

Climate Challenge Fund CCF-035

Blane Valley Energy Efficiency Project

Final Report

Executive Summary

The Blane Valley Energy Efficiency Project (BVEEP) was funded during 2009-2011 by the Climate Challenge Fund to encourage and assist householders in the Blane Valley (Strathblane and Blanefield) to reduce their household energy consumption.

This was a community-led project, proposed and organised by a local group of committed volunteers, with local workers employed on a part-time basis during the project.

The project started in autumn 2009 and ended in March 2011. The project had mixed results, with a fair number of people showing keen interest in taking opportunities to reduce their energy consumption, while most were indifferent and a few were quite negative.

The main approach was to visit households and perform an energy survey, gather data for the Energy Saving Trust – Home Energy Check assessment and provide relevant advice for each householder on the most important energy saving measures appropriate to their circumstances.

The project also engaged in a number of other initiatives as described in this report: thermal imaging, smart meter campaign, eco-projects with the local Primary School, targeted insulation advice and assistance for a local flatted development, promotion of energy-saving measures at community events and organising a local renewables offer.

Key activity measures from the project are:

Households on our list	1050
Engagements with householders (visit or phone)	200
Engagements by HIS (in addition to BVEEP)	152
Attempted engagements, no response	92
Rejections	58
Cavity wall insulations	45
Loft insulations	102
Smart Meter Loans - householder	65
Smart Meter Loans - school project	25
New boilers	8
Wood stoves	3
Double glazing	4
Detailed thermographic household surveys	33
Kerbside thermographic images	620

Estimated total annual carbon savings: 244 tonnes per year

The evaluation method and detailed results are documented in this report.

We thank Keep Scotland Beautiful and the Climate Challenge Fund for their support and encouragement.

Keith Hutton
Philip Graves
May 2010

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Project Overview

Aims

The primary aim of this project, as set out in the tender document, was to reduce the carbon footprint of Strathblane and Blanefield and the surrounding area by encouraging and assisting householders to reduce household energy consumption.

Objectives

- To offer an energy audit to all households in the Strathblane area
- To carry out an audit on a large proportion of these properties
- To provide householders with a written report on the audit
- To offer householders advice and assistance towards reducing energy consumption based on the findings of the audit
- To instigate a number of cavity wall and loft insulation measures
- To produce a kerbside thermal image of as many properties as possible (high visual impact, to be used in publicity to increase participation in the community)
- To offer more detailed thermal imaging at low cost to all properties as an additional service
- To encourage the use of renewable energy in the village.

Carbon savings targeted

Carbon savings are to be based on savings calculated based on actual measures installed and take account of property type.

On top of these tangible benefits we anticipated that the project would continue to change “hearts and minds” on the issue of carbon use and the viability of carbon-reduced living.

Formal targets were:

- To have had a net effect of stopping the increase of energy consumption in the villages and have shown a decrease in real terms of 1% in energy consumption.
- A reduction in carbon emissions of 120 tonnes in 2009/10 and 273 tonnes by the end of the project.
- Have had installed 80 cavity wall and/or loft insulations

Community involvement in the project

BVEEP was planned and then overseen by the community based Blane Valley Carbon Neutral Group (CNG), itself a part of the umbrella organisation, the Strathblanefield Community Development Trust (CDT).

Two part-time energy advisors were recruited from the local community. Thus skills and experience gained during the project would be retained in the community.

It was hoped that the project would encourage participation by the community in future projects designed to continue working towards a goal of reduced carbon emissions and increased sustainability locally. Such longer term projects included the development of a local transport plan, community renewable energy resources and a local allotments site.

Governance

The project was overseen by members of the Blane Valley Carbon Neutral Group (CNG), who are all volunteers. The CNG is a working group of the Strathblanefield Community Development Trust, which is a community-owned and run company with charitable status.

One member of the CNG (Keith Hutton) took operational responsibility for the project and reported to the CNG regularly, at the monthly meetings. He and the Chairman of the CNG (George Thom) were the main points of contact with outside agencies such as KSB, the ESSAC and Solas.

Project Management

The project was initially managed by Solas Insulation, a not-for-profit company based in Dumbarton. The advisors became employees of Solas who then trained them in the head office and out on the road with Solas staff. Solas were responsible for the payroll and other logistical support, such as a rented white van for the household visits, fully equipped with ladders, torches etc for attic surveys and so on. A monthly bill was then submitted to the CNG to submit to KSB for payment.

Solas were the preferred supplier of insulation measures to householders, recommended by the project, although we advised householders that they had a free choice of supplier for any measures. The work that Solas had already done in the village had been commended and we were confident to recommend Solas.

Solas naturally hoped to benefit from referrals and a switchboard number was set up to receive leads from the advisors and also to field calls from the Strathblanefield households, looking to arrange appointments for a Home Energy Check (HEC) from one of the advisors. For reasons explained below this service was generally not required to anywhere near the degree we had hoped.

When the HIS campaign was launched in the summer of 2010 (as detailed later in this report) it became clear that the level of management and support capability provided by Solas was more than was required on an on-going basis and so the project management was taken in-house by the CNG, saving on the overheads.

Solas were still treated as preferred supplier for insulation services, though the government HIS programme made other offers more competitive for a period.

Timescales

The original target milestones were as follows:

- Funding approved: (April 2009)
- Project starts: (August 2009)
- Project launch event: (September 2009)
- First property audited: (September 2009)
- First 100 properties audited: (October 2009)
- 50% of audits complete: (March 2010)
- All audits complete: (October 2010)
- Independent impact assessment study report:(November 2010)

These milestones were met up until Spring 2010 when it became apparent that the original target of auditing 75% of the households was unrealistic, since gaining admission to willing householders was proving much harder than expected. Even the full time efforts of the summer 2010 HIS campaign (explained later) failed to secure the penetration planned.

When the HIS campaign finished in Autumn of 2010, the project refocused on following up HIS leads; providing assistance to the householders who expressed interest in insulation or other measures; detailed thermal imaging of a number of interested households; a smart meter campaign; a campaign to assist Netherblane flats to install insulation; work with the School; and a renewable local package. These initiatives are discussed in more detail in the next section.

Funding

The project was funded by the Scottish Government Climate Challenge Fund (CCF). The funding and oversight was administered by Keep Scotland Beautiful.

