Future of Rural Energy in Europe

ENGLAND

YEAR 2 REPORT:

VILLAGE ENERGY AUDITS

Contents

1. Executive Summary

Background to FREE:

FREE is a bespoke three year £1 million initiative funded by Calor to help tackle fuel poverty and promote effective energy efficiency advice and behaviours in off-gas grid communities. FREE was developed when Calor identified the need for independent carbon reduction and fuel poverty advice to be delivered directly into off-gas grid rural communities by a network of trusted expert advisors. Year 1 of FREE focused on ascertaining the nature and extent of rural fuel poverty, and building specialist knowledge and capacity within rural community networks to both identify fuel poverty and recommend a holistic range of solutions.

FREE Year 2 - Village Energy Audits:

The major component of Year 2 was the undertaking of Village Energy Audits (VEAs) in off-mains gas villages. The FREE VEA process involved:

- A detailed **physical energy assessment** of 5 domestic properties and a Community Building
- A **paper-based housing survey** of all households within the village
- A **walk-through external survey** of all properties within the village

Each VEA produced a suite of reports profiling the village housing, energy and social demographics, and signposting residents to energy efficiency opportunities tailored to both individual household circumstances and typical housing types. These reports were used to educate householders about better managing their energy usage, as well as identifying heating system replacement (including renewables), insulation and financial improvement opportunities.

Village Energy Audit Headline Results:

- **401** households participated across all Village Energy Audits – **a 50% response rate**.
- Most popular fuel is **Heating Oil** – **204** users (51%)
    - Only **24** Heating Oil households are members of **bulk buying schemes** (12%)
- Many properties use **multiple/supplementary heat sources** (ie wood burning stoves)
    - Reduced Data SAP (which assesses a home's energy rating) is unable to accurately assess such systems
- **208** households are Carbon Emission Reduction Target (CERT) priority/super priority eligible (52%)
- Insulation opportunities:
    - **Solid Wall** **203** potential opportunities (96 CERT priority group eligible)
    - **Cavity Wall** **36** potential opportunities (21 CERT priority group eligible)
    - **Loft** **57** potential opportunities (31 CERT priority group eligible)
    - **Loft Top-Up**: current <100mm **127** potential opportunities (60 CERT priority group eligible)
- **229** households are interested in **renewable energy** heating systems (57%)
- **88** households suffer from a **health issue** which could be exacerbated by living in a cold home (22%)
- **110** households could benefit from a **financial entitlement check** (27%). 70 of these are CERT priority group.

Main Barriers to Delivering Rural Energy Efficiency Improvements:

- **Lack of knowledge** of existing assistance schemes (ie. CERT, CESP and WarmFront)
- **Prohibitive increased cost** of delivering practical measures into rural areas
- **Difficulty of successfully engaging** with rural communities
- **Complexity of rural building design**, fabric, and heating systems – including high proportion of solid wall
- **Hidden nature of rural fuel poverty** – those most in need of assistance are less likely to proactively seek help
- Homes with affordable warmth issues often **also require assistance in additional areas**, including health, finance, transport and employment.

Conclusion:

Whilst portraying only a small snapshot of off-gas grid rural households, it is evident from the Village Energy Audits that rural communities are currently **at best being left behind, and at worst ignored**, in the drive for energy efficiency improvements.

CERT has not being effectively delivered into rural areas in spite of both significant insulation opportunities and the high proportion of vulnerable residents CERT is mandated to help. This is a serious issue in light of the closure of the CERT scheme in December 2012 and the introduction of the Green Deal and Energy Company Obligation in Autumn 2012.

The Village Energy Audits prove that **urgent action is required** to tackle rural energy efficiency and fuel poverty issues, but that **'one size fits all' solutions will not be effective** due to the dual challenges of engaging with rural communities and providing effective solutions to the complexities of rural energy options and housing types.

Working proactively at a community level and securing the assistance of **trusted local individuals and networks** to engage with rural householders is the most effective way to ensure that the countryside is not **unfairly disadvantaged** and can play its part in the carbon and fuel poverty reduction agenda.

2. Village Energy Audits

2.1 Summary

A Village Energy Audit (VEA) was undertaken in an off-mains gas village in each of the 8 English FREE regions. Qualified NHER assessors from National Energy Action (NEA) undertook a **full energy audit of 5 domestic properties** and a Community Building within the village, and a **walk-through survey** of all housing stock. Furthermore all households within the village were invited to complete a **confidential questionnaire** which included questions regarding property fabric, insulation, health information, and financial status. A local **Village Representative** facilitated the process in conjunction with the **Rural Community Action Network (RCAN) Representative** to encourage participation and resolve any queries or concerns that residents might have about the process.

The data from the returned questionnaires was combined with the physical audit data and the aggregated results enabled the FREE initiative to **profile the typical energy usage** of households in off-mains gas rural villages, **identify vulnerable households**, and ascertain **opportunities for multi-household interventions** with potential energy efficiency measures delivered into homes at scale and at a lower cost through full or partial CERT funding.

Tailored letters were issued to individual households to highlight potential eligibility for CERT priority/super priority measures and encourage households to contact a CERT supplier for potential services. The letters also signposted householders to relevant **national financial and energy efficiency advice services** as well as **local general advice services**.

Village Energy Audit Analysis:

- **Rationale**:
  Why undertake the Village Energy Audit process?
- **Aims**:
  What did we want the Village Energy Audits to achieve?
- **Methodology and Reporting**:
  What did the Village Energy Audits entail and how were the results reported?
- **Results**:
  What were the key findings?
- **Conclusions:**
  What can we learn from the VEA process and results?

