Target 2050

future-proofing community buildings in Stroud District and beyond

Stroud District Council working in partnership with Severn Wye Energy Agency

May 2012

SevernWye ENERGY AGENCY

STROUD DISTRICT COUNCIL
www.stroud.gov.uk

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Severn Wye Energy Agency, May 2012

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WHAT WE DID

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Stroud District Target 2050
Countdown to a low carbon community

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Foreword by Cllr Frances Roden
Leader, Stroud District Council

The Target 2050 Community project is the strand of the Target 2050 programme developed and delivered by Severn Wye Energy Agency for Stroud District Council to improve Community Buildings. The Target 2050 programme was commissioned by Stroud District Council as a means of achieving targets set in the Councils 2007-2027 Environment Strategy.

Community buildings form the heart of any community, but even more so in a rural environment where access to other services may be limited due to travel distances. However, many buildings are old, manned by volunteers, have very little revenue coming in, are cold, damp, inefficient and struggling to pay their rising energy bills.

These factors combine to leave many village halls being cold, draughty, damp and uncomfortable particularly during the winter months, whilst facing falling revenues. At the same time the buildings are very expensive to heat with consistently increasing fuel bills, with these very often becoming the single greatest component of regular running costs.

This results in poor utilisation, especially in winter, and a negative spiral of reduced income leaving no funding for improvements. The Target 2050 Community Buildings project aimed to provide on-site surveys, advice and help with finance for measures to improve energy efficiency and promote renewables and establish community exemplars.

This report seeks to inform the reader about the Target 2050 Community exemplar approach, the significant outcomes achieved and the learning gained which can be applied to other projects going forward.

Stroud District Council aims to continue to be a leader in this field and maximise the environmental benefits to its community from reduced carbon outputs, economic benefits to the local community through jobs and using local traders and increased use of community facilities providing community cohesion and community exemplars.

These factors combine to leave many village halls being cold, draughty, damp and uncomfortable particularly during the winter months, whilst facing falling revenues

Cllr Frances Roden
Leader, Stroud District Council

Foreword by Catrin Maby
Chief Executive, Severn Wye Energy Agency

Severn Wye Energy Agency was founded on the principle of achieving positive change through a holistic work programme, from high-level strategy down to practical action on the ground. We engage with all sectors to promote the sustainable energy agenda, each sector presenting its own unique challenges and requiring a tailored approach, built on over 10 years of experience.

Severn Wye has a long track record of working in successful partnership with local authorities, and our productive relationship with Stroud District Council stretches back over many years.

The Target 2050 programme was conceived as the keystone of a long-term drive to enable local householders, businesses and community groups to reduce their carbon footprint and to make the transition onto a sustainable pathway to the future.

The community buildings stream, in particular, targeted the venues that represent the focal point of local life, and whose sustainability actions can inspire further positive changes in other sectors.

By providing in-depth advice and ongoing support the Target 2050 work has helped many village halls and community buildings to take significant steps in reducing their energy consumption. Improvements to the building fabric, coupled with important changes in user behaviour and renewable energy generation, have kick started a positive upwards cycle of reduced fuel bills and increased use of the warmer, more comfortable buildings.

The work presented in this report presents a flagship of what can be achieved where this type of partnership and innovation is facilitated and encouraged.

The Target 2050 programme was conceived as the keystone of a long-term drive to enable local householders, businesses and community groups to reduce their carbon footprint and to make the transition onto a sustainable pathway to the future

Catrin Maby
Chief Executive, Severn Wye Energy Agency

Executive Summary

Such work was already known to make halls more comfortable, better used, and more financially sustainable, whilst also acting as green 'beacons' to the community

The Target 2050 Community Buildings project demonstrated that the provision of bespoke and expert advice, coupled with capital funding, can kick-start community buildings into action and enable important improvements to be made quickly.

The Target 2050 programme, inspired by the UK's long-term carbon reduction target, was launched by Stroud District Council and Severn Wye in 2007. It showcases a holistic approach across three key sectors: Homes, Small and Medium Enterprises (SMEs) and Community Buildings. This report describes the latter of the three work streams.

The Target 2050 Community Buildings project (Community Halls Energy Efficiency and Renewables Scheme - CHEERS) was built on experience from previous work programmes with community buildings and local authorities.

The aim was to target energy efficiency, behavioural change and potential renewable generation at each site. **Such work was already known to make halls more comfortable, better used, and more financially sustainable, whilst also acting as green 'beacons' to the community.**

Stroud District Council was able to provide capital grants, which made a crucial difference in take-up rates for improvements. Experience from Target 2050 Community Buildings scheme has since been used to develop similar programmes in other districts, including future paid-for services where funding is not accessible.

Over two years, Severn Wye provided energy audits and written reports plus billing analysis for 30 community halls

Over two years, Severn Wye provided energy audits and written reports plus billing analysis for 30 community halls.

The energy audit reports encompassed:

- history of the site
- existing building fabric
- current utilisation and energy consumption
- heating and hot water provision
- controls
- lighting
- renewable energy potential

Recommendations were categorised as no-cost, low-cost and more substantial capital cost measures and follow-up support was offered to each site.

The Council administered the capital grants in Year 1; Severn Wye administered a smaller grant fund in Year 2, capped at £3,000 per grant. Guidance on suitable matched funding sources was provided, covering both local and national grant-awarding bodies. The Community Buildings programme also incorporated talks and seminars aimed at getting community-level discussion going on energy topics, which were well-attended.

Executive Summary

Total annual reductions arising from the installed measures are estimated at 70,300 kWh of energy, saving at least £4,900, and a carbon footprint reduction of over 28 tonnes

Measures installed or approved

A wide range of measures was installed across the halls. These included:

- **three** ground source heat pumps
- **five** solar PV systems
- glazing improvements at **seven** sites
- retrofit lighting at **eight** sites
- many fabric insulation and heating improvements.

