

Case study summary

St Columb Minor School, Cornwall, UK

2010 Ashden Award

St Columb Minor's 2010 Ashden Award recognises its commitment to taking local action to tackle the global challenge of climate change, incorporating sustainability into the curriculum, culture and buildings of the school.

St Columb Minor School is a primary school on the outskirts of Newquay in Cornwall. Since 2008, the school has made significant investments in energy efficiency and renewable energy measures, with pupils from across the school, led by the Eco-Team, involved in a number of carbon reduction activities.

- Pupils actively engaged in energy efficiency around the school. Energy monitors in each class check that lights and equipment are not left on unnecessarily.
- Pupils have made personal pledges to reduce their carbon footprints and these are displayed in the school hall.
- Energy efficiency investments include new roof insulation, lighting controls, double glazing and energy efficient gas boilers.
- Microgeneration technology includes a 13.8 kWp solar PV array, a 6 kW Proven wind turbine and a 4 kW solar thermal system.
- Display panels in the school entrance area show the amount of energy generated from the wind and solar equipment.
- The solar PV and wind turbine generate about 23,000 kWh/year, saving about 11 tonnes of CO₂ per year.
- Electricity consumption has fallen by 37% and gas consumption by 6% as a result of investments in energy efficiency and microgeneration. School's energy costs fell by 10% in 2008/09 and a further 20% in 2009/10, despite energy supply cost increases of 50%.
- International Primary Curriculum used as the framework for teaching and learning, providing a global perspective that readily accommodates education for sustainable development. Whenever energy topics are taught they involve global issues with local solutions.
- To celebrate the attainment of the school's first Eco-Schools Green Flag, pupils and staff produced a short video called 'Making a Difference', which included pupils' views on climate change and sustainable energy as well as coverage of the renewable energy activities.
- The school involves parents and members of the local community in many of its energy activities and shares its knowledge and expertise with other local schools.

St Columb Minor School is a large, rural, primary school with over 400 pupils. It is situated in St Columb Minor, just two miles from the centre of Newquay. The school shares a site with the FirstSteps Pre-school and Childcare Centre. The school opened in 1982, when the local infant school amalgamated with the junior school.

UK statistics

(IMF 2009, UNFCCC 2006)

GDP: £20,500/year per person

CO₂ emission: 9.2 tonnes/year per person

Location



"I think I need to make an appointment to see the Head of my secondary school. I think I need to bring her to St Columb Minor to see what they are doing."

Jessica King, former pupil and Eco-Team member



St Columb Minor School benefits from solar PV and a small wind turbine to generate electricity.

Contact

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Case study

St Columb Minor School, Cornwall, UK

Background

St Columb Minor School is a large, rural, primary school situated in the centre of St. Columb Minor on the eastern outskirts of Newquay. The school opened in 1982 when the local infant school amalgamated with the junior school on the present site. It has over 400 pupils, 17 teachers and 53 other staff.

The school is situated in an area of relative poverty, with significant numbers living in temporary accommodation. Unusually the school has a 25% mobility rate, due in part to the mixed services base at St Mawgan where forces personnel and their families are based for short periods of time, but more significantly due to the seasonal nature of the area.

The sustainable energy activities in the school are led by Gill Harper, the School Business Manager. She is supported by pupils in the school's Eco-Team who are regularly engaged in activities to reduce the school's carbon footprint.

Integrating sustainable energy in schools

Installing sustainable energy technology

Gill Harper, the School Business Manager, leads the sustainable energy activities at the school. Gill receives excellent support from the Headteacher, Jennie Walker, other members of staff and members of the governing body.

The staffing and environment committee and the finance committee have overseen the installation of sustainable energy measures, including double glazing to all windows and external doors, lighting controls in some classrooms, corridors and offices and new roof insulation. New energy efficient gas boilers have also recently been installed. In June 2008 a 13.8 kWp PV array was installed on the roof at the front of the school, with a display unit in the school entrance area showing the amount of electricity being generated.

In December 2008 a 6 kW Proven wind turbine was commissioned. Parents and neighbours were consulted regularly during the planning for the turbine and no objections were raised. As with the solar panels there is a display meter in the school foyer showing the energy generated and CO₂ saved. Also in the entrance area is a monitor showing the school's current electricity consumption.

In addition to the solar PV and wind turbine, the school has a 4 kW solar thermal system that contributes to the hot water requirements of the school kitchen and some of the classrooms and toilet facilities.

The school has an excellent track record of securing grants and other financial support for its investments in energy efficiency and renewable energy, and has obtained almost £118,000 since activities began in 2007. The main investment has come from government and private sector grants and the local authority.

Behaviour change

The pupils play a leading role in reducing energy use in the school. Each class has energy monitors who check that lights and equipment are not left on unnecessarily. Members of the school Eco-Team review performance and put forward additional energy saving ideas. The pupils have made pledges to reduce their own carbon footprints and these are displayed in the school hall. Pledges have also been taken home for parents to commit to. As part of the school's global sustainability focus, another display has a list of 'global pledges' on environment and education, each linked with a pledge for action in the school.



Milly Heane and Joe Cave measuring wind speeds with an anemometer to help determine best position for a second wind turbine on the school playing fields. St. Columb Minor School, Cornwall.

"We're learning all the time. There's always something more you can do – that's why we want to network with other schools to share ideas and explore ways to continue to improve the environment and reduce our carbon emissions."

Gill Harper, School Business Manager



Students race in the electric car in the school playground. As part of their lessons they work on clean energy projects such as electric powered vehicles. St. Columb Minor School, Cornwall.

"We have a veg shop so when parents come at the end of the day they can buy fresh fruit and vegetables."