2.2 Rationale

The VEA model was developed in response to the **lack of existing practical activity within rural communities**. Year 1 of the FREE initiative identified and met the requirement for bespoke training and materials in order to develop specialist knowledge and capacity within rural community networks, and brought this information directly to rural residents via energy roadshows. However it became apparent that whilst capacity building was proving effective in raising awareness of fuel poverty and energy efficiency issues, there was a distinct lack of practical solutions available to rural residents, and particularly a lack of both knowledge and delivery of formal energy efficiency assistance schemes.

The Government has admitted that more than **6 million cavity walls and 8.5 million lofts** in both urban and rural areas will be left un-insulated after the current CERT obligation ends in December 2012. Furthermore, in April 2012, in answer to a Parliamentary Question placed by Barry Gardiner MP asking what proportion of CESP and CERT funding had been spent in off-gas grid areas, the Minster for Climate Change, Greg Barker MP, stated *"the CERT evaluation report indicated that **proportionally few people in off-gas grid homes** had benefited from the scheme."* He also confirmed that *"there have also been only a **small number of CESP schemes** in rural areas (which are more likely to be off the gas grid)."*

Year 1 of FREE identified this discernible lack of take-up of formal assistance schemes by householders in off-gas grid areas. In particular, CERT, CESP and Warm Front were identified as not having been effective in reaching rural areas[1]. The FREE initiative ascertained that this is due to a variety of reasons including:

- The **difficulty of successfully engaging with rural communities** who are often sparsely located and lacking in effective communication channels ie. media channels, informal social channels, and technological channels such as broadband.
- The **strict scheme eligibility criteria** which typically does not align with rural geographic or socio-economic demographics ie. area-based, social and financial criteria.
- The **increased cost of physically delivering assistance schemes** into rural areas in comparison with urban areas – ie. further distance to travel, fewer eligible properties therefore providers are unable to deliver at a cost-effective scale.
- The difficulty for CERT providers – who are overwhelmingly urban-based – to be able to **identify the specific rural households** where opportunities exist for measures to be installed.
- The difficulty for CERT providers to achieve the **density/volume of installed measures required** in order to meet their targets when considering the sparsity of potentially eligible households
- The **complexity of rural building design and fabric** which often does not allow technological solutions to be delivered within the permissible cost per tonne of carbon saved – ie. external wall insulation.

However, even taking into account these apparent barriers, year 1 of FREE established that there does exist some **'low hanging fruit'** in rural areas, with enough opportunities for low cost practical solutions, such as cavity wall and loft insulation, to be delivered through CERT at a large enough scale to make it viable for the CERT provider.

With the Government admitting that little CERT or CESP funding has been spent in off-gas grid areas to date, there is a clear **need for a proactive approach** within rural communities to ensure that the opportunities that do exist are maximised before the end of both schemes in December 2012. The VEAs provided a vehicle through which to demonstrate that CERT opportunities do exist within rural communities, and the chance to bring practical energy efficiency assistance directly to rural residents.

[1] See Appendix 3 for further information regarding CERT, CESP and WarmFront

2.3 Aims

The aims of the VEAs were:

1. To **establish if the VEA methodology works** as an effective means of bringing practical energy efficiency assistance directly to rural communities.

2. To **collect community housing, energy and social data** from across rural England in order to understand what rural communities actually look like.

3. To use the results to **facilitate delivery of tangible practical help** where possible – ie via CERT.

4. To use the results to **inform policy developments** – particularly in the lead up to the launch of the Energy Company Obligation [2] as an element of the Green Deal.

2.4 Methodology and Reporting

The VEA methodology was developed using the technical expertise of NEA and the community development expertise of RCAN members, in conjunction with the learnings from year 1 of the FREE initiative as to how to most effectively engage with rural communities.

2.4.1 Local Knowledge

Findings from Year 1 of the FREE initiative established that in order to successfully engage with often dispersed rural communities, **local knowledge is vital**. Knowledge of which villages are most in need, which villages are most enthusiastic and conversely which villages need the most encouragement, which villages are already engaged with other related projects, all fed into the village selection process. As the Village Representative was critical to the success of the VEA, local knowledge as to where these willing individuals were located was vital. As such it was agreed that RCAN Members were best placed to identify a suitable village using their local knowledge and expertise.

2.4.2 Village Criteria

To help with this task NEA's technical team in conjunction with Calor agreed a set of key selection criteria:

- Fuel supply: The village must be **entirely off-gas**

- Size of village: a population of **approximately 100 households**

- Household mix: A **good range** of house types, occupants and income levels

- Community building: The Community Building would receive a **full energy audit**, and would also act as the venue for an **energy drop-in/awareness session** at the time of the VEA for residents who wanted further information about the initiative.

[2] See Appendix 4 for further information regarding the Energy Company Obligation

2.4.3 Requirement to work with residents at a local level

Year 1 of FREE ascertained that local knowledge is vital in determining where and how to effectively focus energy efficiency activity. **Working directly at a local level and applying bespoke solutions** to fit specific community and householder needs, rather than applying a one-size-fits-all approach, provides the most effective assistance to those most in need. Similarly educating residents at a local level about appropriate rural energy efficiency measures is vital in ensuring that when capital works are undertaken, the correct choices for the house type, energy option, and lifestyle, are being made.

Similarly, Year 1 established that **local buy-in and co-operation is key** to successfully engaging rural communities where often there is a single person or group that can galvanise activity and secure participation from residents – ie the Parish Council, a local energy champion, community worker etc. It was therefore crucial that the RCC was able to engage an enthusiastic Village Representative to help enlist support and participation from other residents and undertake scoping and other support activities as required, including the distribution of the paper energy questionnaire to each house in the village.

It became clear therefore, that a **direct approach was required**, working directly with residents and a Village Representative at a local level, identifying their specific needs and the opportunities that exist within their specific housing stock.

2.4.4 Co-ordinators

Each VEA four main co-ordinators:

- **Calor Gas Ltd** – Calor provided **funding** to enable a VEA to take place in each of the 8 FREE regions. Calor co-ordinated the process and brought together the facilitators as below.

