

# End of project report – Household Energy Surveys in Powys

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## Background

In Spring of 2022, Light Foot Enterprises (Lightfoot) was contracted by PACE to deliver household energy advice to 50 homes across the county with funding from PAVO via the Community Renewal Fund. This report describes the results of this project.

## The state of the sector – retrofit advice

Lightfoot has been offering domestic energy advice since 2008, but interest in retrofit has waxed and waned in this period. Lightfoot experienced a great deal of interest during the period 2008 – 2012 and carried out a large number of surveys. During the decade that followed, retrofit became the poor relative compared to renewable energy, principally solar PV for domestic homes, and the attraction of the Feed in Tariff meant that home owners were more attracted to installing solar panels than in doing insulation. It is only since the ending of the Feed in Tariff, the greater public awareness of climate change, and the increase in fuel prices that have really only happened in the last 2 years that interest in retrofit has started to take off again.

Against this background, the quality of some retrofit projects across the UK generally caused the UK government to decide that there was a need for greater scrutiny of how retrofit installations are carried out. The outcome of this is a new standard, called PAS2035, which attempts to learn from the lessons of the past and to ensure that retrofit is carried out in ways that address the highest priority areas, and that the house is treated as a whole with all measures coordinated together rather than measures considered piecemeal. PAS2035 is currently being rolled out in the public sector and is not likely to become mandatory in the private sector for some time, but the private sector is learning lessons from the rollout of PAS2035 and it is understood that attempting to do “uncertified PAS2035” in the private sector will lead to better practices and better interventions.

To address this, Lightfoot Enterprises has been undertaking a review of the advice that it is offering and has sought to upgrade this in line with PAS2035. This review was undertaken at the start of this year and resulted in a period when no reports were produced which this was carried out.

## Other sources of advice in Wales

As mentioned above, retrofit was a poor cousin for many years, but over the last few years both the UK government and the Welsh government have been ramping up their support for retrofit.

In Wales, the flagship project from the Welsh Government in delivering retrofit is ORP (Optimised Retrofit Programme). Unfortunately, this is entirely focused on the social rental sector (local authorities and housing associations) so cannot help owner/occupiers at all.

There is support for owner occupiers in fuel poverty and/or hard to treat homes (F/G rated) via the NEST (Welsh Government) and ECO (funded by levy on energy supply companies) but no support at all for people outside this bracket. This means that all those homeowners that are keen to improve their homes, but do not fall into means tested brackets, struggle to obtain impartial advice and are reliant mainly on salesmen for installers. This is the void that Lightfoot is attempting to fill.

## History of Lightfoot Enterprises

Lightfoot Enterprises is a charity that was set up in 2008, and one of the primary activities of the charity since then has been to provide impartial advice to households in relation to household energy use.

The charity emerged from a group of activists in Bishop's Castle who wanted to find ways of tackling climate change by reducing carbon dioxide emissions. Their original idea was to build a wind turbine, but this was an idea that was met with local opposition, and the group realised that they could save the same amount of carbon by reducing the energy wasted in homes.

The charity developed their "Household Energy Survey" as a way of providing bespoke "honest broker" advice to householders on how to save energy. Most of the surveys delivered have been supported by grant funds, most notably a prize of £300,000 from NESTA back in 2010.

## What is the HES survey

The survey is part volunteer and part professional based. Lightfoot trains volunteers to carry out household visits, and these volunteers then call on clients that have expressed an interest in having a survey. During the visit, the volunteer will gather information both from talking to the home owner, and from a tour of the property. This information is collected via a questionnaire that the volunteer is trained to fill in.

Once the survey is complete, the volunteer returns this form to the Lightfoot office, and a Lightfoot officer will convert this into a written report that the volunteer will return to the client.

## Recruiting volunteers

Volunteers are very important to the Lightfoot process. Use of volunteers reduces the cost of the service, but more importantly it emphasises the community grass-roots aspect of the service which improves the credential of the advice as impartial. It also means that the service can be offered wherever Lightfoot has volunteers and minimises the need for surveyors to travel long distances.

For this project we asked for expressions of interest from various communities in Powys via the PACE network, with the intention of establishing volunteers within these communities.

The groups that expressed interest were:

- Llangattock Green Valleys (Crickhowell)
- Trawsnewid Llandrindod Transition
- Presteigne Transition
- Climate Action Newtown
- Zero Carbon Llanidloes
- Machynlleth (Ecodyfi)
- Montgomery Energy Group

The arrangement can only work with the support of a community group based in the community being targeted. It was these groups that carried out all the local arrangements, and recruited volunteers to the scheme.