Annie, year six pupil

Pupils promote energy efficiency at home, using their own 'switch off' stickers to encourage their families to keep lights and appliances switched off when not required. Pupils have highlighted the use of low energy lighting and insulation in their homes and changes in the use of standby on TVs and game consoles. The school is also engaged in a three year programme to develop its garden. An expert gardener visits the school each Monday and assists pupils in growing fruit and vegetables, and has helped them prepare a multi-year crop rotation plan. The majority of the produce is either used in the school kitchen or sold to parents.

Non-teaching staff, governors and parents are also actively involved in the sustainable energy work in the school. For example, the site manager reads the meters weekly, the kitchen staff requested and received an energy efficient dishwasher to replace an inefficient sterilising unit and energy is discussed at every governors' meeting.

A community 'Green Day' was held in September 2009 to celebrate the award to the school of its first Eco-Schools Green Flag and to raise awareness amongst local people of the school's energy activities.

The school helps other local schools to develop their own sustainable energy activities. It has produced guidance material which is available on Cornwall Council's website and has held a renewable energy seminar for schools and community groups. Pupils have also been involved with the outreach activities, presenting their energy activities to pupils in other schools. Through its global links the school has raised money for solar cookers and showers in Peru and shared sustainability ideas with schools in India.

Integrating sustainable energy into the curriculum

St Columb Minor uses the International Primary Curriculum as the framework for its teaching and learning. The IPC covers all the requirements of the National Curriculum but its broader focus provides a global perspective that readily accommodates education for sustainable development.

All pupils learn about renewable energy, alternative fuels and electric vehicles, and Year 5 design the body of an electric powered go kart which they test in the school playground. The pupils also collect wind speed data to identify potential wind turbine sites as part of their maths lessons. A 'One World Week' at the school enabled pupils to study energy around the globe. For example, some pupils from Year 3 (aged 7-8) learnt about energy needs in Peru, made working models of solar cookers, and investigated solar showers. External support for the project was provided by an academic who works with young people and communities in the UK and in Peru.

A Year 6 class (aged 10-11) produced a 10 minute video called 'Making a Difference'. The film was co-written by the pupils and included their views on climate change and sustainable energy as well as coverage of the school's renewable energy activities.

Benefits

Environmental benefits

The solar PV and wind turbine generate about 23,000 kWh/year, saving about 11 tonnes of CO₂ per year, and helping the school achieve its Display energy Certificate rating of 'C'. The food growing project in the school garden will reduce food costs and food miles.

Social benefits

The sustainable energy activities have had a positive impact on the whole school and the local community. The new double glazed windows and doors have not only made the building warmer but have also improved the ambience of the school building, helping to create a better teaching and learning environment.

As a result of the energy work, pupils have become more aware of the environmental benefits of energy efficiency and renewable energy and are sharing these benefits with their families. Many children can describe how they are influencing changes in energy use in their own homes.



Members of the Eco team performing the school eco rap that they have written as part of their sustainable energy project. St. Columb Minor School, Cornwall.

"It's not just here – the effects spread out into the community on recycling, saving energy and saving water."

Lisa, Parent Governor, St Columb Minor primary school



Children from the school eco team complete a community energy survey in the local Co-operative supermarket. St. Columb Minor, Cornwall.

Pupils have been invited by one of the solar PV sponsors to carry out a community energy audit, and will visit a local convenience store to question shoppers about their energy habits and other green credentials. Not only will this provide useful evidence for the retailer but it is a valuable data handling and communication exercise for the pupils.

Parents and local residents are kept informed of the sustainable energy activities at the school. They are consulted when developments are planned and implemented and are encouraged to celebrate what has been achieved.

Economic benefits

Since 2008 electricity consumption has fallen by 37%, due to the installation of the solar PV and wind turbine, coupled with savings from reduced use of lighting and other electrical equipment. Improved insulation and the installation of energy efficient boilers have also reduced gas consumption by 6%. As a result, the school's energy costs fell by 10% in 2008/09 and a further 20% in 2009/10, despite energy supply cost increases of 50%.

Potential for growth and replication

The school is planning to install a computerised energy monitoring system, which will enable it to keep accurate records of energy consumption, solar thermal performance and electricity generated by the wind turbine and solar PV. The monitoring will assist the school in determining how much energy it is consuming and help to assess the impact of further energy efficiency investments and behavioural changes. The data collection will also enable the pupils to play a more active role in monitoring energy consumption in the school, analysing data as part of their curriculum activities in maths, science and technology.

Future energy saving measures being considered include installing sun pipes in some of the corridors and improving zoning and controls of the heating system. There are also plans to install additional solar PV. The school is not currently receiving any payment from its energy supplier for electricity exported to the grid from the current solar and wind installations because they are below the supplier's 30 kWp threshold for payment. However, the school is currently reviewing their contract with the current electricity supplier and is looking to find a supplier that will not only supply their electricity but also buy back excess energy generated during weekends and holiday periods.

Many primary schools are not as fortunate as St Columb Minor in having the resources to employ a School Business Manager, which often means that they do not have the time or commitment to spend on developing sustainable energy activities. However, Gill Harper was originally a school secretary and other schools could consider supplementing the school secretary's role with responsibility for energy management. The cost of training and some additional hours would be recouped by the financial savings from improved energy efficiency.

St Columb Minor's outreach activities and willingness to assist other schools with their sustainable energy practices will encourage replication. The school is always keen to share what it is doing and willing to help other schools establish their own carbon reduction activities.

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"If we didn't have all this renewable energy, we wouldn't be learning about carbon footprints, and it's also reducing our school's energy use too. Fossil fuels won't last forever."

Year six pupil



Gill Harper, School Business Manager, meets with the Eco Team to discuss sustainable developments within the school.



Pupils at St Columb Minor have studied the use and sources of energy around the world.

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