Total annual reductions arising from the installed measures are estimated at 70,300 kWh of energy, saving at least £4,900, and a carbon footprint reduction of over 28 tonnes (Note: these are calculated savings, not measured ones, due to scarcity of data).

The 'exemplar' halls, which achieved significant makeovers including general refurbishments in addition to substantial energy efficiency improvements and the installation of renewables, were:

- **Randwick Village Hall** *- see case study 1 on page 26*
- **Arthur Winterbotham Memorial Hall (Cam)** *- see case study 2 on page 28*
- **Eastington Community Centre**
- **The Exchange (Stroud)**

A further 13 sites achieved wide-ranging improvements involving two or more separate measures.

Timescales can be long for community building improvements due to the limited resources of what are usually all-volunteer committees. Inevitably, some sites have only carried out limited measures, and some dropped out of the scheme. Follow-up contact continues to be made where possible.

Levered-in funding, used to match Target 2050 grants, amounted to over £190,000. Much of this was spent employing contractors who are part of the Severn Wye's local Sustainable Energy Installers' Network, benefiting the local economy.

Severn Wye's Target 2050 experience is now being deployed on a wider work programme with whole communities

- Three ground source heat pumps
- five solar PV systems
- glazing improvements at seven sites
- retrofit lighting at eight sites

Key themes and learning points

Through the project, we learned that many community buildings are cold, damp, inefficient and struggling to pay their rising energy bills. This results in poor utilisation, especially in winter, and a negative spiral of reduced income leaving no funding for improvements.

Although the advice provided to remedy this varied from site to site, the following key themes and learning points emerged:

- ✔ **Help with simple behavioural change and better heating control usage is crucial**
- ✔ **Learning to deploy the 'sustainable energy hierarchy' when planning improvements**
- ✔ **Finding reputable installers**
- ✔ **Support in negotiating with planners, with regard to heritage buildings**
- ✔ **Communication with hall users and the wider community about the improvements**
- ✔ **Capital grants were vital in making small measures happen quickly, as well as enabling larger ones**
- ✔ **Critical under-utilisation of halls leads to very long payback times for some measures**
- ✔ **Improved halls report better utilisation, raising income and reversing the negative cycle**
- ✔ **Small savings make a big difference to constrained budgets**

The exemplar sites, such as Randwick Village Hall, have attracted much publicity around the region. **Severn Wye's Target 2050 experience is now being deployed on a wider work programme with whole communities.** A self-audit system is also being developed for halls, allowing Severn Wye's time and value to be focused on the critical analysis and recommendations.

1 Why Target 2050?

The Target 2050 brand was inspired by the headline target for a 60% reduction in carbon dioxide (CO_2) emissions on 1990 levels by 2050

In April 2007 Stroud District Council launched a new programme of work to tackle climate change. Severn Wye Energy Agency was commissioned to develop and deliver the programme, and has achieved this through close collaboration with Council staff and a wide range of other local partners over a four-year period.

The Target 2050 brand was inspired by the headline target for a 60% reduction in carbon dioxide (CO_2) emissions on 1990 levels by 2050, as proposed by the Royal Commission on Environmental Pollution report of 2000, and adopted in the 2007 Energy White Paper. This target has been subsequently adopted and raised to 80% in the Climate Change Act of 2008, and the 'Target 2050' concept remains a powerful one.

The Target 2050 approach is holistic, looking at the needs of and provision to different sectors within the locality, against the background of the strategic framework. After an initial feasibility stage, the full programme was launched in the autumn of 2007.

Initial activity

A programme of local activity was developed to complement what was provided through the market and/or national programmes. This consisted broadly of:

Target 2050 Homes

Development of a targeted approach to achieving deep carbon cuts in existing homes.

Target 2050 Business

Bespoke advice to SMEs, with on-site surveys and action plans. This was designed to complement the Carbon Trust provision by targeting those whose annual energy spend was below the Trust's threshold to qualify for face-to-face support.

Target 2050 Community Buildings

On-site surveys, advice and help with finance for measures to improve energy efficiency and promote renewables in community buildings.

The programme also incorporated completion of the Eco-Management and Audit Scheme (EMAS) for the local authority's own operations and support for development of a forward-looking local planning policy through mapping of resources for renewable energy against housing needs and heat loads.

This report describes the Target 2050 Community Buildings theme of the programme in detail, from the reasons behind its inception to how the work may be taken forward in future. For further project information please visit www.swea.co.uk.

The homes and business themes are covered in separate reports available from Severn Wye Energy Agency.

2 Developing the Target 2050
Community Buildings programme

The idea was to provide a number of community buildings with a holistic assessment focused on technical advice and ongoing support for implementation of measures

The Target 2050 work on community buildings in Stroud built upon experience that Severn Wye Energy Agency had gained through running a series of community-based projects and initiatives, plus Stroud District Council's own experiences with regeneration programmes.

At the time, Severn Wye had recently completed a five-year pilot of community energy support as part of the Countryside Agency's Community Renewables Initiative which, successfully delivered 22 community energy projects across Gloucestershire, South Gloucestershire and Wiltshire, including several based in community buildings.

Experience with an Energy Saving Trust Innovation Programme called Lydney Local Power and several community building support contracts with nearby local authorities, including Tewkesbury Borough and Cotswold District, also contributed to the realisation that working with community buildings can provide a useful addition to work in the domestic and business sectors.

The idea was to provide a number of community buildings with a holistic assessment focused on technical advice and ongoing support for implementation of measures.