The funding allowed us to run three volunteer training sessions. We decided that rather than operate in three specific communities, that we would run the training sessions such that people from various different communities could attend so that we could attempt to serve all communities. The locations chosen for the training were Llandrindod Wells, Crickhowell and Newtown, with the Newtown one aiming to serve a wider

catchment of Machynlleth, Llanidloes, Newtown, Montgomery and Welshpool and the Llandrindod Wells one aiming to serve Presteigne also.

The training sessions were organised for:

- Llandrindod Wells on 19<sup>th</sup> March
- Crickhowell on 26<sup>th</sup> March
- Newtown on 23<sup>rd</sup> April

## Format of the training events

The training events were arranged to be physical meetings and the training takes about 5 hours in total. These were arranged to be on Saturdays, scheduled from 10am-3pm.

The purposes of the training event is to cover two main issues

1. A briefing about all aspects of energy use in houses, to equip the volunteer to have a useful conversation with the householder about their home and what can be done.
2. Training on how to fill in the questionnaire that the volunteer would use to gather data about the property, so that the Lightfoot officer has enough information to enable them to write a report on the property.

The numbers that attended the training events were Llandrindod (2), Crickhowell (7 in person, 1 via zoom) and Newtown (6 in person, 2 via zoom). In addition one person from Presteigne attended a training session in Bishops Castle that was part of a Shropshire HES project.

Following the training sessions, the groups were encouraged to publicise the availability of these surveys in the community.

## Response from communities

The communities are still active in recruiting clients for surveys. At present, 35 surveys are complete, with a further 6 in the process of being arranged.

Of these, the numbers from the different areas are as follows:

Crickhowell/Llangattock	19
Llandrindod Wells / Llanbister	5
Llanidloes	2
Machynlleth	3
Montgomery	5
Newtown	2
Presteigne	5

Some enquiries were received from people living beyond these communities and out of range of the volunteers trained, (in particular, several from Brecon). These enquiries were directed towards a similar scheme called Future Ready Homes which was offering a limited number of free surveys in Powys.

## The process

The process of providing a HES survey is as follows:

1. Each of the communities that we have worked with have had one person act as a coordinator for the surveyor volunteers that are willing to take part in the community.

2. A client makes a request. This is either via an online form on the website, or supplied on email or a manual request that comes through one of the volunteers.
3. The client is sent an email explaining what is on offer, and asking for confirmation that they wish to go ahead. The offer explains that there is an optional £35 fee, waivable just on request. Of the surveys carried out, only 6 have chosen to waive the fee.
4. Once confirmation is received, the coordinator will identify a volunteer that is able to carry out a visit/survey. The volunteer will contact the client to arrange an appointment for a survey.
5. The volunteer will carry out the visit and fill in the questionnaire. This is then returned to the Lightfoot office.
6. One of the Lightfoot officers will write a report based on the questionnaire. This is returned to the volunteer to pass on to the client.
7. The Lightfoot office will send the client an invoice (if they have opted to pay the £35 fee) and a feedback form
8. The report we send encourages the client to ask further questions if there are any queries raised by the report.

## Typical report

Our reports cover a variety of issues, and it is useful to examine some aspects of this report here.

The method we use for producing a report is that we have a template that we have developed over time, which includes all the information that we feel is likely to be needed that covers all properties and situations. The process of creating an individual report is to delete the parts of this report that are not relevant, leaving only those parts that are. It is often the case that the questionnaire will raise particular issues that the report writer will include bespoke information about, the report is a combination of cut and paste, with bespoke sections according to need.

### Lighting

If the survey identifies that the house is not fitted out with LED bulbs, there will be information on replacing bulbs with LED ones. We find that that majority of houses that we visit have already replaced most bulbs with LED ones, so the reports quite often omit this information. We suspect that part of the reason for this is that people that actively seek out advice are already more aware than most about energy saving and have done what they can to save energy.

### Wall insulation

The properties that we have surveyed include a full scope of wall types, including solid stone, traditional oak frame, solid brick, cavity brick and modern timber frame. Advice is given appropriate to the wall type.

Wall insulation is one of the most significant, and most expensive of the measures that many people will have to address over the next 10-20 years. There are many properties that have solid walls where the only options are external insulation or internal insulation, both of which are expensive and disruptive. The cost for a typical family house would be in the region of £10,000 - £20,000.