Funding of £102,642 was allocated, which excluded another notional £36,000 of “contributions in kind” made up of volunteers’ unpaid time committed to the project.

Project Activities and Delivery

Energy advisors & Training

There were two part-time, highly qualified advisors employed, Alan Sharpe (AS) and Philip Graves (PG). Both were in full-time education and thus working under tight time constraints but willing to work the out of normal hours the job required (serving a community dominated by commuters).

Fortunately most of the training took place in the weeks before the university term started as this involved a week of formal training to complete the City & Guilds Energy Auditing course in Glasgow, followed by a few weeks of “on-the-job” training with the Solas team. This involved shadowing the various teams, including the insulation sales force, the energy auditing team and the fuel poverty advisor as they made visits around the region. They were also given detailed training in the completion of energy audits using National Home Energy Rating (NHER) forms.

The project was fortunate to have advisors who were willing to attend a number of related training events and seminars, under their own steam, such that by the end of the project the remaining advisor could claim the following:

- Attended a 7 week Carbon Conversations course run by the Baldernock CCF project.
- Proficient in the use of the thermal camera through practical experience.
- Renewable energy expertise gained through attending annual Small Wind conference in Glasgow, UK Renewables conference, All-Energy Aberdeen conference and various Carbon Trust seminars.
- Simultaneously completed an MSc in Environmental Studies at Strathclyde, winning “best student” award!
- Become an expert on carbon footprinting in the renewable energy field.
- Through previous training as a teacher was able to lead the energy classes at the primary school.

Householder Visits

The initial focus of the project was to complete as many home visits and energy surveys as possible. Gaining access to households was not foreseen to be a problem, as the project had received a fair amount of publicity in the local magazine and through the primary school, and it was hoped that people would ring in to book an appointment or use the website to make enquiries. In practice, this did not occur to any degree and even leafleting whole streets of houses failed to produce much in the way of a response. Also, Strathblane and Blanefield are very much commuter villages and catching people in during daylight hours was bound to be difficult.

The initial visit process used NHER surveys themselves proved very time-consuming, poorly laid out and far too complex. Too much time was spent measuring the dimensions of rooms rather than discussing energy advice. A single visit could take over an hour.

After a few months we changed from collecting household data on NHER forms, and utilised the EST Home Energy Check forms instead. There were several reasons for this:

- The EST had just sent a mailshot to all householders with the EST form
- Some of the householders had already filled in HEC forms online
- We could fill in the HEC data online and get an immediate assessment and calculations
- Other CCF projects were using HEC as the data-gathering basis

As well as the HEC data-gathering, we developed an energy-saving checklist to cover all the key energy-saving aspects that householders could address, with notes for the advisors to discuss with the householders.

The HEC data gathered was input to the EST website, and the results came through immediately and were emailed to the BVEEP website. They were posted out to the household along with a covering letter highlighting the main advice, and the householder visit checklist (see appendices).

The full package consisted of:

- EST report listing potential carbon reduction measures
- BVEEP summary letter highlighting main issues and measures advised
- Kerbside Thermal image of the house
- Energy-saving tips sheet, with bespoke commentary on issues covered during visit as noted on the energy-saving checklist.

Home Insulation Scheme (HIS)

In the summer of 2010 the Government HIS (Home Insulation Scheme) project rolled into the village. They blanketed the villages with teams of advisors with the aim of visiting every house in the area and completing an HEC (using the same EST-based check list the project had now adopted). Each household was to receive a minimum of 3 visits, and although they failed to achieve as wide a coverage as they may have hoped, the amount of resource deployed did allow them to complete double the number of HECs that our project had completed by this stage; as can be seen from the tables below. Their visits were limited to filling in the HEC, and took less than half the time of a typical BVEEP project visit.

Not wishing to duplicate effort, the project collaborated with the HIS campaign, suspending our visitation programme for the duration of the HIS campaign, but publicising and supporting the HIS campaign. Fortunately, by this time Ian Brown, ex-Chief Executive of Solas had taken on the role of running the operational side of BVEEP and had good links with the Wise Group and EST who were responsible for the HIS campaign. This allowed us to work closely with the HIS team and led eventually to a number of leads for later in the project. The project was given access to all the HECs completed, the lists of referrals (to Eaga for insulation for loft insulation or cavity wall insulation) and addresses and phone numbers of all who had been visited. The HIS advisors also asked householders if they were interested in a visit from one of our advisors to offer advice on renewable energy or use of a smart meter, and these were followed-up.

Homes visited by the BVEEP advisors over the course of the project

Homes visited	271
Completed surveys and energy advice given	102
Refusals	72
No response	96

Most of these visits occurred before the time of the HIS campaign, but numerous visits have been made since then, most of them with another reason for the visit such as with smart meters or to complete thermal camera surveys and are not included in the above figures. Inevitably these visits were combined with more general energy advice, covering often the same ground as the official HEC surveys. Also there has been considerable energy advice over the phone as part of the follow-up service for the above visits and HIS referrals.

Homes visited under the HIS campaign

Doors knocked	965 (figure at end of round 2)
Completed HECs	210
Refusals	189
Referrals for measures	89

The HIS assessors did 3 rounds of visits, and completed their work at the end of July with insulation work progressing over the following weeks. Eaga were still following up leads in early 2011 and were assisted by BVEEP who chased up the referrals. These figures exclude any referrals generated by calls made to those on the HIS lists.

Capitalising on the HIS campaign - telephone survey

The HIS campaign reduced the potential client base for BVEEP's own HEC service but it opened up two important avenues. Firstly the HIS offer itself was an attractive one, especially for those with limited loft insulation. Top-ups were being offered for free for those with between 60-160mm of existing insulation, paid for by government grants. Rates for cavity wall insulation (CWI) and virgin loft insulation (VLI), where the house had no existing loft insulation, were very competitive. This gave us a reason to ring all those we had already visited who could benefit from this offer (using the HEC information) to check whether they were aware of the new HIS offer. Those interested were forwarded to EST who were managing the HIS referrals. It also gave an excuse to offer further services that were now available such as smart meters and full thermal image survey.

Secondly, the project took the initiative to ring all those on the list of referrals from HIS to check progress on the insulation measures promised. This proved very instructive as a wide range of responses were apparent. Some had received no follow-up from the contractors Eaga, some had failed to make any arrangements and some had received a prompt service and were very happy with the service. Those that had failed to receive any follow-up were put on a list and forwarded to EST who then sent the list to Eaga. All were offered the chance of further services such as smart meters. Others more suitable for either DIY insulation or a full insulation service were offered suitable advice (e.g. the npower loft insulation deal at £3 a roll, or referred to Solas).