- **Rural Community Action Network (RCAN) Representative** – the role of the RCAN Representative was to identify a suitable village and act as the **liaison** between the Village Representative and the NEA Representative. The RCAN Representative was responsible for facilitating the process including arranging the date for the audit, the dissemination of questionnaires, and the publishing and dissemination of the final reports.

- **National Energy Action (NEA) Representative** – The NEA Representative was a qualified NHER Assessor and was responsible for **undertaking the physical Energy Audit** of the 5 domestic properties, the Community Building and the walk through survey of properties within the village. They also compiled, agreed and disseminated guidance on the process, including the village energy questionnaire and promotional materials. Following the Audit, the NEA Representative undertook a data mining exercise of the physical Energy Audit data as well as the returned questionnaires, and used this data to produce the final report. They created and issued the signposting letters for individual households who took part in the physical audit and who returned the questionnaire.

- **Village Representative** – Having a person, on the ground, in the village, who was trusted and respected by the participating households was key in **ensuring community support** for the Energy Audit, facilitating the physical Audits, and encouraging households to complete and return their questionnaires. The Village Representative was chosen because of their existing standing within the community, as a trusted and respected member of the community.

2.4.5 The Physical Audit

The VEA involved the **physical audit of a maximum of 5 domestic properties and a Community Building**. A qualified NHER Assessor from NEA's technical team carried out the physical energy assessment of the properties. Data was subsequently input into NHER Plan Assessor 4.5 to **generate draft Standard Assessment Procedure (SAP) results**. SAP is a recognised measurement for the thermal efficiency of a building. Latterly, **Reduced Data SAP (RdSAP)** has become more common as it is a quicker process. The programme NEA used generated a draft SAP rating between 1 and 100 (where 1 is the poorest thermal efficiency), predicted energy costs and predicted carbon emissions. A SAP rating of 55 is accepted as representing a home that has adequate levels of thermal efficiency, according to the main fuel poverty programme Warm Front.

In order to determine the draft SAP rating of the properties, NEA's technical team used the detailed data derived from the audits to reconstruct the individual properties. This also determined the **predicted actual cost and carbon figures for all energy use** in each dwelling, including heating and hot water. NEA used this information to create a 'base house type' and from that, NEA could model cost effective improvements in a range of similar rural construction types locally. This modelled information was shared with occupants of other houses in the village who could compare their property to the modelled results for the 'typical' property.

It is important to note that the draft SAP ratings, energy costs and carbon emission were calculated using the NHER Plan Assessor software where the results were based on the input information. In some instances, **the exact nature of more complex heating and insulation systems could not be adequately reflected in this standard software** – ie. where homes included a complex array of build types and heating fuels e.g using wood stoves as primary heating and storage heating as secondary due to the natural availability of wood and high running costs of older storage heaters. DIY insulation measures were also evident and could only be assessed through self-reported thermal values. This is an important finding from the VEAs – that many rural homes utilise complex/bespoke heating systems is a key difference between many rural homes and the more traditional wet heating systems generally found in on-grid or urban properties. As such **like for like comparison between rural and urban properties** (or on and off mains gas properties) is often difficult, if not impossible. Some examples of complex rural heating systems and non-standard insulation methods that were uncovered during the VEAs can be seen below.

Above: Complex heating system control and metering

Above: Supplementary heating systems/energy sources

Above: An example of bespoke insulation

Below is a **typical example of the basic findings** from the physical audit:

House type	Occupancy	Fuel type	Heating system	Wall/insulation type	Draft SAP rating	Heating cost/carbon emissions per annum	Total cost[3]/carbon emissions per annum
A. Mid terrace	2 adults, 2 children,	Solid fuel	Closed fire 60% efficient	Solid stone wall	45	£588 6101Kg/Yr	£1,325 8535Kg/Yr
B. Mid terrace	2 adults	Oil	Oil boiler 79% efficient	Mixture of solid wall and internally insulated solid wall	41	£2, 702 / 11,808Kg/Yr	£4,160 / 18,389Kg/Yr
C. Detached	2 adults	Oil	Oil boiler 82.5% efficient	13.5 inch solid wall	50	£3,229/ 14,115Kg/Yr	£4,962/ 19,846Kg/Yr
D. End terrace	2 adults standard heating pattern	Oil	Oil boiler 79% efficient	Mix of 9 inch solid wall, filled cavity construction and new build	45	£1,273 / 5,566Kg/Yr	£2,287 / 10,159Kg/Yr

Based on a practical judgement of potential cost effective solutions, and to show a range of improvements available and their various merits, NEA then outlined **different scenarios for recommended improvements** to selected housing types. An example based on the above results is below:

House type	Draft SAP rating	Heating costs per annum	Fuel type	Fuel / system replacement	Insulation improvement	New draft SAP rating	Heating cost per annum post improvement
A Mid terrace	45	£588	Solid fuel room heater and electric storage	Solid fuel back boiler	Loft to 270mm	49	£401 Predicted saving £187 p/a
B Mid terrace part insulated	41	£2,702	Oil	Solid fuel boiler	Loft to 270mm	58	£806 Predicted saving £1896 p/a
C Detached	50	£3,229	Oil	Ground Source Heat Pump	Top up loft insulation to 270mm, consider GSHP	61	£1,164 Predicted saving £2,065 p/a
D End terrace	45	£1,273	Oil	N/A	External insulation, improve heating controls, loft top up	70	£470 Predicted saving £830 p/a

[3] This includes heating, hot water, lighting and appliances

It was made clear to the physical audit participants that the recommended improvements to the assessed properties were determined using a SAP modelling exercise, and with consideration of the qualitative feedback drawn from speaking to the householders themselves about their needs, lifestyle, energy behaviours and personal circumstances. It was also important to note that the capital investment required by householders to meet needs will differ depending on eligibility for free/discounted measures. Therefore, further analysis would be required on the level of actual spend required for improvements.