Many more modern properties have cavity walls, and many of these can be filled with cavity wall insulation. However, to achieve net-zero, many will at some stage in the future also need to have external insulation installed in addition to the cavity wall insulation.

Finding an installer can be a problem, see next section.

Given the high cost of installation, this is often a recommendation, but one that many householders are not able to take up in the near term.

## Loft insulation

Topping up loft insulation is one of the cheapest and most effective of the retrofit measures. As with lighting, we find that most of the properties that we survey already have decent levels of roof insulation and this is likely to be because our clients are generally more aware than the general population. The recommended depth of loft insulation has increased significantly over the last 20 years, so it is quite often the case that owners do have what seems a decent amount but there is scope to increase this further to reach the recommended levels.

## Floor insulation

Very few houses have floors that are insulated other than those that had this as-built, which would typically only be those houses built after 2000. It is however very hard to install retrospectively, and our advice is generally that it would be good to do if carrying out a major renovation, but not the top priority if other measures are still needing to be done.

## Heating systems

Given the rural nature of Powys it is to be expected that the majority of the properties that we visit have oil heating systems, although some gas systems are encountered. Many of the properties we visit supplement heating with a wood stove.

Many people are keen to find out about the pros and cons of fitting a heat pump, and our report will provide detailed information about what needs to be understood about these and this is often a measure that owners are interested in learning more about.

## Windows and doors

It is rare to find houses now that do not have double or secondary glazing, although again this may be due to the self-selecting nature of our clients. Where single glazing is encountered, appropriate advice is given.

## Draughts

Draught advice is included, in particular areas that people are advised to address are loft hatches, letter boxes, unused flues, and unused air vents.

## Thermal comfort

The issue of thermal comfort is discussed in the report, this is the gain in comfort that can be achieved by eliminating features that create discomfort even if the air temperature is adequate, such as draughts which create a chill factor that makes the room seem cooler than it actually is. Various aspects of thermal comfort are discussed.

## Renewables

Where appropriate, advice is given on the installation of solar PV panels and batteries. There has been a significant increase in the interest in battery systems particularly over the last year or so, but it can be difficult for a home owner to know if the battery salesman's spiel is to be trusted.

The resulting report is typically 12-20 pages containing information that is pertinent to the homeowner.

There is an option for us to calculate the carbon footprint of the household if energy bills and other data (travel information) is available. Often clients do not have this information to hand and are more interested in the recommendations, so less than half take up the offer of having the carbon footprint calculated.

## The supply chain

A major challenge in Wales, and the UK, is the shortage of suppliers and installers, in particular installers of insulation, and people willing to undertake minor works such as installing loft insulation, repairing windows, draught stripping.

In general, locating an installer for PV panels and heat pumps is easier as installers for these are generally registered with the Microgeneration Certification Scheme (MCS) and are listed on the MCS website (<https://mcscertified.com/>).

We are continually working to gather feedback from our clients on installers/builders that they can recommend that we can then include in our advice. Even so, this information is patchy and inadequate, and is an area we are working on.

This is a national problem, and improving the supply chain is an area that the Welsh Government is aware of and is seeking to rectify. This is likely to be a slow process.

## Feedback.

We have had some feedback both via email and from the feedback form. Some comments are reproduced here.

### Responses via the feedback form

Do you have any comments, good or bad, about the visit of the surveyor to your home.	Do you have any suggestions about how we could improve the home visit..	What other comments do you have about the emailed report and suggestions for how it could be improved.
Helpful and straightforward. No immediate actions and confirmed that I have all the basics and discussed the problems of extra cladding/insulation. Highlighted the need for a thermal camera survey to check for "leakage"	Where appropriate and in cooler weather Thermal imaging/Measurement would add a lot to the survey.	Not sure about the Carbon Footprint- Is Octopus 100% Green really zero carbon? I Export 2.5-3 MWh (from PV )to grid each year, does this mean the house is carbon negative?
The surveyor turned up when he said he would, was very thorough in going through the survey, and communicated	None.	The report was easy to understand and well organised. No suggestions for improvement.
The surveyors who visited my house were friendly, helpful and took their time to appreciate the issues with my particularly property.	The form took a long time and much of it wasn't relevant to an old property. I'm not sure if anything could practicably be done to improve this however.	The email report did take much longer to come through than expected (10 weeks) and I had to chase it up. This wasn't a problem but it might be worth making sure that surveyors set appropriate expectations during the site visit.
They were very thorough and amenable.	Not at present	None
The visit was excellent. The Surveyor was knowledgeable, approachable, and able to gauge very quickly the level of understanding we had of the system, what we needed to know, and how to go about helping us. He was patient, unhurried and thorough, but didn't waste time either.	No - it was exactly what we needed	I'd love to help but honestly everything was optimum!
V useful re futurescaping.		V helpful.
Very helpful, thank you.	Being able to suggest and/or recommend local or non-local installers.	none