The end result of the many hours on the phone were a number of leads for further services, completion of some delayed referrals and a much better knowledge base on the carbon savings achieved by home visits than that held by the outside agencies involved.

Kerbside Thermal Imaging

The project obtained use of a thermal imaging camera, and undertook a programme to take kerbside thermal image photos of all the houses in the village. Several late evenings were spent in the depth of winter taking photos of the majority of the houses in Strathblane and Blanefield. These images were used as part of the report that was sent to households who were visited, and well as a later 'flyer' campaign to households that had not yet been visited, with a copy of the thermal image of their house attached, and a reminder of the HIS offer and the local project services. Of about 80 flyers delivered we got 4 responses. There may be a degree of householder weariness with having received so many offers from so many groups – HIS, local council initiatives, our project and numerous approaches by insulation suppliers and energy companies.

A total of 620 houses had kerbside thermal images recorded.

Detailed Thermal Imaging

Full thermal imaging surveys began late in the project once familiarity with the camera gave confidence in offering this service. Appointments were made with householders who specifically requested this service. They were given the opportunity to view the camera around the outside and inside of the house, identifying where there was heat escaping from the outside of the house (poor insulation, damp or thermal bridging), or where there were cold spots inside the house (missing insulation or draughts). This was sometimes coupled with delivery of smart meters and general discussion about energy and insulation issues. A selection of the images recorded were then sent to the householder by email.

The camera has been available to the project for much of the time. As a tool it is very powerful but works only in the right conditions, making planning difficult. Cold, clear nights might be ideal for the thermographic images but not for the poor operator!

By the end of the project 33 houses had received a full survey, with the images emailed or sent to the householder.

Smart Meter Loan Campaign

From summer 2010, the project had the use of 8 smart meters, some sourced from Solas, some purchased. After the HIS campaign, with each of the contacts we made to follow up on HIS, as well as other contacts we made ourselves, we offered the householders the opportunity to have a smart meter for a couple of weeks. The meter was installed by an advisor and the opportunity taken to discuss energy-saving measures. There was also a worksheet to record usage and help suggest ways of seeking out high energy appliances and lights. By the end of the project in total 60 households had used one.

We found that the offer of borrowing a smart meter proved to be good as a way to get an invitation to visit people's houses and discuss other energy issues. It is debatable how much carbon-saving they deliver, at least compared to bigger factors such as insulation measures or other heating issues. However they do provide a very visible reminder of the costs of energy.

Netherblane Insulation Campaign

The large flatted development of Netherblane makes up about 10% of the village households. It made up of about 100 flats in 3-storey blocks, built in early 1970s and entirely heated by electricity; most flats still retaining the original under floor heating. This heating system is very inflexible in the degree of control that it offers. In order to maintain a comfortable temperature in the late evening, the system has to take a large heat load during the overnight storage time, leading to higher energy usage than would otherwise be expected.

The project contacted the block representatives to assess means of encouraging a more energy-efficient future. Actions included:

- Met the chairperson of the block convenors
- Wrote a report circulated by block convenors to all residents suggesting possible measures
- Encouraged CWI in all blocks as a first step
- Highlighted longer term solutions such as air-source heat pumps

- Contacted EST/HIS to treat it as a priority area
- Liaised with 3 block convenors in getting a quote for CWI and encouraging their blocks to support it
- Pilot study in trying to get new central heating for a resident under EAP scheme.

The project has therefore done its best to engage with residents here, but can claim only limited success. Much time, effort and cost would be required to modernize a heating system designed for poorly-insulated 1970s construction.

Primary school projects

The project always intended to involve the primary school in the project and this was achieved in two ways, firstly a smart meter project for the P7 class and secondly a major eco-day held at the end of the spring term.

P7 smart meter project

This initiative involved purchasing a set of smart meters so that each pupil in the P7 class could take one home and investigate the electricity use in their home. A lot of planning and preparation went into this project. We researched which type of meter would be the most appropriate, ideally looking for ones that would record energy use for a couple of weeks and allow the results to be downloaded later. There were 2 different suppliers who could potential to do this, and we spoke to their technical staff at length. While both assured us that their product would do what we wanted, we obtained samples of both and it transpired that the implementations were not good enough to reliably record and download the data, so we had to proceed with manual daily notes of the readings.

The objective was to provide each pupil in the class a smart meter for two weeks. It required ordering the meters, testing them all and putting together a programme which included three 45 minute classes taken by PG, supported by PowerPoint presentations. This called on a wide range of skills which fortunately resided within the project.

The key elements were:

- Designing a “foolproof” instruction manual and worksheets to log two weeks of readings
- Introduction class to demonstrate how to install the meters and take readings
- Initial discussion of simple energy concepts
- Discussed energy saving devices such as low energy light bulbs and A-rated appliances
- Follow-up class to discuss energy concepts such as nuclear power, renewable energy
- Discussion of topical events such as Fukushima, Arab “Spring” and oil prices
- Computer lab class to chart pupils’ results on an excel spread-sheet, discussion of the results, ideas for energy reduction, and calculation of the costs that could be saved.
- Comparing efforts to save electricity to other energy use in the home – heating, insulation measures etc
- Participating in a “Dragons Den” style panel to judge P7 entries to an eco-product competition

School Eco-day

We employed a group known to PG through links with other CCF groups to offer a full day of eco-drama events at the school. All classes were involved, with two showings of the “Isle of Egg” play, to P1-P3 and P4-P6. (Unfortunately P7 were away on a week’s outdoor course). In attendance, though, was a correspondent from the Times Educational Supplement.

“The Isle of Egg is an ecological fable inspired by Eigg, the beautiful, self-sustainable island off the west coast of Scotland. Through thought-provoking, interactive storytelling, some eco gadgets, humorous characters & live music, Eco Drama brings to life an uplifting story about climate change, positive thinking and the power of community spirit” (source: <http://www.ecodrama.co.uk>).

An indication of how successful these shows were was clear at the end of the performance. The two performers had to stop the constant flow of questions so that they could pack away the kit in time to leave the school before it closed!