2.4.6 The Paper Energy Questionnaire

In addition to the physical audits every household in the village was asked to complete a confidential paper questionnaire which detailed information about their **property type, age, tenure, current insulation levels (if any), heating fuel type, interest in renewables, health information, and financial/benefit information**.[4] After analysis of the questionnaire, the resident was sent a **letter signposting them to relevant services** tailored to their individual circumstances (ie. if they were potentially CERT eligible, if they were recommended for a benefit entitlement check etc). Participants were given the assurance that all information would be held confidentially and securely by NEA. No other party had access to the raw data, and only aggregated results were to be made public. Participants had the option of returning the forms anonymously, although this would mean that they would not be able to receive the follow up letter with recommendations specific to their property and personal circumstances. As such very few respondents decided to withhold their details, although a higher number of respondents did not complete all areas of the questionnaire.

2.4.7 Reporting

The data from the physical audits and questionnaire responses were analysed and aggregated to produce three VEA reports:

- **A full report**
- **An anonymised report**
- **A two page summary report**

The full report, which contained information which identified the individual properties who took part in the physical audit (ie through photography of the exterior, heating system etc), was available only to NEA, the RCAN Member and Calor. The anonymised report had all identifying information, such as photographs, removed and was made available to residents – ie. via the village/ RCAN Members website, notice board.

The 2-sided summary report, which contained the key findings and recommendations, was sent directly all households who responded to questionnaire. In addition each household received a letter, tailored to their specific circumstances, which signposted them to local and national service provision such as CERT providers, Citizen's Advice Bureau, local energy groups, local financial assistance etc. Finally, all individual households who took part in physical survey received a full detailed report for their individual property. The Community Building Committee received the same full report for the Community Building.

[4] See Appendix 7 for an example of a typical questionnaire

2.5 Results

The key findings from the 8 VEAs are as below:

2.5.1 Participation

VEAs were undertaken in 8 villages each containing around 100 properties. **401 households participated which is a 50% response rate** based on a target participation of 800 households. Whilst participation levels varied between regions, the overall **50% participation rate is extremely high** for this type of initiative and particularly encouraging when considering the difficulties typically encountered in engaging with rural communities. The high response rate was primarily achieved via the involvement of a local Village Representative whose trusted position within the community enabled them to promote the initiative and encourage participation. This clearly demonstrates the importance of both **working at a local level**, and **securing community buy-in**, in ensuring the success of such initiatives. There was a wide variation in response rates between villages across the 8 regions:

- Yorkshire and Humber 98
- East Midlands 83
- South East 71
- South West 47
- North East 39
- North West 32
- East Midlands 22
- West Midlands 9

The variation in response rate is to be expected as Year 1 of the FREE initiative demonstrated regional variations in engagement with the fuel poverty and climate change agenda.

The particularly high response rate from Yorkshire and Humber can be attributed to the fact that this village was a landlord estate village with a very keen Estate Manager who acted as the Village Representative and encouraged all residents to take part. The housing stock within the estate village was of extremely poor quality and there was enthusiasm from the Estate Manager and residents to gather data which could potentially lead to building fabric and heating system improvements.

The low response rate in the West Midlands can be attributed to the fact that the area was already very active in the low carbon agenda with lots of projects already underway. Although this was seen as a benefit when selecting this village to participate, as the VEA got underway it became clear that there was an element of 'project fatigue' with too many other projects underway for residents to fully engage with the VEA.

Interestingly, the East region found it extremely difficult to find a village willing to participate in the VEA and had to approach 12 villages before a willing community was found. There were varying reasons for this, including perceived bureaucracy (ie. issues with needing to get the approval of the Parish Council before agreeing to the VEA) and also a general sense of caution regarding the VEA process – residents were sceptical that the project was free of charge, and could lead to improvements at no cost to residents. Finally, on a number of occasions the region encountered the attitude that even if measures could be identified, the 'hassle factor' was too much trouble (ie. completing questionnaires, clearing lofts, having installers in the home etc).

The variations in response rate demonstrate the importance of choosing the right village and having an enthusiastic Village Representative. Interestingly it also highlights some of the **barriers to energy efficiency and fuel poverty projects**, including, at one end of the scale, **too much existing activity** (ie. project fatigue), and at the other end of the scale, the **sense of caution and even apathy** that some rural communities feel regarding energy efficiency improvements. Similarly, there is an evident difference between real financial need and environmental aspiration – the VEAs found that those who are interested in the energy efficiency agenda are more likely to actively participate, whilst often it it those most in need of assistance who are least likely to actively seek help. It is therefore vital to ensure that policies and programmes are targeted to assist those who need it most.

2.5.2 Tenure

As expected the majority of households who participated were **owner occupiers**. The high number of private rented includes a landlord estate in Yorkshire and Humber of 98 homes.

- Owner Occupier 252
- Private Rented Sector 116
- Social Rental Sector 29
- Unspecified 4

It should be considered whether this is an **accurate reflection** of property tenure types across rural communities or rather whether this is a reflection of the **type of household most likely to respond** to an initiative such as the Village Energy Audit.

Furthermore, the VEA produced some interesting anecdotal evidence regarding private rented housing/tied accommodation with participants admitting, informally, concerns that if their properties were improved the landlords might increase the rent. Tenants were concerned that they might save on fuel costs but face higher rent costs. Issues were also uncovered whereby tenants were unwilling to complain about their heating for fear of losing their home.

2.5.3 CERT Priority and Super-Priority Eligibility

A key finding from the VEA was the **significant proportion of residents identified as qualifying for CERT** funded energy efficiency improvements such as loft and cavity wall insulation. **208 (52%)** of the households who participated in the Village Energy Audits contained an individual who would be eligible to receive measures (if required) through the CERT priority or super priority groups. This means that measures would be installed either entirely free of charge, or at a heavily discounted rate. The high rate of CERT eligibility demonstrates that CERT suppliers should be targeting rural areas in order to hit their obligations, however it is evident from the VEAs that the potential opportunities have not been taken up by CERT suppliers.

