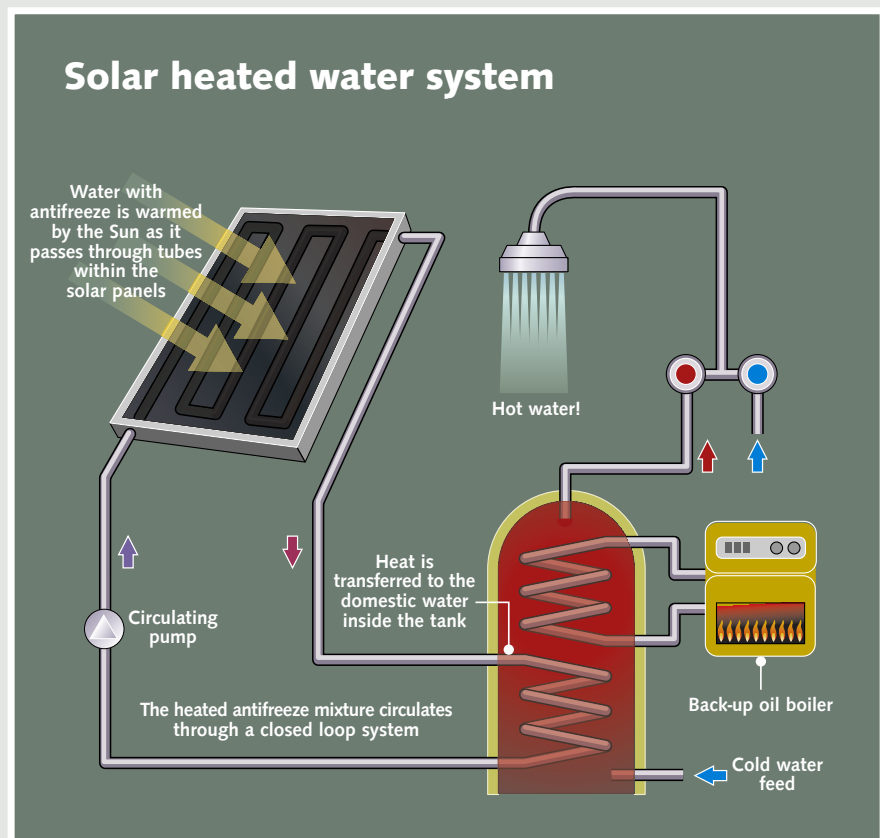
Rainwater harvesting systems work by collecting the rain water that falls on a building. The gutters and down-pipes feed into an underground storage tank. The water is then filtered and used to flush toilets. The purification of mains water requires large amounts of energy, and using unpurified water for non-potable uses saves the associated carbon emissions, as well as reducing the strain on water demand.

REALL carried out an initial site visit and provided advice on the different types of solar panel, which enabled the group

to make an informed choice of technology for the visitor centre. REALL also helped liaise with installers and assisted with funding applications. This enabled the project to secure grants from the Major PV Demonstration Programme and Easington District Council Local Agenda 21 group.

Solar Green installed the 3.6kW array, at a cost of £18,000. This generates 2,500kWh per annum and saves just over one tonne of carbon dioxide and approximately £300 (2007 prices) per year.

A touch screen control panel is to be installed in the courtyard for all visitors to access information about the renewable energy installations at the visitor centre. The classroom is in daily use by visiting school children and other community groups, so the renewable installations on this site are being used as a resource for education about renewable energy and sustainability.



CLEAN GREEN TECHNOLOGIES



Solar water heating

Over a year, solar water heating can provide about 60% of a typical family's hot water.

Solar photovoltaics

PV panels generate electricity from the sun, produce no CO₂ and are maintenance free.



Wood heating

Heating with wood is carbon neutral as growing trees lock up the CO₂ emitted by burning them.



Micro wind power

In an open location wind turbines make a useful contribution to electricity supply.

Hydro power

For buildings near a river, hydro can generate power with no pollution.



Ground sourced heat pumps

Heat from the ground for underfloor heating or extra large radiators. Uses electricity efficiently.

Funding for renewables and energy efficiency

There are various funding sources for renewable energy and energy efficiency at both local and national level. Advice on funding is available from your local rural community council:

Community Action Northumberland

Tower Buildings, 9 Oldgate, Morpeth
Northumberland NE61 1PY

Durham Rural Community Council

Park House, Station Road, Lanchester
Durham DH7 0EX

Tees Valley Rural Community Council

Queensway House, Queensway
Middlesbrough TS3 8TF

REALL was run by Community Action Northumberland and Durham Rural Community Council and operated in conjunction with partners. Funding has now come to an end, and Community Action Northumberland can no longer supply specialist renewable energy advice, although Community Action field workers are able to offer general guidance.

Funding for **REALL** was received from:

Community Action
Northumberland



Further information

Further information about community ownership of renewable projects is available from the **Department of Trade and Industry**. www.dti.gov.uk/files/file15108.pdf.

Information about energy co-operatives - **Energy4All**

Tel: 01229 821028, Email: info@energy4all.co.uk
and web: www.energy4all.co.uk

Information about energy matters for communities may be obtained from **Café**.
Community Helpline 08701 261444, email café@est.org.uk and web www.est.org.uk/cafe

Small scale renewables may be seen on the **Tynedale Renewable Energy Trail** and there is an exhibition at Kielder Castle, open from Easter to October. www.tynedalerenewableenergy.org.uk

The **SEED** Programme

Community Renewables Initiative

PB Power and RC Engineering