Alongside the play two workshops were hosted by Emily Reid, the Ecodrama organizer. These were based on the subject of recycling and were attended by P4 and P5. These taught the classes about the problems of finite resources and the rising cost of landfill. The TES correspondent and PG sat in on the first show and were impressed how Emily kept their attention for a full hour and managed to entertain and yet still make a serious point about the need for recycling.

“This workshop is written around the principles of ‘Reduce, Reuse, and Recycle’. Through a fun and informative drama workshop led by the fearless ‘Bag Girl’, pupils are encouraged to find their own inner recycling hero and rid the town of the menacing Rubbish Monsters!” (source: <http://www.ecodrama.co.uk>).

Meanwhile P6 were having to put up with a much less active workshop held by PG on the broader subject of energy efficiency. Dividing the class into eco-teams with self-designed eco-related team names, he gave a succession of questions to test their understanding of electricity using a combination of PowerPoint images and electrical appliances brought into the classroom. The teams had to guess the energy rating of these appliances.

A thermal image of some of the light bulbs and other appliances were displayed and the teams had to guess what they were from the images. The difference in heat given off by old fashioned bulbs in comparison with energy-saving bulbs was one crucial learning point.

The thermal camera was then used to show where heat was leaking out of the classroom windows. It was also used to demonstrate the effect of simple insulation on the walls of a cardboard box, made to resemble a house, with a hot water bottle (heating system) inside. One half of the wall had a layer of insulation inside, the other did not. From the outside this was not visible, but with the thermal imaging camera the difference was dramatic, and helped the children to appreciate how much energy can be saved by proper insulation.

Renewable Energy Package

The advisors asked householders whether they had any interest in home renewable energy solutions. PG had considerable knowledge on the subject but felt constrained in giving too much advice given the uncertainties over the future levels for Feed-In-Tariff and Renewable Heat Incentive. Thermal solar will also be a hard sell in the village given the majority of houses have combi-boilers.

Even so, there was considerable interest expressed, and it was felt important to investigate some form of bulk purchasing arrangement with a local installer.

With that in mind a tender document was drawn up and duly sent out to 5-6 local renewable installers found from the MCS list on the EST website. These were emailed the tender and of these only three made any contact and only one completed a formal reply. Eco-living duly came out to meet a few of the CNG and were taken around the village to see some potentially suitable areas. A long discussion took place as to how the offer would be priced and how we would help market the service to the community.

Appointments were made with a couple of the members of the CNG interested in solar energy.

On the suggestion of Eco-living, a few of the CNG and PG went to meet Stephen Strachan, energy project officer in Fintry to hear his views on Eco-living who had started a similar scheme in Fintry and had already installed some systems in the village. Stephen warned about being seen as too closely linked with the chosen installer as any complaints from local customers could do reputational damage to the CDT/CNG.

Plans are being made to host a renewable energy evening in the village and invite Eco-living to present the case for renewable energy and their services. They will be offered a place at the forthcoming summer fair.

Community Publicity & Events

Publicity for the project has involved a range of tools. These include:

- Formal launch of the campaign at the Primary School, September 2009, attended by the local paper (Bearsden & Milngavie Herald).
- Attended a full-day conference of local groups organised Loch Lomond National Park in Drymen where the BVEEP also had a stand.
- A stand, alongside HIS and the CNG at the School Fair in June 2010, the main “village event” of the year.
- A similar stand at neighbouring Baldernock village Eco-fair, October 2010, displaying the potential of thermal imaging.
- PG helped organise and presented at a CCF workshop for other local CCF groups at Strathclyde University, October 2010.
- PG made frequent references to the project at community council monthly meetings.
- Leafleting of houses with a well-designed A3 poster produced in partnership with Solas.

- Articles for the local village magazine The Blane to highlight the availability of the free energy advice service and suggestions on energy-savings.

Unfortunately a well-crafted article designed to give the project a re-launch and a final push in late 2010 and early 2011 was never published, as the December issue was heavily delayed. A full-page colour advert did appear, but by then it was late March and too late to be of much use to the project. Readers would not have been aware of this, though, and in the event it has not resulted in any further signs of interest or phone-calls, despite villagers suffering one of the coldest winters on record!

Renewables Education

Members of the CNG and PG have kept themselves well-informed on all the latest grants available and technologies of relevance to the promotion of renewable energy for the home. The project was unusual in that one of the advisors had himself gone through all the hoops of the grant system to support his installation of an air-source heat pump, the only one known to have been installed in the village. So there was a deep understanding of how the grants work, and a good relationship with the EST and knowledge of local installers.

PG also attended a number of renewable energy events, both large-scale, such as Scottish Renewable conferences, and small-scale, such as Fintry and Killearn's eco-fairs, all on a voluntary basis.

Website

A dedicated web-site was set up, linked into the impressive village website, which is run and maintained diligently by another member of the CNG, Alan Campbell. (<http://www.strathblanefield.org.uk/>)

The aims and services of the project for the community were clearly laid out with promises of potential savings available of £100-500 a year. Services offered were stated as:

A free energy survey and appropriate advice to every household in the community, consisting of:

- A home visit to discuss your energy usage and to complete a standard national energy questionnaire.
- Review of appropriate energy efficiency options.
- Review of a coloured thermal image of the front of the property to assess if there are any major cost-saving opportunities.
- Offer of assistance to get the benefit of lower-cost social tariffs on energy bills, depending on circumstances.
- Offer of assistance to get appropriate grants e.g. for installation of energy-saving insulation.
- Offer of additional in-depth review of possible energy-saving measures (detailed thermographic survey, renewable energy etc).

In reality, as with the leafleting, very little response was generated through the website.

Miscellaneous

Other options considered included looking into offering a loft-clearing service for those unable to complete the job themselves and thus unable to top up their existing loft insulation. There was a tender sent out to a selection of local builders to obtain quotes for a basic clearing service, with perhaps the possibility of adding the option of installing limited loft flooring to allow storage. There was debate as to whether this should be provided free of charge, but in the light of the fact that no builder showed even willingness to reply to the tender, this was never resolved. It is a key issue for the Scottish Government to resolve as many attics in the village have been floored and thus used extensively for storage, making loft insulation top-up almost impossible without huge upheaval.