- North East 64%
- West Midlands 66% (NB small number of respondents – 9 households)
- South East 52%
- Yorkshire and Humber 41%
- East Midlands 39%
- East 24%
- North West 19%
- South West 12%

Suppliers are required to meet 40% of their total CERT target by delivering measures to a 'Priority' group of vulnerable and low-income households, including those in receipt of eligible benefits and pensioners over the age of 70. Furthermore 15% of the savings must be achieved in a subset of low income households (a 'Super Priority' group) considered to be at high risk of fuel poverty.

Significant CERT opportunities exist, which largely **reflect the age demographic of rural communities** which tend to contain more retired people than urban areas.

2.5.4 Potential Insulation Opportunities

- Solid Wall — 203 potential opportunities (96 CERT priority group eligible)
- Cavity Wall — 36 potential opportunities (21 CERT priority group eligible)
- Loft — 57 potential opportunities (31 CERT priority group eligible)
- Loft Top-Up: current <100mm — 127 potential opportunities (60 CERT priority group eligible)

2.5.5 Primary Fuel Use

Heating Oil was the most commonly used fuel type with **204 out of the 401 households** using it as their primary heating source. This aligns with market data which suggests approximately 50% of the off-grid heating market is fuelled by heating oil. However of these 204 households using oil, only **24 were members of a bulk-buying heating oil scheme**. There are significant opportunities for cost savings to be made if communities set up a bulk buying scheme.[5]

Furthermore the VEAs also ascertained that many rural households **use a mixture of fuel sources**, and employ a number of **subsidiary heating systems** to deliver supplementary heating. The complexity of such heating systems has serious implications for energy efficiency assessment processes such as 'RdSAP' which is used to calculate Energy Performance Certificates (EPCs) and evidently in some cases is **not flexible enough** to take into account the complex nature of many rural heating and insulation systems and lifestyles.

2.5.6 Renewable Technologies

Of the 401 households, **229 (57%) stated that they would consider installing renewable technologies** if they were replacing their heating and/or hot water system. However whilst participants were interested in renewable solutions, the majority of households stated that they **did not feel they knew enough** about available renewable options to make an informed decision regarding installing a renewable heating system.

This suggests that in spite of the Government's recent promotion of the Renewable Heat Incentive Premium Payment (RHIPP) whereby off-mains gas residents can apply for a grant of up to 10% of the capital cost of installation of renewable heating systems, the information is not getting through to many rural residents.

[5] See Appendix for information on the Oxfordshire RCC Oil Bulk Buying Scheme

2.5.7 Health and Financial Issues

The VEA ascertained that **88 of the 401 households reported a heart, circulatory or respiratory problem** that could be exacerbated by living in a cold home. Furthermore 55 of these are CERT priority/super priority households. Again, there was an interesting variation across the regions - 43% respondents in the North East reported having an illness which can be exacerbated by the cold, compared with only 17% in South East region. This information has been reported back to the RCAN Members who will share this with their local counterparts who work within the healthcare sector.

The responses from **110 households (27%) indicated that they should be referred for a financial/benefit entitlement check**. 70 of these households qualify for CERT priority group. This substantiates the findings from Year 1 of the FREE initiative which ascertained that **benefit uptake in rural areas is often lower than in urban areas** with rural people either not being aware of their entitlement or perceiving a stigma to be attached to claiming benefits.

2.5.8 Other Issues:

The VEAs demonstrated that a significant proportion of homes with a need for energy and affordable warmth assistance **also required assistance in a number of different and additional areas**, including health and financial issues, but also covering other issues such as transport and employment.

Whilst the VEAs and the wider FREE initiative are not designed to directly intervene regarding such wider issues, the findings from the VEA demonstrate **the importance of a holistic approach** to fuel poverty which encompasses (but is not limited to) health, financial, transport and employment solutions, as well as energy efficiency improvements within the home.

Understanding these competing priorities and ensuring that in addition to being well-targeted, **local and national policies and programmes are designed and resourced to provide for intense and multiple assistance requirements** is a key to a successful approach to tackling not only affordable warmth, but a wider range of rural issues.

2.6 Conclusions

It can be concluded that the **VEA methodology does work** and can be a useful means to gather data regarding rural community energy profiles, identify CERT eligible households, and flag up vulnerable households. In light of the failure of other schemes to effectively reach and engage with rural areas the VEA approach has been extremely successful in making rural residents aware of the energy profile of their home and how they can access practical solutions, in many cases at little or no cost. The VEAs have provided an overview of the housing types, energy profile and efficiencies of a range of off-mains gas domestic properties in villages across England, as well as a brief overview of resident social and financial demographics.

2.7 Benefits of the VEA approach

- The VEA may act as a **catalyst and focus for local interest and engagement** in the fuel poverty and energy efficiency agenda.
- Provides **detailed information** regarding rural property types and communities, and allows for comparisons between regions.
- Physical audits of homes give extremely detailed information to the 5 homeowners, but also give all residents an **opportunity to compare their home to a 'typical' similar property**.
- **Questionnaires are an effective means** to capture detailed personal information:
    - Capture a large amount of data
    - Few respondents chose to withhold personal information – ie. very few anonymised returns
    - Questions about financial/health circumstances were not an apparent deterrent

However whilst there are obvious benefits to the VEA approach, **the process is by no means ideal**.