Sheepscombe Village Hall -
A community building typical of the Stroud area

Such measures turned halls into warmer, more comfortable spaces that were better-used by local communities, raising the revenue generated by the building as well as reducing energy bills

This would include a full building energy audit and written report with a view to:

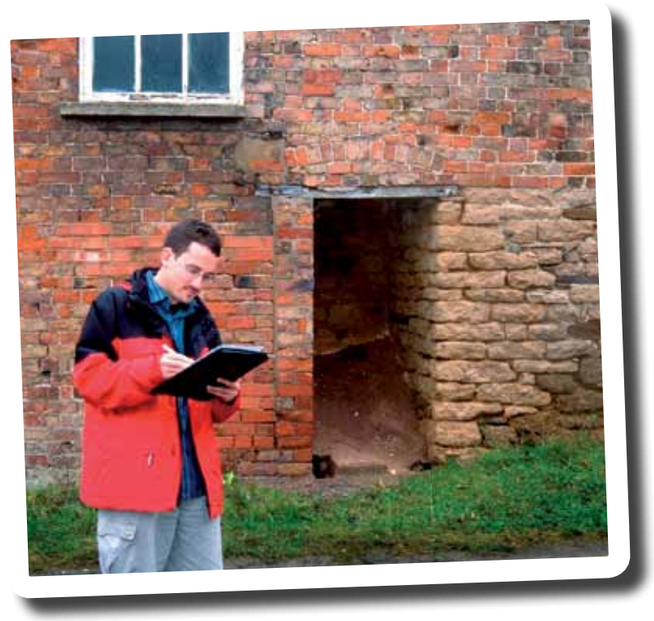
1. **Improving the insulation levels of the building fabric**
2. **Maximising the efficiency of the heating system**
3. **Improving the behaviour of hall users**
4. **Assessing the potential for renewable energy generation**

Experience in other areas had demonstrated how such measures turned halls into warmer, more comfortable spaces that were better-used by local communities, raising the revenue generated by the building as well as reducing energy bills.

The business case for energy-efficient halls was greatly improved and the buildings began to act as 'beacons' or 'exemplars' providing hall users with a real, tangible example of the benefits of installing energy efficiency and renewable energy measures.

Carefully-planned interpretation and education materials have been proven to impact on the behaviour and actions of the hall users when at home, at work and in other situations, spreading the benefits throughout the wider community.

Importantly, Stroud District Council was able to provide a number of capital grants to participating village halls, to enable the measures to be installed quickly, and the benefits to be realised and monitored during the lifetime of the scheme.



Severn Wye sustainable energy surveyor in action at a village hall site

This approach has since been expanded to other areas, including Wiltshire, Swindon, Wales, the Forest of Dean and Herefordshire, with similar success.

Work has continued in Stroud District and other Gloucestershire districts with the Gloucestershire Environment Trust (GET) contracting Severn Wye to provide sustainable energy advice and support to a large number of community buildings that apply to the trust for funding, to ensure supported projects were making the most of any opportunities for saving energy.

As part of this GET contract, Severn Wye has developed a **self-audit guide for halls that directs hall committees through a set of questions and data collection to enable decisions to be made on improvements to energy performance**. This guide will be available to halls throughout the area and will be run in conjunction with future 'paid for' advice services, for areas where our work cannot be funded through existing projects.

3 What we did - the project

Its main focus was to ensure the uptake of energy efficiency and renewable energy measures in all participating community buildings

The Target 2050 Community Buildings project ran over two years, starting in April 2007 and running through to March 2009.

Its main focus was to ensure the uptake of energy efficiency and renewable energy measures in all participating community buildings, creating a number of 'exemplar' halls that demonstrate that an energy-efficient hall is a better asset to the community, a more viable business opportunity and can act as a catalyst for change across the community.

Support, advice and an on-site energy audit plus written report was offered to 30 Stroud District village halls and community buildings over the two years on a 'first come, first served' basis.

Severn Wye contacted all halls in the district in Year 1 and invited them to fill in a short application form. The first 10 eligible applications received were offered a full energy audit in Year 1 with remaining halls being put through to Year 2 when another recruitment campaign was carried out to fill the remaining places.

All participating halls were required to provide Severn Wye with at least one year's worth of fuel bills prior to audit to help determine energy consumption patterns, check tariffs and any standing charges.

Miserden Village Hall showing the type of challenge that many village halls face with solid stone walls, single glazed windows and located within a conservation area

Severn Wye then produced an energy audit report designed to provide a useful, accessible, comprehensible summary of the main features of the building in relation to energy use

On-site energy audits and advice reports

Once a building had been accepted onto the scheme, Severn Wye carried out an on-site energy audit accompanied by a relevant member of the committee and/or caretaker. The walk-round survey examined all elements of the building fabric and heating systems and involved discussion with the hall representative regarding building history, hall user type and frequency, any heating or lighting control systems, how they are used in practice and any plans for the future.

Severn Wye then produced an energy audit report designed to provide a useful, accessible, comprehensible summary of the main features of the building in relation to energy use including:

- **Summary of building age, type, location and use**
- **Overview of the building fabric and levels of insulation – walls, roofs, floors including any extensions and outbuildings**
- **Energy consumption patterns from billing information – weekly, monthly and annually**
- **Type and quality of windows, doors and draught-proofing**
- **Description of heating and hot water systems, heat distribution, controls and method of use**
- **Outline of lighting and electrical appliances in use**

The report then moved on to a section that provided a summary of the recommended actions that could be taken. These ranged from:

- **no-cost and low-cost behavioural changes** – such as switching supplier/ tariff, improved monitoring and meter reading, optimising heating controls and use of appliances
- **medium-cost fabric improvements** – including draught proofing, lighting upgrades, insulation top-up
- **higher-cost, longer-term improvements** – such as major insulation projects, new or improved heating systems and renewable energy installations

Severn Wye advisors remained available to the halls for ongoing support with the implementation of the projects. This further support included help with applications for funding, obtaining permissions, identifying installers, assessing quotes, preparing business plans and consulting with local residents and community members.

4 What we discovered – analysis of results

At the time of the project, there was significant public grant funding available for renewable energy installations, principally the Low Carbon Buildings programme. This has since ended and been replaced by the Feed-In Tariffs

Capital Grants

To assist halls with the installation of identified measures and technologies, Stroud District Council offered participating halls a capital grant towards the realisation of the project.