During the winter period when snow lay thick on many roofs, PG completed a few walkabouts through the village noting and photographing houses that appeared to have lost their snow covering, suggesting poor attic insulation. Some of these were pursued later in the year. Ideally a thermal survey should have been completed on all of these houses a few weeks later. Unfortunately the camera was returned to the village only in early spring from Solas, so less use of it was made than could have been the case, though some were checked later in the spring.

PG completed a review of the possible training options for volunteers wishing to learn how to use the thermal camera later in the year, in time for winter 2011. In particular training in interpretation of the images was sought and a few potential courses were investigated, with phone-calls and emails. All were very expensive and nothing had been possible before the official close at the end of March 2011.

Project Evaluation

Carbon saving assumptions

In the absence of an agreed template for the savings to apply to particular energy-saving measures, we developed our own by interrogating the EST outputs for potential carbon savings (comparing before and after values for identified measures) and comparing them to the inputs to the HEC. The latter included such information as the type of house, the amount of existing loft insulation and the age of the boiler. 31 HECs were studied and a matrix drawn up of the estimated carbon savings by house type and by measure. A few gaps where no data for a particular house type existed were filled by interpolation. Using this matrix then only required knowledge of the energy saving measures employed and the type of housing. For the houses where measures were adopted we used the information from the HEC or local knowledge to allocate the house type.

Other key assumptions were:

- Smart meter loan, assumed as 0.2T carbon based on research* published last year in Finland found that in-house displays brought average energy savings of 10.3%**.
- Engagement with householders assumed 0.2T, whether through an HEC visit or through telephone interviews when following up HIS referrals list. This covered other advice on DIY insulation, and other minor measures such as pipe lagging, draft-proofing, TRV adjustments, thermostat controls, energy saving bulbs etc.
- Uncertainty discount of 50% - it was not always possible to ascertain whether recommended measures were actually completed, despite many phone-calls and messages left. Any measure, where the householder had expressed significant intention to implement the measure, but we were not able to confirm the completion of the installation (“Probable to “Possible”) received only a half-weighting (i.e. 50%).

* BBC 29.5.09 (<http://news.bbc.co.uk/1/hi/sci/tech/8055344.stm>).

Assumes average electricity bill is £480/yr, saving of £48, roughly 0.2T of carbon.

** This could be an underestimate as most smart meter visits included a much wider discussion on other energy-saving measures.

Carbon Saving Results

Strathblanefield Energy Efficiency Project Results

CCF-035

	CWI	LI-TU	LI-V	Smart meter	Boiler	Thermo-graphic Survey	Wood Stove	Double Glazing
Large detach								
Carbon Saving	2.0	0.4	1.8	0.3	1.0	0.4	0.5	1.0
Number of instances	8.5	27.0	3.0	22.0	3.5	16.0	3.0	2.0
Subtotal (tonnes)	16.7	10.8	5.4	6.6	3.5	6.4	1.5	2.0
Med detach								
Carbon Saving	1.7	0.4	1.6	0.2	0.8	0.3	0.4	0.8
Number of instances	21.5	45.5	3.0	29.0	4.0	10.0	0.0	2.0
Subtotal (tonnes)	36.6	18.2	4.8	5.8	3.2	3.0	0.0	1.6
Med semi								
Carbon Saving	1.0	0.3	1.2	0.2	0.8	0.2	0.4	0.6
Number of instances	10.5	22.0	0.0	13.0	0.0	6.0	0.5	0.0
Subtotal (tonnes)	10.5	5.7	0.0	2.6	0.0	1.2	0.2	0.0
Small semi								
Carbon Saving	0.7	0.2	1.2	0.2	0.5	0.1	0.3	0.4
Number of instances	4.5	1.5	0.5	1.0	1.0	1.0	0.0	0.0
Subtotal (tonnes)	3.1	0.3	0.6	0.2	0.5	0.1	0.0	0.0
Total per Measure	66.8	35.1	10.8	15.2	7.2	10.7	1.7	3.6

Overall Total of specific measures

Carbon savings as detailed above **151.1**

Soft Measures

Behavioural change due to project engagement, consultation and advice
e.g pipe lagging, draft-proofing, TRV adjustments, thermostat reduced, energy saving bulbs etc

Engagements 200
Carbon 0.2
40

School Project

Eco Drama, Assembly, Workshops
Pupils 120
Carbon 0.2
24

Primary 7 Smart Meter Exercise

Pupils 25
Carbon 0.3
7.5

HIS consultations & HEC (not counting the households engaged by our project)

Households 152
Carbon 0.1
15.2

Netherblane

Significant engagement in encouraging residents to install CWI. Liaised with 3 block conveners in getting quotes for CWI. They are progressing with gaining agreement from all

Blocks 3
Flats 6
Total 18
Carbon CWI 0.7
Probability 50%
Total **6.3**

TOTAL PROJECT ANNUAL CARBON SAVINGS 244.1

Project Issues and Lessons Learned

Part time resources

It is tempting to think that a dedicated full-timer would have achieved more than 2 part-timers, each with a heavy work load alongside their time spent on the project. Whilst this could be the case in many instances, here it is more complicated, simply because the best time to complete the work tended to be outside of normal working hours. As a commuter village, evenings and week-ends were often the only time to find people at home. The most productive time for contacting people on the phone often proved to be on Saturday or Sunday morning, for example. In some organizations this would have cost huge sums in over-time payments, and the project were lucky to find a couple of recruits who were flexible with their hours, willing to work late into the evening in wintry conditions, all for not much over the minimum wage!

Process and data collection

As noted earlier, HECs need to be kept simple and relevant. The swift return of an HEC report within days of a visit is also essential, preferably followed up by a phone-call to check for any queries and any assistance in contacting an installer to quote for insulation work. The original NHER form failed on all accounts. It also included questions on salaries, benefits etc that the advisors found very awkward to ask, especially when visiting people they knew.

Although some of the assumptions behind the EST on-line HEC appear to understate the benefits of energy efficiency measures, the form had the advantages of being easy to fill in during visits and then quick to input onto the EST website. The results could then be forwarded immediately to the BVEEP website.

To widen the energy issues covered by the EST form during the HEC visit a householder visit checklist was developed. This was filled in during the visit and then completed in more detail afterwards and stored on the BVEEP files. These two forms, plus a letter summarizing the EST advice formed the package sent out to the householder. The checklist proved an essential tool in ensuring all carbon-saving issues were discussed. It was also a useful summary sheet that was handed out during smart meter visits, when a full HEC was not completed but key energy-saving measures were discussed.

