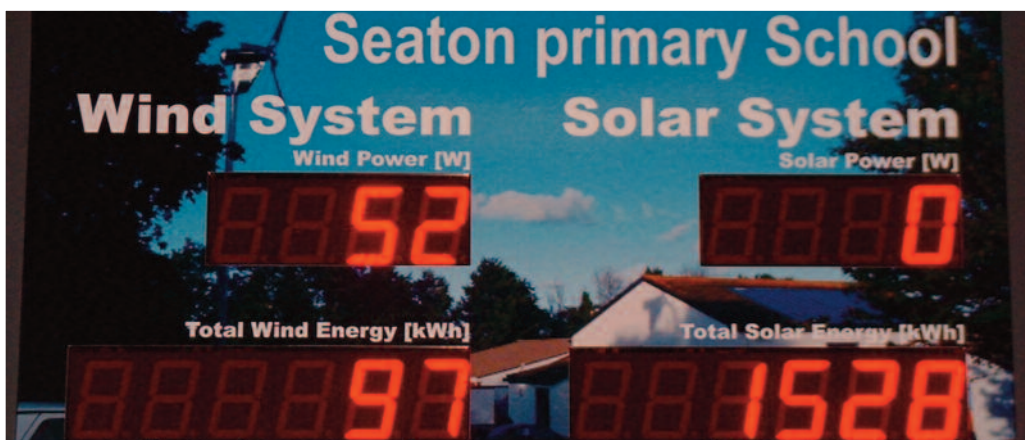




Case study Seaton Primary School East Devon

RENEWABLE ENERGY 4 DEVON



Introduction

In 2002 the school was awarded around £1million for new facilities. The school governors thought this would be the ideal opportunity to integrate renewable energy technologies into the school and to develop ways of using knowledge gained for school curriculum studies. They wanted the equipment to be of a working scale to provide energy for the school – rather than just demonstration models. The project could not have gone ahead without the full support of the Head Teacher and Devon County Council's (DCC) Property Services.

Project development

- The school governors were keen to reduce the energy bills and the school's carbon dioxide emissions, as well as creating an exciting educational resource. So a renewable energy feasibility study was undertaken, funded by the Clear Skies scheme (cost approx. £2000).
- As a result of the study it was decided to place a wind turbine near the school entrance, solar photovoltaic panels on the existing school hall roof, and solar water heating panels for the swimming pool on a raised framework in order to retain poolside patio space beneath.
- A feasibility and safety study was required by Devon County Council (DCC). The £8000 cost could not be met from grants raised for the renewable energy equipment itself and this turned out to be the biggest problem faced, which was solved by DCC providing a combination of grant and loan assistance. Seaton school also began working on a standard procedure for other schools to avoid this in future.
- The systems were installed in 2004.

How the system works

The PV and the wind turbine generate electricity reducing the school's energy bills. A row of inverters convert the DC current into AC and feed it into the school's mains supply. An export meter has been installed, but due to energy usage in the school, even during holiday times, there has been little export so far. This could change if further equipment is added in the future. The wind turbine does not generate as much as could be expected by this model because of the sheltered location. The 48m² of SHW collectors heat the outdoor swimming pool to 32°C, and the heat is retained for longer with a pool cover. There is a digital display unit showing how much electricity is being generated in real time. An automatic weather station enables pupils to download energy and weather information to a website for study and sharing with other schools.

Costs and benefits

- The PV produces around 4220kWh pa, and the wind turbine, 290kWh. Together they save around 1.94 tonnes CO₂ pa.
- The SHW generates approximately 15,600kWh th pa and displaces around 3 tonnes of CO₂ compared with mains gas.
- Grants were secured from EDF Energy's Green Fund for £35,000 towards the whole scheme; £2000 from Clear Skies for the initial feasibility study; £12,000 from Clear Skies for 50% of wind and SHW; £16,000 from Energy Saving Trust covering 50% of PV costs; £1,000 from The Co-op for the digital display panel; and £3,500 from DCC towards consultants' costs.
- The energy saving ethos of the school and the renewable energy installations have saved about 10% grid based energy use per year.

Technical details

Wind turbine

2.5 kW Proven, on 11m mast

PV

4.7 kWp BP roof integrated panels

SHW

13 x Suncell 030 flat plate collectors, facing South East

Installers

Wind turbine and PV array - Cholwell Energy Systems (now Beco Solar)
SHW - Celtic Solar

Wider benefits

In addition to installing renewable energy technologies, energy efficiency has been improved through higher efficiency gas boilers and low energy lighting with sensors and timers. An Energy Management System also regulates one block, which will hopefully be extended. A new teaching block was built in 2003 with high insulation specifications, and significant natural lighting.

Sustainable Energy education is built into the curriculum - each class has an Energy Agent responsible for ensuring lights and appliances are switched off. They and the Eco Club report on progress to the council and at assemblies. The school has an automatic weather station for the children to compare weather and energy outputs, with results available on the school website.

As a spin-off from these activities the school has instigated annually-reviewed Energy and Waste Management Policies. Seaton Primary is a member of the DEBI award winning Sustainable Axe Valley Endeavours (SAVE) Trail, and won second prize in the 2007 Ashden Awards.

Dave Kelf – School Governor said 'For an investment of about £70k (4.7kW PV and 2.5kW for wind) we get 5% of the schools energy requirement but the work has encouraged another 5% saving by conservation and reduction measures. We have received awards for the work and this has given good publicity for the ethos of the school - "Caring Now for the Future".

Further information

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For independent advice and support

Image gallery

wind turbine



wind turbine and photovoltaic panels



plaque showing funders

