Dearne Valley Community Energy
Peer Mentoring by Sheffield Renewables
Year 1 Evaluation Report

Executive Summary

Sheffield Renewables was delighted to grasp the opportunity to spread its community-based clean-energy ethos into the neighbouring Dearne Valley through peer mentoring of Dearne Valley Eco Vision. Sheffield Renewables provided expert advice and hands-on practical expertise to Dearne Valley Eco Vision to enable them to set up their own social enterprise, Dearne Valley Community Energy. We were aided in this project by the Cabinet Office Peer Mentoring Fund.

As part of the project, Sheffield Renewables assessed the schools in the Dearne Valley and determined that >80% of the schools could benefit from clean solar power electricity. To exemplify how a social enterprise can set up a solar power scheme in the community, Sheffield Renewables installed a 50kW array on the roof of Swinton Fitzwilliam Primary School. This was installed at no cost to the school, allowing 20 years of electricity savings[1] and provides a working template for the newly-founded Dearne Valley Community Energy.

The benefits to the region include a much lower carbon footprint and cheaper electricity bills. Perhaps most significantly, by working with children in these schools we have helped to instil a sense of environmental responsibility, attitudes that are likely to endure through to adulthood.

Finally I offer my thanks to the twenty dedicated volunteers who were engaged in the project, committing 400 hours of free skills and expertise to this vital community initiative.

- Richard Collins, Sheffield Renewables Chair

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[1] After 20 years, the electricity from the solar panels will be free. It is estimated that the life of the panels is 40 years, so 20 years of free solar electricity is anticipated.

Evaluation

The objectives of the project were:

I. Increase awareness of renewable energy technologies in the region.
II. Decrease energy usage and cut energy bills in schools.
III. Increase the number of volunteers engaged with Dearne Valley Community Energy.
IV. Deliver one community-owned solar PV scheme on a school.

What did Sheffield Renewables achieve?

- Provided expert advice to Dearne Valley Eco Vision, facilitating the establishment of Dearne Valley Community Energy (DVCE), a new social enterprise.
- Authored and provided an advice booklet on the best fundraising methods for social enterprises involved in community energy projects.
- Provided a business model for DVCE along with advice about share offers for its members, a board induction pack and a director job description.
- Advised on the incorporation process for DVCE.
- DVCE incorporated as a Co-operative and Community Benefit Society.
- Assessed 45 schools in the Dearne Valley for solar panel suitability.
- Identified 37 potential solar schools (82.2%).
- Installed and commissioned a 50kW PV array on Swinton Fitzwilliam Primary School, officially opened by John Healey MP on 7th November 2014.
- Engaged 107 pupils and 13 staff in 8 regional schools in project-based lesson plans.
- Structured lessons to incorporate carbon footprints, solar power and its importance. These lessons contained elements of Science, Maths, Citizenship and Geography.
- At Swinton Fitzwilliam school the carbon footprint has been reduced by 25.5%. Before this work, the carbon footprint per pupil was 601.49kg CO_2 per annum. After installation of the solar panels and the associated lessons with the children, this has dropped to 448.22 kg of CO_2 per pupil per annum, a 25.5% reduction[2].
- 6% drop in CO_2 for Gooseacre Primary school after involvement in the lesson plans of the scheme, complemented by the school's involvement in Eco-schools accreditation.
- An interpretive display installed at Swinton Fitzwilliam giving live updates on electricity generated and CO_2 saved.

[2] Rough estimates based on Carbon Detectives website, a child-friendly learning tool.

- Eco Schools Green Flag awarded to Swinton Fitzwilliam, based on DEC (display energy certificate) rating.
- Developed a website for DVCE.
- Involved 20 volunteers dedicating a cumulative 400 hours to the project.

What will be achieved later? What are the legacies?

- DVCE will invite local businesses to become shareholders.
- We expect a £22500 electricity bill saving for Swinton Fitzwilliam over the next 20 years.
- On-going peer mentoring from Sheffield Renewables to DVCE.
- Approximately 300 tonnes of CO_2 will be saved per school if using a 50kW installation over a 20 year time period.
- Dearne Valley Community Energy are now in a strong position to equip another 36 schools with solar panels and reduce the carbon footprint of the whole region.
- £835000 of electricity savings for the Dearne Valley region if it exploits its potential.
- 11100 tonnes of CO_2 can be saved in the region.

Quantitative Data

Early electricity use figures from Swinton Fitzwilliam's utility bills show a clear drop in the electricity demand from the supplier. Ideally, we would want many months more data, but even at this early stage we can reasonably confidently conclude that the drop in electricity demand (kWh) is very likely due to the extra electricity being generated on site by the solar panels. This is what we would expect to see and is a pleasing early result.

The figure for November is an anomaly, showing an increase in electricity demand from the supplier. This was the first month after the installation of the panels. Also be aware that less electricity is generated in the winter for a number of reasons: the days are shorter and the weather is generally cloudier.

Pre-Installation of PV Array		**Post-Installation of PV Array**		
Month, Year	**Electricity used (kWh)**	**Month, Year**	**Electricity used (kWh)**	**Saving (kWh)**
November 2013	6845	November 2014	7950	-1105
December 2013	9500	December 2014	7263	2237
January 2014	9235	January 2015	9009	226
February 2014	9379	February 2015	6942	2437

Also, snow fall can sometimes completely obscure panels for a short period allowing no electricity generation. We expect a clearer picture to develop with time and a significantly bigger saving being recorded during sunny Summer months.