Energy saving estimates - no consistency on numbers

As noted above, we had grave reservations over the carbon savings assumptions backing the EST on-line HEC. As a means to encourage action the insignificant savings suggested by the model were probably too small to motivate the typical householder in Strathblane. Comparing some of the results from the NHER figures provided from a small sample sent to EAS, with the same household data entered on the EST on-line HEC gave very conflicting results. One has to question the comparability of carbon data emanating from different CCF groups given the absence of an agreed template.

Householder Contact - Door knocking / leafleting

A whole report could be written on the difficulties of gaining access to households to complete HECs and to encourage "buy-in" to the whole carbon-savings philosophy.

Some key learning points:

- Don't mention "carbon" – emphasise the desire to save the householder money.
- Leafleting can spread the word but seldom leads to enquiries.
- Most effective means of gaining householder is through the use of local contacts or asking about nearby neighbors when visiting houses.
- Being recognized as a local is a great advantage given the surfeit of other salesmen supposedly offering the same service.
- Cold-calling can work. Many residents seem to wait to be visited rather than ring for appointments.
- In a commuter village timing is crucial; expect to arrange appointments at the convenience of the householder. Despite the vast resources employed by HIS, their hit-rate was not impressive as most visits were during normal working hours.
- Flexibility is crucial – week-ends and evenings are often best.
- Don't assume well-to-do households know how to conserve energy – lethargy and ignorance are prevalent across the whole spectrum.

- Decide if you should concentrate on the big carbon emitters where a single win can have more effect than half a dozen terraced houses (social equity 'v' prioritizing carbon cutting?).
- Smart meters and thermal imaging may not in themselves save much carbon but they do encourage interest and can facilitate entry and thus a broader discussion on energy saving measures.
- What to do about floored attics? How to persuade householders to raise floors to allow a full 30cms of insulation?
- Obtain a good data base of the village, preferably with phone numbers as well as addresses as phoning can save a huge amount of effort and is more successful than leafleting.
- Ideally the data base would be GIS-based so that visits can be plotted graphically and areas of low penetration displayed visually.

Getting data from other initiatives

Working closely with the Energy Saving Scotland Advice Centre (ESSAC) proved essential in extending the range of the project. The ESSAC who ran the HIS project was very helpful in providing all the data that had been collected by the HIS teams. We made extensive use of the HIS referrals list and tried to check on progress of these with Eaga (the subcontracted insulation installer), as well as referrals from BVEEP's own "customers" who had been referred to HIS. It was always difficult for the ESSAC and hence us, to clarify the extent to which referrals to Eaga, had been acted upon. Referring work to HIS meant a convoluted chain, as these were passed to the ESSAC, who passed then to EST who then passed them on to Eaga; and we had no direct access to Eaga ourselves. Our contact at the ESSAC, Alex Warren, also proved a very difficult person to contact, either by phone or by email.

Many households were left waiting and suffered another hard winter before action was finally taken. Without PG actively following these up and taking an interest, many of these would have given up. It is still unclear what the exact numbers and measures are that were implemented through the HIS programme in our area. The numbers we have are the results of our investigations. No progress report from Eaga for our local area is likely to be available.

Community Outcomes

Increased awareness

There is no doubt awareness of the project has been relatively high, though it is surprising how few have contacted the advisors direct for appointments. It is hard to gauge how much else has gone undetected in the way of energy saving measures in houses where we have had no engagement. Word of mouth is a powerful force in a village and the fact that many over 70s or those given HIS loft top-ups have received an excellent free service cannot have gone unnoticed by neighbours etc. The school pupils can act as powerful agents of change in environmental matters. None of these factors can be quantified and no "guestimates" have been added to the carbon totals.

School involvement

As described above, the school has received much attention. The BVEEP was launched in the school and all pupils benefited from the eco-day events. P7 received 3 full lessons over a 2 week period.

Links with other CCF groups and nearby community groups

PG has forged relations with a number of other groups, including hosting a mini-conference and participating in an independent on-line CCF forum, exchanging views with other groups. Contact with neighbouring Baldernock has been very positive with assistance provided at their eco-fair and attendance by PG on their carbon conversations course.

Legacy of the Project

Experienced energy advisors

PG has offered to continue giving advice to the community on a voluntary basis and intends to become an active member of the CNG. His knowledge and contacts in the renewable energy field will be useful for the CNG and he will be available to man the CNG stand for the summer village fair.

Thermal Image capability

The project staff will be able to have ongoing access to the thermal imaging camera. PG has gained confidence in its use.

Smart Meter Library

It has been agreed that the smart meters will be held in the village library for free loan. They will also be available to other Primary Schools to repeat the home energy saving lessons. The local Primary school plans to re-use the meters and lesson plans next year for P7.

Renewables 'Package'

This is on course to be turned into a commercial reality over the next few months, and is being pursued by the CNG volunteers.

Community links with CNG

The CNG has a much raised profile in the village through this project and other initiatives. This should increase its credibility in the next stage – encouraging the take-up of renewable energy in the home and developing a community-based renewable energy project.

Netherblane Insulation

A start has been made in prompting this large segment of the community to think about the options available to improve the poor energy efficiency ratings of these flats. Co-operation between flat-owners in individual blocks is a stumbling block that a project such as BVEEP cannot expect to overcome single-handedly.

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Appendix: Householder report pack (sample)

Blane Valley Carbon Neutral Group



Blane Valley Energy Efficiency Project
admin@bveep.org.uk

1 Mar 2010

Mr xxxxxxx
xx Kirkland Avenue
Blanefield
Glasgow
G63 9BY

Dear Mr xxxxx

Thank you for the time you spent with me when I visited your home. Apologies that it has taken so long to get back to you - we are at the beginning of the project and we have had to do some 'ironing out' of the process and also waiting for the snow to melt and rain to abate so we could take the thermographic images.

We have now managed to do this, and a kerbside thermographic image of your home is attached, with some general notes on how to interpret it.

We have also entered the information that we collected during my visit (anonymised) into the Energy Saving Trust (EST) website to produce a 'Home Energy Report' with calculations and recommendations, also attached. You may have done this yourself, as EST did a mailshot in the Stirling Council area recently; but we are doing it for each household we visit so that we can build up some measures for project reporting, which our funders require.