- **In Year 1 Stroud District Council made £20,000 available through the Target 2050 programme and £55,000 through a regeneration programme.** Halls were able to apply for up to £3,000 without match funding but for amounts above £3,000 and up to the maximum of £35,000, match funding of no less than 50% was required. All grants in Year 1 were administered by the Council
- **In Year 2 the grant level was altered due to reduced funding available and halls were eligible for up to £3,000 (max. 75% of total project costs) from a total grant pot of £30,000.** Severn Wye took over the administration of the grants in Year 2

The audit reports included full details of complementary funding sources, both local and national, to which halls could apply for matching funds.

Where required, direct follow-up assistance was given with applications to organisations including the Gloucestershire Environmental Trust (which awards grants from Landfill Communities Fund monies), and other government, private sector and charitable funds.

At the time of the project, there was significant public grant funding available for renewable energy installations, principally the Low Carbon Buildings programme. This has since ended and been replaced by the Feed-In Tariffs.

Community Energy days brought together old and young from the community

Spreading the word

During the second year of Target 2050 Community Buildings, **Severn Wye organised a number of energy days and events** when the participating halls could come together to discuss the issues they were facing in implementing their sustainable energy projects and any lessons learnt. This was useful in encouraging halls to work together especially as many were facing very similar challenges.

The first event was held in Whitminster in September 2008, as part of the Parish Community Plans Forum. The next was at Sheepscombe in October 2008, and included an illustration of three possible community-level energy scenarios. An interesting discussion was had with many members of the village, and information on domestic micro-generation and energy efficiency measures was given out.

Finally, a major 'Energy Roadshow' day which attracted more than 250 people from local communities, was held at Dursley in January 2009, at which Severn Wye had a stand and delivered a presentation.

The project results show a significant uptake of a wide range of measures

Measures Installed

Table 1 below shows the full range of measures installed in participating halls to date plus the modelled energy, cost and CO_2 savings. A wide range of measures were installed giving useful cost, energy and carbon savings, year after year, to the halls. The lifetime impact of these measures is very significant and is also displayed in the table.

The project results show a significant uptake of a wide range of measures including:

Fifteen lighting and glazing upgrades – these are relatively straight-forward measures that can be usually installed within the £3,000 Target 2050 grant

Six upgraded heating systems and controls – for halls that are on mains gas, upgrading to a more efficient boiler with proper controls is very often the most cost-effective solution

Three solid wall and sloping ceiling insulation measures – it is very encouraging to see some of the halls tackling the difficult issue of insulating solid walls and sloping ceilings. The capital grant was key to these going ahead

Three ground source heat pumps, five new solar PV systems installed or approved, and a solar thermal hot water system helping halls to generate renewable energy and reduce costs into the future

Table 1: Annual Energy, Cost and CO_2 Savings and Lifetime Cost and CO_2 Savings

Measure	No. installed or approved	Energy savings (kWh/year)	Cost savings (£/year)	Carbon savings (tCO_2/year)	Lifetime cost savings (£)[1]	Lifetime carbon savings (tCO_2)
Lighting retrofits	8	3,410	409	1.4	8,180	28
Glazing	7	3,530	221	1.2	4,420	24
Solar PV systems	5	10,840[2]	1,290[2]	11.6	32,250[2]	290
New/upgraded heating system	4	15,000	510	3.7	10,200	74
Loft or roof insulation	3	6,590	276	1.4	5,520	28
Solid + cavity wall insulation	2	10,780	324	2.0	6,480	40
Heating controls	2	7,040	333	1.7	6,660	34
Heat pumps	3	12,100	1,455	5.2	29,100	104
Solar thermal system	1	1,000	120	0.4	2,400	8
Totals		**70,290**	**4,938**	**28.6**	**105,210**	**630**

[1] At 2008 energy prices – long-term savings will likely be higher in reality

[2] Assumes 60% of units exported; benefits quantified are savings only

About the data: It should be noted that the figures in the tables above are calculated savings, not measured ones. They are derived by starting from a basic analysis of prior billing data and hall usage hours, with energy (and therefore carbon) savings estimated using standard metrics for fabric insulation, heating control and lighting retrofit measures, together with standardised annual output figures for PV systems. This was applied to each measure known to have been installed or approved for imminent installation. There is unavoidably a significant uncertainty in the figures. The picture is further complicated by changing hall usage patterns: indeed, many halls see increased utilisation following improvements. This can result in energy consumption remaining nominally constant or even rising, despite better efficiency; but long-term savings against baseline will be higher for better-utilised halls.

Energy-conscious families gather in Randwick for Severn Wye's Energy Neighbourhoods project

Several of these halls have been nominated for awards and all have reported lower bills and warmer, better-used halls

Exemplar Halls

It is important to note that **a small number of halls used the opportunity to obtain capital grants and technical support to install several measures simultaneously as part of a significant refurbishment.** These became the 'exemplar' halls and continue to be a source of inspiration and motivation to other halls and the wider community.

Several of these halls have been nominated for awards and all have reported lower bills and warmer, better-used halls and interest from users as to why and how the changes have been made. All of these halls were successful at using the Target 2050 capital grant to lever in significant resources from other funders.

The exemplar group includes:

- **Randwick Village Hall:** measures include loft insulation, LED lighting upgrade, double-glazed windows and doors throughout, ground source heat pump replacing electric overhead heaters and a 4kW photovoltaic system – *see case study p27*
- **Arthur Winterbottom Memorial Hall, Cam:** improved insulation throughout including cavity wall insulation, improved lighting plus a 12kW photovoltaic system – *see case study p29*
- **Eastington Community Centre:** new build community centre including super insulated building envelope, solar thermal (including innovative space heating contribution) and solar photovoltaic system
- **The Exchange, Stroud:** 19th century former school converted to a social enterprise activity hub, comprising complete refurbishment and installation of ground source heat pump, solar photovoltaic and solar thermal system

The timescales for the implementation of measures in community buildings can be very protracted

Secondary glazing installed in one of the participating halls – helping to keep heat in and cold draughts out

Other wide-ranging improvements

A second group of halls are those who took advantage of the support and grant available from Target 2050 Community scheme to make some smaller improvements – including insulation, glazing and lighting upgrades and the improvement of heating systems and controls.