2.8 Areas of difficulty

- The success of the VEA process relies heavily on the **effectiveness of local support** for engagement and promotional activity.
- The VEA process is **lengthy, manually intensive, and needs streamlining**.
    - The physical audit process is **time-consuming** and due to the often complex nature of rural property types and heating systems, the results sometimes do not fit with standard software assessment and data analysis packages such as RdSAP.
    - The data analysis of the paper questionnaires is a **manual process** and extremely time consuming.
    - The feedback process needs refinement. Whilst it is extremely useful for each home to receive a tailored letter suggesting next steps, it is left to the individual householder to decide whether to pursue these recommended steps. There is currently **no way to automatically track if householders take up the identified intervention opportunities.**

The findings from the entire VEA process, from how to best engage with rural communities, to the data produced, can be seen as **useful in the design of future Government energy efficiency policy** , and in particular the design of the ECO obligation which will succeed CERT, CESP and WarmFront from January 2013. The Government must ensure that unlike its predecessors, ECO is successful in its delivery within rural communities. Calor hopes that this will, in part, be ensured by the introduction of the Hard To Treat element of the ECO. With an expected 50% of ECO funding targeted at Hard To Treat homes, rural

householders should benefit from this scheme – however it should be noted that urban areas also contain a significant number of Hard To Treat homes, and there is every danger that the ECO funding will once again be targeted within urban areas where properties can be more easily identified and measures delivered at a greater scale therefore lower cost.

Government should also take note of the findings of the VEAs in regard to **existing energy efficiency assessment software packages such as SAP and RdSAP.** The VEAs clearly identified a flaw in such software in that it often cannot take into account or accurately reflect the complexity of rural heating and insulation systems which may contain more than one fuel source, may employ a supplementary heating system or bespoke insulation methods.

Whilst portraying only a small snapshot of rural households, it is evident from the VEAs that **rural communities are currently at best being left behind, and at worst ignored, in the drive for energy efficiency improvements**. CERT is not being effectively delivered into rural areas in in spite of both significant insulation opportunities and the high proportion of vulnerable residents CERT is mandated to help.

The VEAs prove that **urgent action is required** to tackle rural energy efficiency and fuel poverty issues, but that **'one size fits all' solutions will not be effective** due to the dual challenges of engaging with rural communities and providing effective solutions to the complexities of rural energy. **Working proactively at a community level** and securing the assistance of **trusted local individuals and networks** to engage with rural householders is the most effective way to ensure that the countryside is not unfairly disadvantaged and can play its part in the carbon and fuel poverty reduction agenda.

3. Appendices

Appendix 1: Other Year 2 Activities:

Year 1 of FREE focused on ascertaining the nature and extent of rural fuel poverty, and building specialist knowledge and capacity within rural community networks to both identify fuel poverty and recommend a holistic range of suitable energy efficiency and financial solutions. Bespoke training and materials were provided to the Rural Community Action Network, and advice was delivered through a series of energy efficiency roadshows specifically targeted at off-gas grid communities most at risk of fuel poverty. Year 2 of FREE continued the work from Year 1 in raising awareness of the dual issues of fuel poverty and energy efficiency through a combination of roadshows and events, and capacity building within rural networks.

Roadshows:

The roadshow approach was refined to take into account feedback from Year 1 which ascertained that it was difficult to encourage people to attend stand-alone energy efficiency roadshows. Instead linking up with existing projects and integrating energy efficiency advice into wider events proved far more effective. As such during Year 2 the energy roadshows were largely integrated into other events such as county shows, farmers markets, luncheon clubs, coffee mornings, parish council meetings etc.

Capacity Building:

Whilst Year 1 aimed to engage end-users in off-gas grid communities, Year 2 aimed to extend the initiative's reach through building capacity within existing organisations with frontline staff already working in rural communities, ie local service providers such as the fire service, health workers, social care groups and clubs. By educating relevant rural front-line workers in how to identify fuel poverty and either directly recommend solutions or signpost onto specialists for further advice, FREE is creating a lasting legacy through building capacity within a network of rural advisors.

Appendix 2: Fuel Poverty and the Nature of Rural England:

Around 2 million English homes, comprising 4.6 million people, do not have access to the mains gas grid. This rural population contains around twice the percentage of retired people than the general population. The most popular heating fuels for rural homes are heating oil (c.55%) and to a lesser extent electricity (c.18%), solid fuel (c.11%) and LPG (c.10%).

Off-gas grid communities are, by their very nature, often comprise a collection of relatively isolated buildings located over a wide geographical area. Rural standing buildings tend to be older and possibly stone-built, very often with solid floors and walls. Such properties are classed as hard to treat and traditional cost effective energy efficiency measures, such as cavity wall and loft insulation, cannot be employed. Electrically-based low carbon energy options are limited by the high CO_2 emission levels and restricted capacity of electricity in Britain; much of the electricity in rural areas is only single phase, limiting the power available for electric powered heating systems such as heat pumps.

Fuel poverty is caused by a combination of three main factors: the energy efficiency of the home, the amount of disposable household income level, and the cost of domestic energy. Until recently fuel poverty was defined as having to spend more than 10% of net household income on energy bills (heating and electricity), however this definition was reviewed under the 2011/2012 Hills Fuel Poverty review and recommendations for a new definition and indicator for fuel poverty have been proposed to Government in the final Review report.

The latest Government fuel poverty statistics stated that in 2009, there were 5.5 million fuel poor households in the UK, whilst in England there were 4 million fuel poor households. Fuel poverty is a problem across England, but particularly in rural areas. The DCLG English House Condition Survey (updated November 2008) concluded that there are nearly three times as many households in fuel poverty in rural areas and that the numbers are increasing compared to urban areas. However, in spite of this, rural areas, and particularly those located off the mains gas grid, have seen little dedicated support or activity to alleviate the problem.

However, rural households continue to face pressure to contribute to the Government's fuel poverty and carbon reduction targets, but with no realistic plan or support specifically developed for the countryside. Similarly Government funded fuel poverty and energy efficiency assistance programmes have traditionally been neither aimed at, nor able to reach, the majority of rural homes.