The key findings on this EST report are:

- The estimated CO2 emissions from your house are 2.9 tonnes per year.
- You could save an estimated 15% on your fuel bills by adopting the measures mentioned in the report.

Please note that while these estimates are calculated by a sophisticated computer model, the EST process uses very simplistic assumptions based on a standardised house. Also, the numbers relate to the **fabric** of the house only, in terms of the use of heating, hot water and lighting, but do not take into account the number of people living in the house nor the energy used by appliances. There is evidence that these numbers are significant underestimates. They assume 'ideal' habits (and none of us are perfect!). If you check the 'estimated running costs' against your bills you will probably find your bills are higher. So the potential savings are almost certainly considerably **greater** than the figures shown in that report!

Nevertheless, these EST figures are a recognised standard measure which we are required to use for project monitoring and reporting as it gives a basis for comparisons.

From the visit, we make the following notes:

- **cavity wall insulation would**
- **you have 150mm loft insulation, the recommended depth is 270-300 mm**
- **consider changing the remaining incandescent bulbs to energy-saving light bulbs**

We suggest that it would be worthwhile getting a comprehensive free insulation survey. Our partners, Solas Insulation, who are supporting our community project, would be happy to do this for you if you wish. You can contact them on 0800 616 203; they will also be able to advise you on what grants are available. Solas have just insulated 7 other houses in Southview Drive. Alternatively you can find other companies in the Yellow Pages or other sources.

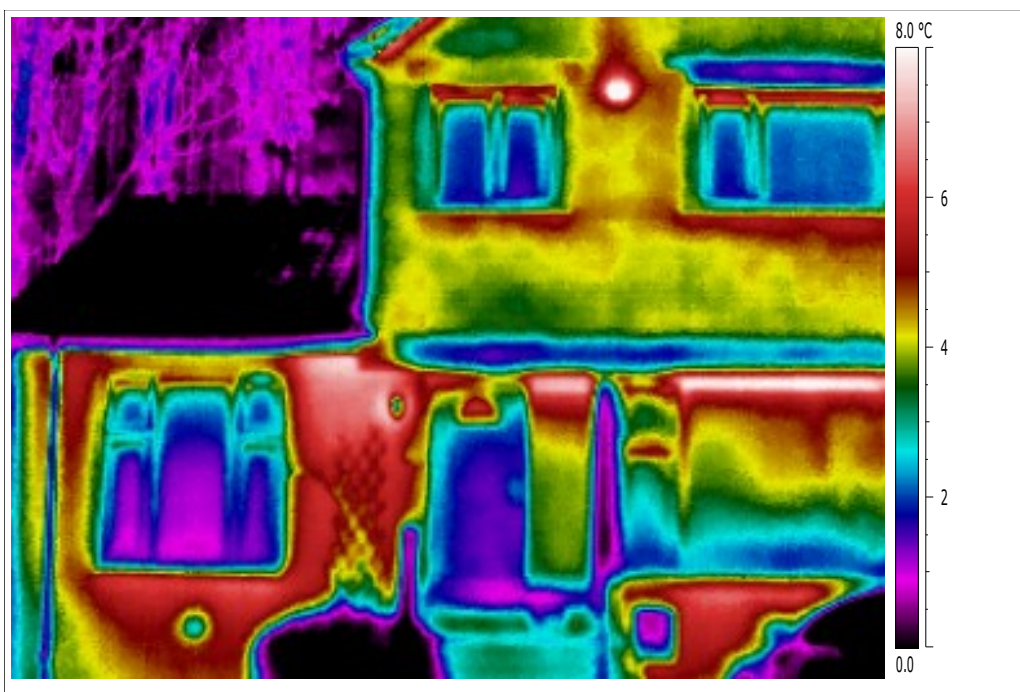
There is also a general Energy Saving Tips leaflet attached.

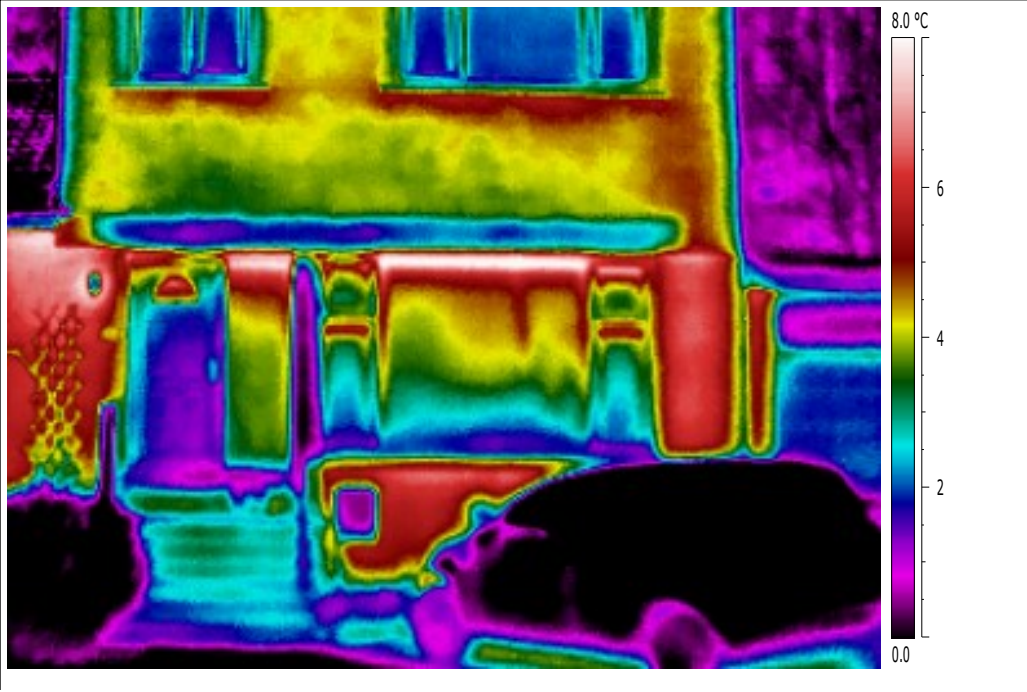
Kerbside Thermographic Images Ref: 1528

These are thermographic images (infra-red) of your home taken at night. The different colours show temperature of the exterior - and can help to identify where heat is being lost. White, red and yellow are the warmer areas, blue and purple are cooler.