Most of these projects were able to use the Target 2050 Community grant plus their own funds to complete the works.

This group includes:

1. **Miserden Village Hall** – new loft insulation and secondary glazing
2. **Bisley Village Hall** – full lighting upgrade
3. **Kings Stanley Village Hall** – new insulated floor, improvements to windows
4. **Cashes Green** – new heating system, full lighting upgrade, general renovations, roof insulation works imminent
5. **Brookthorpe** – re-constructed roof with new roof-level insulation, heating controls
6. **Bussage** – new double glazing to replace rotten windows
7. **Standish** – new lighting, including chandeliers with specialist low energy bulbs
8. **Douglas Morley, Stonehouse** – upgraded glazing and new air source heat pump
9. **Slimbridge** – internal wall insulation for rear stage area
10. **Amberley Parish Room** – secondary internal glazing within church crypt area
11. **Cam 3C Church** – new central heating to replace electric heaters
12. **Stinchcombe** – new heating and controls, internal insulation works, new double glazing for cold rear aspect
13. **Sheepscombe** – reconfiguration of heating controls (behavioural), draught proofing, radiator reflector panels
14. **Paganhill Maypole** – full refurbishment including upgraded heating, loft and cavity wall insulation, a 45-panel solar PV system, fabric repairs.

It is worth noting that the timescales for the implementation of measures in community buildings can be very protracted. The projects are run by volunteers working in their own time (often around other employment/ commitments) with very limited resources.

As a result there were a small number of hall committees who have been very slow to react, often due to very limited time and resources available. These halls have only carried out some of the basic no-cost measures and in some cases dropped out of the scheme altogether.

Severn Wye does attempt to contact these halls during the periodic reviews, and in some cases is able to encourage action at a later date. The latest round of follow ups has revealed that three of these halls have plans for major overhauls that are well advanced.

5 What we learned - opportunities, barriers & solutions

Another key result of the project was the amount of external funding that has been 'levered in' to the district as a result of the programme

Levering in external funding

Another key result of the project was the amount of external funding that has been 'levered in' to the district as a result of the programme.

The grants and support offered by Target 2050 enabled these halls to apply for the remaining funds from a wide variety of sources including the national Government Low Carbon Buildings Programme, landfill tax money via the Gloucestershire Environment Trust, the Big Lottery, 'Green Tariff' trust funds and other charitable trusts, plus a significant amount of money from local fundraising initiatives.

To date, in excess of £191,000 has been levered in by Target 2050 Community Buildings. Several sites have ongoing projects which will further increase this figure.

The vast majority of this funding has been directed at local Target 2050 Installers' Network companies which have carried out the work. This has been of benefit to the local economy and increased the experience and portfolio of these local businesses.

To date, in excess of £191,000 has been levered in by Target 2050 Community Buildings. Several sites have ongoing projects which will further increase this figure

Many of the halls were not well-used, meaning that the committees had scant funds to make investments and that any investments in improvements paid back very slowly

The aim of the Target 2050 Community project was to enable community buildings in Stroud District to take advantage of expert technical support and grant funding in order to become more energy efficient, and to make the most of opportunities for generation of clean energy from on-site renewable energy technologies.

Cold damp halls

As expected, the visits and surveys at the early stages of the project revealed that many community halls are currently very inefficient in energy terms. The majority of buildings visited had poor levels of insulation, inadequate and/or poorly understood heating and control systems, draughty windows and out-of-date lighting.

Many of the halls were not well-used, meaning that the committees had scant funds to make investments and that any investments in improvements paid back very slowly.

The usage patterns were generally quite erratic – halls would be used intermittently with patterns of use changing frequently, making it difficult to set up timers and programmers. Often a caretaker or local resident would put the heating on in advance of a known booking with the hall having to be warmed up fully from cold.

Other problems included lights, appliances and heating systems being left on by users by accident and settings on thermostats and boilers being altered and not reset.

Advice and support

The level of support and advice needed varied greatly from hall to hall, depending on the time available and commitment from the committee and the named contact.

Some halls were able to take the recommendations made in the report and press ahead with gathering quotes, applying for funding and getting planning permission, whereas others needed considerable support at all stages.

Common factors

Almost all the halls are run by unpaid volunteers, usually in their spare time and the members of the committee change quite rapidly (with many of the volunteers being elderly). This creates issues of continuity, especially due to the lengthy period of time that it takes hall committees to develop the more substantial projects. New members are very often not fully briefed or aware of the history to the project, and it can take additional time to get them up to speed.

These challenges meant Severn Wye provided highly-tailored advice to each hall depending on its circumstances. The level of support was not spread evenly across the halls.

Key themes and 'lessons learned':

A positive upwards cycle has been created for many community buildings, which really can act as 'beacons' within their communities

Changing behaviour patterns of users, the committee and the caretaker

Severn Wye helped many of the halls to find the most suitable supplier and tariff, set up efficient energy use monitoring and evaluation systems, establish proper use of controls and implement systems for ensuring lights and appliances are switched off when not in use.

Understanding the energy hierarchy and making informed decisions based on implementing the most cost-effective improvements first

Many halls wanted to move directly to renewable energy projects such as photovoltaics and heat pumps without first improving the building envelope and control system. Severn Wye encouraged halls to take steps in the appropriate order.

Finding accredited local installers and assessing quotes

Severn Wye was able to help halls identify local suppliers through the Target 2050 Installer Network, and to compare and assess the quotes provided.