Appendix 3: CERT, CESP and WarmFront:

The current CERT (Carbon Emission Reduction Target) programme which obligates energy suppliers to provide energy efficiency measures to eligible homes has been primarily marketed to, and delivered within, urban areas, where the majority of homes are eligible for relatively low cost improvements such as cavity wall insulation, and the CERT companies can make a large volume of improvements in a small geographical area, therefore maximising efficiencies.

CESP (Community Energy Saving Programme), a community-based partnership involving Local Authorities and energy suppliers, has also traditionally not been effective for rural communities. CESP is delivered in areas of low income as identified by the Income Domain of the Indices of Multiple Deprivation, and accordingly CESP delivery areas have been overwhelmingly urban. Additionally, the house-by-house, street-by-street characteristic of CESP delivery is not well-suited to the dispersed nature of rural communities.

Finally, the Warm Front programme provides both heating and insulation measures within a strict eligibility criteria. However a 2010 a Centre for Sustainable Energy report stated that the correlation between Warm Front grants delivered between 2000 and 2008 and levels of fuel poverty was strongest in urban areas and weakest in hamlets.

In addition, if assistance is available at a local level, many rural fuel poor households find that they fall outside the scope of the available grant programmes due to their personal circumstances, house type or location, or that the grant level is not sufficient to enable the necessary improvements to the fabric of the home to be made.

Appendix 4: Energy Company Obligation – proposal:

It is anticipated that at least £540m of the £1.3bn per year Green Deal scheme will be channelled into the Energy Company Obligation (ECO). Funding will be directed at vulnerable homes unable to participate in the Green Deal and those where the cost of works would outweigh the savings. The majority of ECO financing will cover solid wall insulation, however its remit will be widened to allow for measures such as hard-to-treat cavity walls, glazing and draught proofing. About £350m a year will go towards heating and insulation measures for those suffering the greatest fuel poverty. It is expected that 270,000 homes will be tackled by 2015. The remaining £190m will cover upgrades to homes and flats with loft, cavity wall and other insulation measures.

Appendix 5: Heating Oil Bulk Buying Schemes:

Oxfordshire Rural Community Action Network runs a large-scale consortium of heating oil clubs, both across Oxfordshire and has franchised the model out to other English counties. Members generally save about £45 on a 1,000 litre delivery. Further information can be found at http://www.oxonrcc.org.uk/home/bulk-oil-buying-scheme

Appendix 6: FREE Village Energy Audit Partners:

Calor:

Calor began operating in 1935 with the aim of bringing clean, efficient and modern energy solutions to homes and businesses across Great Britain. 2010 marked the Company's 75th year, and Calor continues to play a vital role in meeting rural energy requirements, supplying bulk and bottled LPG (Liquefied Petroleum Gas) to homes and businesses located off the mains gas grid 365 days a year. As Britain's leading supplier of domestic LPG, Calor has developed an excellent understanding of the unique energy challenges that rural householders face. Calor supports the Government's efforts to tackle climate change.

As an energy provider Calor takes its environmental responsibilities very seriously and wants rural property owners to have a strong voice in the energy efficiency debate - and the same opportunity to reduce their carbon emissions and fuel costs as exists in urban on-grid areas. LPG is the lowest carbon-emitting fossil fuel available in rural areas, and is a flexible fuel designed to meet the needs of the rural homes and businesses. Calor's innovative technological advances offer affordable, common sense solutions that can make a realistic and long-term difference to climate change in Britain, today and in the future.

Simply installing an LPG condensing boiler can significantly improve energy efficiency, reduce carbon emissions and cut a home's energy bills by up to 30%. Moreover, by combining an LPG condensing boiler with solar thermal water heating, energy bills will reduce yet further and improve the home's sustainability, without excessive installation or maintenance costs. Calor is working in partnership with companies such as the UK fuel cell manufacturer Ceres Power, and innovative boiler manufacturer Baxi, to bring the next generation of home energy solutions to the rural market in the form of micro Combined Heat and Power (mCHP). mCHP is the process of generating both electrical power and heat from a single source. It is a low carbon solution which is particularly effective at delivering secure low carbon electricity in to rural areas - even very remote ones. Calor is also partnering with various other renewable technologies including Solar Thermal, Solar Photovoltaic and Biomass. Calor is also in the early stages of development of a bio-propane product which would be classed as 100% renewable.

National Energy Action (NEA):

A national charity working, for over 25 years, to eradicate fuel poverty, NEA develops and promotes energy efficiency services working in partnership with central and local government, fuel utilities, housing providers, consumer groups and voluntary organisations. NEA campaigns for greater investment in energy efficiency to help those who are poor or vulnerable. NEA achieves its objectives through:

- Research and analysis into the causes and extent of fuel poverty and the development of policies which will address the problem.
- Providing advice and guidance to installers on good practice in delivering energy efficiency services to low-income householders.
- Developing national qualifications and managing their implementation to improve standards of practical work and the quality of energy advice
- Producing educational resources to teach people about the importance of energy efficiency.
- Managing demonstration projects in inner cities and rural areas which show innovative ways of tackling fuel poverty and bring the wider benefits of energy efficiency to local communities, such as the FREE initiative.

Rural Community Action Network (RCAN):

RCAN covers the whole of rural England through the work of 38 local member organisations, eight regional bodies and ACRE (Action with Communities in Rural England). The local member organisations are all independent charities, largely county-based.

As local development agencies, RCAN members have been facilitating social change in rural communities for decades by providing tailored and comprehensive support to rural communities to enhance their quality of life and access to services. With a strong focus on local advocacy and brokering relationships between rural community aspirations and local government strategies, RCAN members enhance the role of community action and self-reliance in rural areas across the country.

RCAN collectively:

- Reaches 40,000 grassroots contacts and organisations in 11,000 rural communities across England.
- Engages in 1,300 different partnerships, including working with 58 different higher tier local authorities.
- Has over 12,000 fee-paying members.
- Employs approximately 1,000 staff with a variety of specialist skills.