There is also an assumption that the electricity requirement is the same pre-installation as it is post-installation. This is something that can change considerably from year to year; for example, energy-saving lightbulbs could be fitted or insulation could be improved.

Survey Data: Changing Attitudes

Questionnaires were completed by pupils and parents of Swinton Fitzwilliam before and after the project to gauge changing attitudes towards energy use. Surveys will continue to be used to monitor changing attitudes as more schools switch to solar power through engagement with DVCE.

At Swinton Fitzwilliam, the responses of the parents was very encouraging. They were asked to rate themselves out of 10 on a number of issues.

When asked to rate their knowledge on ways to reduce energy use, the respondents rated themselves 0.833 points on average higher after the project.

When asked how much they had actually done to reduce energy use, they rated themselves a full point higher on average after the project.

This shows the positive impact of the project in changing attitudes about energy in the region.

Comments from Dave Wilde, Eco Schools Officer

Dave Wilde is the Eco Schools officer who worked with the region's school pupils. His work is set to continue for the foreseeable future. He shared these comments:

"...the lesson involved demonstration of a motor powered by a small solar panel. This effectively replaced the battery in a more conventional circuit diagram and was an opportunity to introduce a less familiar symbol in science curriculum based work. Links were also made to Maths, Design Technology and Citizenship. This enthused the children and staff, as did the links with this project to the schools' Eco-School accreditation which is an internationally recognised award for environmental excellence.

It was clear that children, staff and parents recognised the value of renewable energy, particularly PV, in reducing Carbon Footprint, which is a central tenet of both the Dearne Valley Eco-Vision and Eco-Schools. This was facilitated by the provision of a real time display from the panels at Swinton Fitzwilliam, in a prominent place at reception. It clearly provides useful information and makes the whole installation a valuable educational resource.

Providing the session at another school that already had PV resulted in a commitment from their science co-ordinator to use data from their (less accessible) display as a curriculum-based educational resource. This strengthens their bid for the top Eco-School Green Flag award (already achieved by Swinton Fitzwilliam). Other schools, where panels are not yet fitted, committed to lower their Carbon Footprint by adopting more energy saving behaviours."

Concluding Remarks

The funding awarded (£13925) to Sheffield Renewables allowed a cohesive, professional approach to the peer mentoring of Dearne Valley Eco Vision, ultimately establishing Dearne Valley Community Energy. Without funding, Sheffield Renewables can (and does) undertake peer mentoring, but it necessitates a more informal approach with slower results due to its volunteer workforce. For the amount of work completed and the legacy of the work, Sheffield Renewables delivered very good value for money.

The positive results from this project will continue to unfold for decades: lower carbon footprints of schools in the region, lower electricity bills and a greater understanding and accountability for all energy use. We are delighted to have been able to make a positive impact on the schools and the young pupils of the Dearne Valley region and look forward to seeing Dearne Valley Community Energy commit to future projects with the verve and confidence gained during this crucial collaboration.

Photograph shows Swinton Fitzwilliam Staff and Pupils with their Solar Panels.
Photo (L-R): John Healy MP (Chair of the Dearne Valley Special Board); Paul Stewart (Rotherham Metropolitan Borough Council) Swinton Fitzwilliam Eco-Council; Brian Tinnion (Dearne Valley Community Energy); Paul Cocker (Sheffield Renewables); Dave Wilde (Dearne Valley Eco Vision and Eco Schools Project Officer); Chris Neil (Homeco Energy); Vicky Helliwell (Headteacher, Swinton Fitzwilliam Primary School); Kristy Smith (Swinton Fitzwilliam Primary School).

Appendix

Terminology used in this report:

Sheffield Renewables:

A social enterprise who own and run renewable energy schemes in the Sheffield area. Run by dedicated and experienced volunteers for the benefit of members and the community, Sheffield Renewables is a not-for-profit organisation and was started in 2007 before being established in 2009.

Dearne Valley:

A geographical region in South Yorkshire along the river Dearne and a former coal-mining community.

DVEV:

Dearne Valley Eco Vision. A pre-existing project involving Rotherham, Barnsley and Doncaster councils. They approached Sheffield Renewables for advice about community energy schemes.

DVCE:

Dearne Valley Community Energy, a new social enterprise established through the mentoring of DVEV by Sheffield Renewables.

CEPMF:

Community energy Peer Mentoring Fund. The fund used to allow Sheffield Renewables to dedicate specific time and resources to the mentoring of Dearne Valley Eco Vision.

PV:

Photovoltaic. A device that produces electricity from light.

Photovoltaic array:

A technical term for solar panels.

kW:

Kilowatt, a unit of power

kWh:

Kilowatt hour, a unit of energy used to measure electricity (and gas) consumption.

Carbon Footprint:

The amount of CO_2 released into the atmosphere. A carbon footprint is created whenever fossil fuels are used. For example, a carbon footprint is usually created when turning on a light because the electricity is generated at a coal-fired or natural gas-powered power station. A car journey creates a carbon footprint because petrol or diesel is usually burnt, releasing CO_2 into the atmosphere.

CO_2:

Carbon dioxide, the gas released when fuels are burned such as coal, oil, gas and wood. Carbon dioxide is a powerful greenhouse gas, trapping the sun's heat and causing the Earth to warm up over long time periods.