The 12kW solar photovoltaic system installed at Cam Memorial Hall

Severn Wye was able to help halls identify local suppliers through the Target 2050 Installer Network, and to compare and assess the quotes provided

Many of the participating halls were completely or partially restricted by 'heritage' designations such as being located within a conservation area or being listed

Severn Wye was able to provide useful support when dealing with planning departments and conservation officers, many of whom were unfamiliar with the sustainable energy measures proposed.

Communicating issues (and successes) to all hall users and the wider community

Severn Wye was able to provide help and support in explaining the key issues to hall users and also to spread the message to the wider community. Where halls had successfully implemented a sustainable energy measure (such as improved insulation levels) it was important to communicate this to hall users and to spread the message to other community buildings – school, church, sports pavilion – as well as householders and local businesses.

The provision of the capital grant to halls was vzery important

All halls have limited funds and raising finance to pay for measures is time-consuming. Having 100% grants for smaller measures was key to getting these 'quick wins' implemented and building confidence within the committee and community. The larger grants acted as anchors that enabled the more active halls to lever in funding from a wide variety of sources.

Many halls were critically under-used

In some cases, several venues (village hall, church hall, sports pavilion) serve a very small community, competing for limited customers and volunteers. The low usage levels meant that payback times for measures were very long. Severn Wye was able to work with the community to identify the key resources and to channel these into the most viable halls.

Once measures were installed and buildings became warmer and more comfortable the usage rates increased bringing in additional income

The sustainable energy improvements helped reduce fuel bills, boosting the funds available to the committees and allowing further investment in the building. As a result, a positive upwards cycle has been created for many community buildings, which really can act as 'beacons' within their communities.

Even small financial savings can make a big difference

For halls operating on very constrained budgets, savings made from new heating controls, top up loft insulation and behaviour change programmes, although seemingly small in the wider Target 2050 scheme have had a big impact. This is often combined with increased income from the fact that the hall is used more regularly due to increased comfort levels.

6 Conclusion

Severn Wye is developing a wider approach working with whole communities - village halls, schools, church, businesses, farmers, landowners and local residents

Future development opportunities

The successful Target 2050 Community Buildings programme has attracted considerable interest and publicity – **Randwick Village Hall was runner-up best community project in the 2009 REGEN South West sustainable energy awards** – and several of the halls participate in the annual Stroud Open Homes event, opening the doors to members of the public to showcase their energy improvements.

Severn Wye Energy Agency is building on the success of the Target 2050 Community Buildings project and the wider Target 2050 scheme:

Whole community approach

Severn Wye is developing a wider approach working with whole communities – village halls, schools, church, businesses, farmers, landowners and local residents – to calculate the community carbon footprint and establish a strategic action plan for reducing emissions by a set amount by a target year. Community buildings such as the village hall will play a key role in this type of approach.

Sustainable Energy Self Audit Guide

Severn Wye has also developed a **Sustainable Energy Self Audit Guide** for village halls. This allows village hall committees to work through the issues in a logical way, recording key information which Severn Wye can then analyse to provide structured recommendations.

The aim is to minimise the time, and therefore cost, of our service, allowing Severn Wye's consultant time to be focused on the critical aspect – analysing data and applying experience and judgement.

Empowering halls to work through the basic auditing process themselves allows for a better understanding of the energy improvement process, and encourages increased 'ownership' of the project and results by the committees.

Empowering halls to work through the basic auditing process themselves allows for a better understanding of the energy improvement process

Village halls and community building continue to be an important focus for rural communities, providing valuable space for all types of community activities and services. Helping hall committees to improve these buildings and ensure that the facilities are warm, comfortable and cheap to run is crucially important.

The Target 2050 Community Buildings project demonstrated that the provision of bespoke and expert advice, coupled with capital funding, can kick-start community buildings into action and enable important improvements to be made quickly.

Many halls are then able to build on these successes and lever in further funding to complete the transition into exemplar buildings that are cheap to run, nice to use and can encourage the uptake of sustainable energy measures in the wider community.

Randwick Village Hall Stroud

This and other case studies are available online at **www.target2050.org.uk**

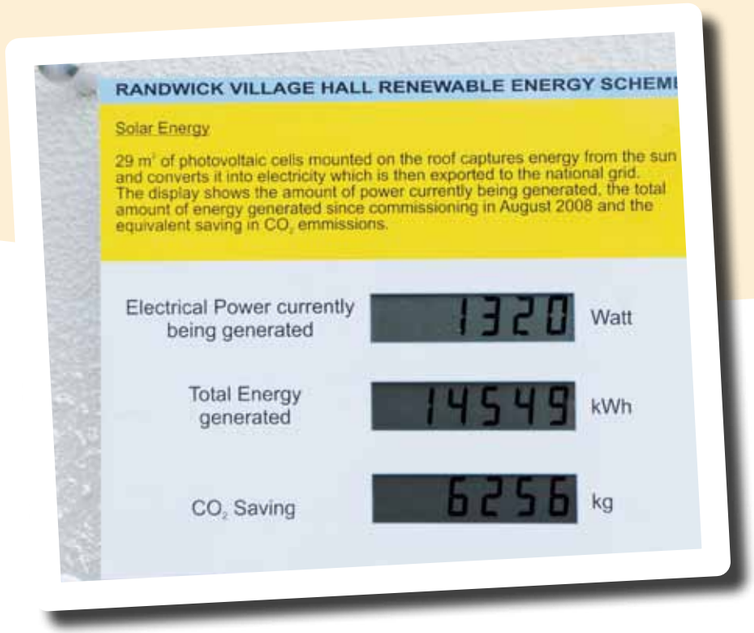
Stroud District Target 2050
Countdown to a low carbon community

Community case study 1

Newly-refurbished Randwick Village Hall with efficient double glazed windows and solar photovoltaic system on display

Key facts

- Footprint **REDUCED** by 5.49 tonnes CO_2 per year
- Building envelope greatly improved with upgraded insulation plus new windows and doors
- Solar photovoltaic (PV) system installed generating 'renewable' electricity to run a ground source heat pump
- Running costs **REDUCED** by £1,502 per year