Action with Communities in Rural England (ACRE):

ACRE is the national umbrella body for the Rural Community Action Network, providing a focus for national advocacy and support for its member organisations and the rural communities they serve. ACRE works strategically with government and with a wide range of national third sector organisations to reflect a rural perspective in policy and practice. ACRE is nationally recognised for its expertise in ensuring rural community-led solutions are central to public policy debate and manages the delivery of programmes that directly benefit grass roots communities.

Village Representative:

It became apparent that in order to effectively engage with rural communities, a local trusted representative was required in order to facilitate the process. Year 1 of the FRE initiative established that village communities are often fiercely independent, and often do not welcome, or trust, outside 'interference' – especially considering the sensitive nature of the key issues – fuel poverty, housing, financial information, social information and energy consumption. As such the Village Representative was key in breaking down these barriers and encouraging communities to engage with and actively participate in the VEA. The Village Representative took many different forms, from the leader of the Parish Council, to the local shop proprietor, to the co-ordinator of the local heating bulk buying group. However they all shared the common characteristic of being respected and trusted within their community.

Appendix 7: Example Questionnaire:

BURY VILLAGE ENERGY AUDIT

We are currently undertaking a village energy audit to identify households that might benefit from insulation and/or heating improvements. Your feedback will help us to identify sources of available funding and other support that will benefit you and help you achieve a warmer, more comfortable home and potential energy savings. Your feedback will be held in the strictest of confidence and will only be used for the purposes of identifying and promoting assistance that might be available for your household.

Free
ENGLAND

Household details (OPTIONAL): (Complete in BLOCK CAPITALS)

Name			
Address:			
Postcode:		**Telephone Number:**	

For each of the following please place a ✓ in the relevant box

1. About your home? Own/mortgage: ☐ Rent (private): ☐ Rent (Social): ☐

2. House type: Bungalow: ☐ Terraced: ☐ Semi-detached: ☐ Detached: ☐ Flat: ☐

3. When was your home built? Before 1930: ☐ After 1930: ☐ Unsure: ☐

Does your home have cavity walls?	Yes: ☐	No: ☐	Unsure: ☐
Are the cavity walls insulated?	Yes: ☐	No: ☐	Unsure: ☐
Does your home have solid walls?	Yes: ☐	No: ☐	Unsure: ☐
Do you have internal or external solid wall insulation?	Yes: ☐	No: ☐	Unsure: ☐
Does your home have loft insulation?	Yes: ☐	No: ☐	Unsure: ☐
- If yes, is it at least 27 cm thick?	Yes: ☐	No: ☐	Unsure: ☐

4. What do you use as your main heating fuel?

Oil: ☐ LPG bottles: ☐ LPG bulk purchase: ☐ Electricity: ☐ Solid fuel ☐

Other (please specify) ____

5. Does your current heating system work correctly? Yes: ☐ No: ☐ Sometimes: ☐

6. If using heating oil, do you buy it in bulk with other householders in your community?

Yes: ☐ No: ☐

7. If you needed to replace your heating and/or hot water systems would you consider renewable energy solutions? Yes: ☐ No: ☐ I need more information ☐

8. Your health

You may be eligible for heating and insulation improvements if you are living with a particular medical condition.

Do you have a heart, circulatory or respiratory condition? Yes: ☐ No: ☐

(Note: If you're not sure, you GP practice will be able to tell you)

NEA, National Office, Level 6 (Elswick), West One, Forth Banks, Newcastle upon Tyne. NE13PA. Tel: 0191 261 5677

9. Eligibility criteria:

There are a number of free and low-cost heating and insulation initiatives/interventions currently available. Eligibility for each can be complex and is based on an assessment of current income and/or benefit entitlement. To assess your eligibility we need to ask you questions about your household (Please place a ✓ in the appropriate box).

Would you welcome a benefit entitlement check? *Yes* ☐ *No* ☐

Is anyone in your household over 70 years of age? *Yes* ☐ *No* ☐

Do you or any member of your household receive any of the following benefits? (Please ✓ all that apply):

Council Tax	☐	Housing Benefit	☐	Attendance Allowance	☐
Disability Living Allowance	☐	War Disablement Pension (which includes Mobility Supplement or Constant Attendance Allowance)	☐	Disablement Pension (which included Constant Attendance Allowance or State Pension Credit)	☐
Income Support	☐	Income-base Job Seekers Allowance	☐	Income-related Employment and Support Allowance	☐
State Pension Credit	☐	Child Tax Credit (with an income of less than £16,190 per year)	☐	Working Tax Credit with an income of less than £16,190	☐

In addition do you or any member of your household possess any of the following:

A parental responsibility for a child under 5	☐	Disabled Child Premium	☐	Child Tax Credit which includes a disability or severe disability element	☐
Disability Premium, Enhanced Disability Premium or a Severe Disability Premium	☐	Pensioner Premium, Higher Pensioner Premium or Enhanced Pensioner Premium	☐	Income-related Employment and Support Allowance, which includes a work-related activity or support component	☐

Consent declaration: *I certify that the information provided on this form is true and correct. By returning this form I consent to my personal information (including my health condition) to be stored by NEA for the purpose and duration of the FREE project and to be used by employees, partner agencies and representatives only in order to identify, promote and provide insulation, heating and/or other energy efficiency services to me and/or members of my household.*

Your signature: _____ *Date:* / /

Thank you for contributing to the village energy audit. Please return your completed questionnaire to NEA in the envelope provided. Look out for further information about progress of the village energy audit around the village.

The FREE (England) village energy audit is supported by:

CALOR NEA Campaigning for Warm Homes ACRE

NEA, National Office, Level 6 (Elswick), West One, Forth Banks, Newcastle upon Tyne. NE13PA. Tel: 0191 261 5677