Obviously it is normal for some heat to escape, particularly from doors and windows, and less through the walls and roof. If the windows are not double glazed, or the double glazing is poor, or if the wall or loft insulation is suboptimal, then more heat will be lost. If you would like to know for sure if there is an opportunity to save costs by installing more insulation, we can arrange a free detailed insulation survey. If any work does need to be done we can also assist with obtaining grant funding.

We also plan to offer householders in the village a more detailed thermographic survey at nominal cost. This would involve a complete analysis of the exterior of the house to look for problem areas where heat is escaping; and optionally an internal survey to identify cold areas i.e. areas where insulation is poorly fitted, and where cold draughts are entering. If you would be interested please send us an email at admin@bveep.org.uk.





Further options

- **Smart meters:** we now also have a number of wireless smart meters for loan (free). These allow you to easily see how much electricity your home is using at any time. Most people are finding that this is helping them to identify significant savings.
- **Detailed thermographic survey:** we will be offering a detailed thermographic survey, at nominal cost, to those who are interested. This will involve a detailed inspection of the exterior of the house to assess if there are any problem areas with heat escaping, and optionally also an interior analysis to identify any areas where the insulation is poorly fitted or cold draughts are entering.
- **Loft insulation:** We are finding that many people would like to improve their loft insulation, but are put off by the hassle of clearing the loft, and also do not want to lose the convenience of having a floored loft for storage. We are investigating what we could do to provide help with temporarily clearing lofts to enable fitting loft insulation; and also checking what other insulation measures (i.e. other than rockwool) could be made available for people who want to have their loft floored.
- **Solar panels:** we are considering organising a community purchase of solar panels at discounted price - if we get enough interest from the community!

If you are interested in any the above, please let us know.

Further information

Blane Valley Energy Efficiency Project www.bveep.org.uk

We are updating our website with information and answers to householder questions, and project progress.

Blane Valley Carbon Neutral Group www.strathblanefield.org.uk/carbonneutral

BVCNG are a local voluntary group. As well as this Energy Efficiency project, they are organising several initiatives to improve the sustainability of our community.

Energy Saving Trust www.est.org.uk 0800 512 012

This is a government funded organisation. Lots of information on energy saving, renewable and several carbon calculators. The local office, called the Energy Saving Scotland Advice Centre, is contactable on the number above.

Solas Insulation www.solas.biz 0800 616 203

Solas Insulation are run by a not-for-profit community business. We have chosen them to partner us in this project, to help with logistics, expertise etc and carry out any insulation work requested. They have already insulated several homes in the village.

Attachments

- Kerbside Thermal Image
- Energy Saving Trust - Home Energy Check

I hope it is OK for me to phone in a week or so to see if you have any questions.

Regards, xxxxx

Appendix: Visit Energy Saving Checklist (Sample)

WHAT: Action / Outcome	Advisor Checklist	Advice & tools	COMMENTS (Examples)
ELECTRICITY			
Better Habits - less waste of electricity	<ul style="list-style-type: none"> Use wireless meter - demonstration of household base load, identify potential savings. Ask - electric fires Usage of appliances (wash etc) 	<p>Good habits can save £200 (200w) or more per year. See Energy-saving tips leaflet. See Typical appliance usage / cost leaflet. Buy Wireless energy monitor Buy plug-in monitor</p>	<p>Baseload was 500w we switched off TV printer PC and got to 120w.</p> <p>Electric fire is 26p/hr Shower is ..</p>
Use of low-energy lightbulbs	<ul style="list-style-type: none"> Identify numbers & where 	<p>Old (incandescent) bulbs including most spotlights are terribly inefficient!!</p>	<p>Hall and bathroom could be changed - save 500w total Replacing 6 main lights would save the same</p>
Better appliances	<ul style="list-style-type: none"> Discuss any due for replacement. Discuss ratings 	<p>Choose A-rated new appliances See notes on rating of current household appliances, and typical running cost. Reference info on typical efficiency of best new appliances.</p>	<p>When replace washing machine go for A rated appliance.</p>
HEATING			
Better habits - more efficient use of heating, setting of controls	<p>See timer See thermostats</p>	<p>Heating settings tips leaflet, recommended timings, temps. Observation of current household settings.</p>	<p>Room thermometer to read current temperatures?</p>
Hot water temperature	<p>See thermostat setting</p>	<p>Thermostat set to 60-65</p>	<p>Was 85 - set to 65</p>
Better cylinder insulation	<p>See cylinder</p>	<p>Ensure well insulated - more is better</p>	<p>OK</p>
Better boiler	<p>See boiler model</p>	<p>Use efficient condensing boiler. Look-up your boiler on www.sedbuk.com</p>	<p>Your boiler Trinco Eur 30/22 is rated C 70%. A new 92% efficient boiler could save 22% = £333</p>
Better heating controls	<p>See controls Where is the 'always on' Multi-day timer Radiator TRVs</p>	<p>Reference on 'best' heating controls - compare with household. Identify opportunities (timer, thermostatic radiator valves, intelligent controllers, room thermostats).</p>	

INSULATION			
Double Glazing	Extent and age Secondary in older houses	Comfort 'v' low priority in energy saving terms	Worth considering but expensive
Draftproofing	Look at doors and windows	Insulated curtains Draftproofing around the doors	Consider Thermographic survey to highlight drafts around the doors, windows, fireplaces
Internal insulation	If no cavity - discuss options	Reference info on internal insulation options available. Sources of further information. Internal thermographic insulation to identify cold spots / poor insulation	
Cavity insulation	Ask if and when	Initial query re cavity insulation. Offer of follow-up insulation survey?	Arrange free insulation survey Consider thermographic image to identify heat loss
Loft insulation	See & measure	Inspection of household loft insulation	Internal thermographic image to identify poor insulation
Sub-floor insulation	Ask & observe	Consider if feasible	Internal thermographic image to identify poor insulation / drafts
SOCIAL TARIFFS			
Change to social tariff if appropriate	Query on householder circumstances.	If spending over 10% of net income on heating then may qualify for special tariff.	Not relevant
GREEN TARIFFS			
Change to green tariff	Suggest looking at green tariff	See reference info on green tariffs and options	Consider switching to green tariff at same cost
RENEWABLES			
Installation of renewable source	Ask interest	See Reference info on renewables (EST). Arrange renewable consultation if interested.	Solar panels could be an option.