Information panel describing the photovoltaic system, the renewable energy generated and CO_2 savings achieved

Ingredients for success

- Excellent location: ideal roof for solar PV and land available for ground source heat pump
- A motivated committee that is on board with the low carbon agenda
- Individuals with energy and drive to see the project through
- Some financial resources to lever in grant funding

Summary of measures installed and annual energy, CO_2 savings and cost

Measures installed	Annual energy saved or generated (kWh)	Annual CO_2 saving (tonnes)	Annual cost saving
Loft insulation	750	0.32	£90
New glazing and doors	300	0.13	£36
High efficiency lighting	800	0.34	£96
Ground source heat pump	6,660	2.90	£800
Solar PV system	4,350 (generated)	1.80	£480
Total	**12,860 saved or generated**	**5.49**	**£1,502**

The benefits

The transformation of the hall has initiated a positive spiral of increased use, increased revenue, better ongoing maintenance - and community pride. The renewable energy systems cut operating costs by £1,200+ p.a. which can be used for maintenance and further improvements; savings will grow as energy prices continue to rise. The hall has hosted high-profile energy and sustainability events, attended by local media.

The community building

This rural village hall was first surveyed in Sept 2007 as one of the first wave of Target 2050 Community halls. Although it was well-used throughout the year, extremely inefficient heating, lighting and single-glazed windows meant the hall was uncomfortable and expensive to run.

Heating was provided by costly, ineffective overhead electric heaters. Very poor levels of insulation throughout meant that hall users, particularly the elderly and those groups that are sedentary such as book clubs, parish meetings etc, found the hall cold, draughty and uninviting.

Rising energy costs had forced the hall committee to raise its hourly hire fees by 20% in the preceeding year and 10% the year before that.

The hall's glazing was in serious need of replacement, and comprised outdated, single glazed, metal framed windows and doors with rotting frames and sills that were not only responsible for considerable heat loss but which also gave the hall a neglected and run-down appearance.

The lighting was old and inefficient, and the hot water for the sports changing room was provided by costly electric immersion heaters.

STROUD DISTRICT COUNCIL
www.stroud.gov.uk

SevernWye
ENERGY AGENCY

How we worked with the community

Recognising the hall as a focal point of community life, the village hall management committee used the opportunity presented by the Target 2050 Community Buildings survey and report to work with Severn Wye to draw up a detailed plan to greatly improve all aspects of the building including:

- reducing heat losses through the roof by upgrading the loft insulation
- fitting modern low U-value double-glazed windows and doors
- upgrading to high efficiency LED lighting and introduced sensor switches for infrequently used areas
- removing the overhead electric heaters and installing a low temperature 'wet' radiator system supplied by a ground source heat pump, with the ground collectors buried in the adjacent playing field
- installing a solar photovoltaic system on the hall's south-facing roof to provide enough year-round electricity to offset the entire consumption of the hall
- redecoration of the hall, inside and out, to complete the aesthetic transformation of the building
- adopted an environmental policy to cover recycling, composting, use of environmentally friendly products and travel

How it was funded

The committee required £71,000 capital for the project. It successfully applied for a £33,840 capital grant from the Target 2050 Community Buildings programme. This excellent first step enabled the hall to lever in the remaining funding from the Low Carbon Buildings Programme (national government grant) £24,000, Gloucestershire Environmental Trust using landfill tax credits from Cory Environmental (local) £10,000 and £3,160 of its own funds.

The redecoration of the hall was funded by Randwick Parish Council.

The pre-Target 2050 project single glazed metal frame windows contributing to heat loss

Energy, cost and CO_2 savings in this case study have been calculated using actual meter reading data wherever available. Where this data is not available estimated figures have been calculated based on type and size of building, heating fuel and occupancy levels 2011

Cam Arthur Winterbotham Memorial Hall Stroud

This and other case studies are available online at **www.target2050.org.uk**

Stroud District Target 2050 Countdown to a low carbon community

Community case study 2

The Memorial Hall with 12kW photovoltaic system and information panel as viewed from Cam High Street

Key facts

- Carbon footprint **REDUCED** by 5.2 tonnes per year
- One of the largest community building solar photovoltaic (PV) systems in the county generating more than £1,296-worth of energy per annum
- Solar PV installed only after significant energy efficiency programme undertaken in the hall
- Pro-active and supportive Parish Council

Members of the hall committee, Keith Pearce and Jeremy Clutterbuck, with the public facing display showing 'real time' performance of the solar photovoltaic system.

Ingredients for success

- Excellent highly visible location and ideal roof for solar PV
- Basic energy efficiency and heating measures carried out first, minimising energy consumption
- Strong drive for sustainable energy already existed within the parish
- Dedicated individuals drove the project forward and carried out majority of fundraising

The benefits

The hall now offers a warmer, more comfortable space with a large, prominent solar photovoltiac system which has been consistently generating renewable electricity for over four years, continuing to save the hall money, and demonstrating to the whole community the viability of solar power.

The community building

This busy and well-used hall is visited by several hundred people a year. It was one of the larger halls surveyed, and was already the subject of considerable refurbishment, including remodelling to maximise useful space and improve disabled access.

The committee wanted to continue making the hall more sustainable. Poor insulation and inefficient lighting and heating controls were resulting in high fuel costs and less than satisfactory levels of user comfort.

The prominent location and large user base also meant the hall could showcase the transition to the use of sustainable energy technologies to a wider audience.

Cam Parish Council had already been involved in several sustainable energy initiatives including:

- distributing several hundred low energy light bulbs
- permitting the switching off of many street lights in the early hours of the morning (an initiative later taken up by other communities following its successful pilot study)
- distributing home efficiency leaflets and questionnaires to about 3,000 homes
- commissioning energy audits of the other community facilities, church halls and schools
- showing the film "An Inconvenient Truth"

A member of the Parish Council was also successfully nominated as one of Gloucestershire's Sustainable Energy Champions.

An energy survey of the hall had already been carried out under another Severn Wye Energy Agency scheme shortly before the Target 2050 programme began. However, the hall committee and Parish Council were very keen to make improvements to the building and Stroud District Council approved the inclusion of the hall in the follow-up support provided to the other halls surveyed in Year 1 of the programme.

STROUD DISTRICT COUNCIL www.stroud.gov.uk

SevernWye ENERGY AGENCY

How we worked with the community

With support and advice from Severn Wye, the hall committee had already installed cavity wall insulation throughout, improved roof insulation where practicable, and replaced old-style lighting with low energy equivalents.

With improvements to the heating system and controls also planned, the committee wanted to go further and use the large unshaded south-facing roof, directly visible from Cam High Street, to generate solar electricity and to demonstrate the viability of the technology.

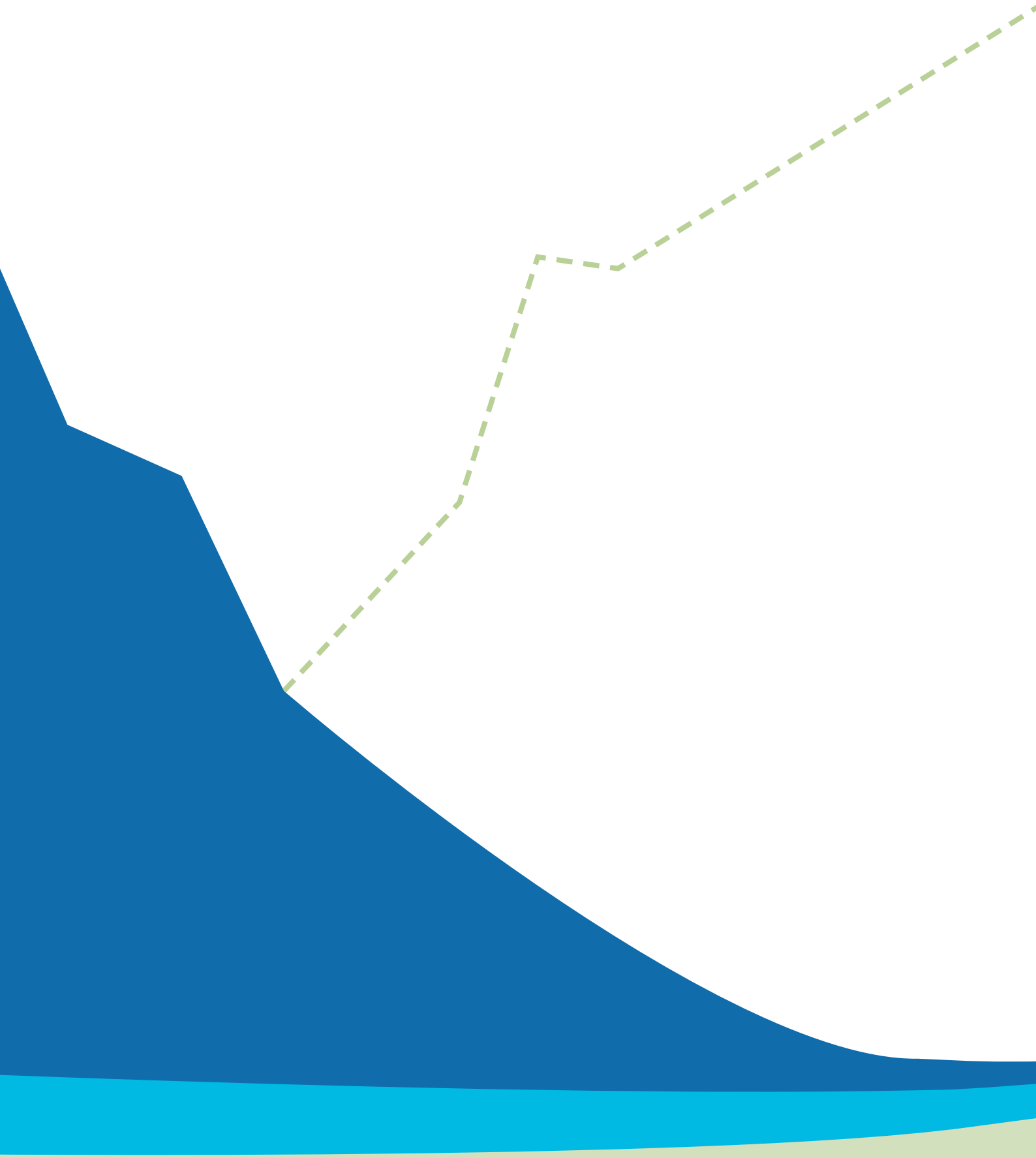
The roof was big enough to accommodate a 72m^2 photovoltaic system with a rated capacity of 12kW. A system of this size would generate 10,800 units of electricity annually, worth around £1,296 every year to the hall at that time (2008), and would save around 6 tonnes of CO_2 every year – roughly the carbon footprint of an average household.

How it was funded

The PV project cost £63,000 for the photovoltaic panels, inverters, cabling, roof fixings and a public-facing energy generation display board. Stroud District Council agreed to award the hall a grant of £21,700 towards the installation and the hall committee, with the support of Severn Wye, raised the remaining funds from the Low Carbon Buildings Programme (£30,164), EDF Green Energy Trust (£9,600) and Cam Parish Council (£1,536).

Energy, cost and CO_2 savings in this case study have been calculated using actual meter reading data wherever available. Where this data is not available estimated figures have been calculated based on type and size of building, heating fuel and occupancy levels 2011

Notes:



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Severn Wye Energy Agency Limited is a non-profit company and educational charity. It was established in 1999 under the European Commission SAVE programme to promote sustainable energy and affordable warmth through partnership, awareness-raising, innovation and strategic action.

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