### Responses via email

*Hi Jeremy, Many thanks for this - it's a great summary of your visit, and I will take a look at the links you've suggested. Thanks once again for all you help. Best wishes,*

*Hi Jeremy, Thank you very much for the report. It is very useful. We're planning to implement nearly all of the measures. The big decisions are whether to go ahead with EWI now or to wait as recommended in the report, and whether or not it's feasible to install MVHR. I know it's difficult to say, but to what extent do you expect EWI costs to fall over the next 24 months? Steve very helpfully provided a list of suppliers to contact and we're reaching out to people named on it. Best regards,*

*Hi Jeremy, Thanks very much for this. I have paid by bank transfer - receipt below, it's been very efficient and very useful too. We appreciate it, thanks,*

*I was very pleased with it thanks. Not sure how much I can actually afford to do but the information was detailed enough to be useful if the time comes. Best wishes*

*I found the report and all contact information very helpful, thank you. Apologies for delay in replying but your email went into a spam folder!*

## Training of Energy officers

The budget included funds for training of additional officers to assist Lightfoot in the writing up of the energy reports. One individual was identified for this, an architect who was keen to work more in the area of retrofit. This architect is now going through Retrofit Coordinator training which is ideal for gaining knowledge for providing the type of advice that Lightfoot offers, and has been involved in writing of reports for clients through this project.

## Lessons and problems

There are some lessons that we can take from this project.

### Lesson 1. Management and admin

Administration of the project proved to be a bigger challenge than anticipated, partly because this was undertaken as a one day per week post which was in hindsight an underestimate of the work required, and the identified person ended up taking on extra commitments in May as county councillor, making juggling of different part-time roles a challenge. Ideally work of this type needs to be administered as part of a properly funded and resourced post, which could be the case if the delivery were scaled up to allow more efficient use of resources.

### Lesson 2. Comparison against other processes

The Lightfoot system is intended to be a more affordable process than the conventional way of purchasing retrofit advice. If this advice were obtained commercially, a home owner would need to commission a Retrofit Coordinator or architect to prepare a retrofit plan. This typically costs £500 - £1000 per property, and as a result very few homeowners take up this option.

The Lightfoot process reduces this considerably, but it cannot be reduced to zero. As it stands at the moment, the cost is around £120 per report. This comprises £50 for the person that writes the report (this typically takes 3-4 hours) with the remaining £70 covering administration and overheads (insurance, liaising with volunteers, report writers and clients, training, etc). Our experience is that this barely covers this cost so is only just viable even as a not-for-profit charity at this level.

One difference between the Lightfoot process and the type of report that would be produced by a professional Retrofit Coordinator is that often the professional report would include a computer generated energy model of the property, so that the energy savings of the retrofit measures recommended can be accurately shown rather than just the broad estimate that would be given in the Lightfoot report. Our view is that the important information is that of guidance on what are the priority areas, and what would give best value for money. People appear to be less concerned about the precise savings that can be achieved. Preparing the computer-generated building model is part of the significant cost difference between the report that would be given by a Retrofit Coordinator and that prepared by Lightfoot.

### Lesson 3. Retrofit is expensive

Many of the properties that we have surveyed have already done all the quick easy wins, and the remaining measures, that will be essential for net zero, are the expensive disruptive ones, especially internal or external insulation.

Many of the properties we visited will need internal or external insulation, and at present there are very few installers doing this, and the cost of this is in the region of £10,000 – £20,000 per house. Often if a home owner were to take up all the measures needed to get a home to net zero, the cost would be in the region of £50,000. This is a big financial challenge for most homeowners, and most will not be able to take up these measures immediately. This report does pave the way however for homeowners to start thinking

about how this can be programmed into their lives over the next 5-10 years. On the plus side, it does indicate the scale of the boost to the green economy that a healthy retrofit installation sector could create.

#### Lesson 4. Installers are a bottleneck

At present there is a shortage of installers, and also there is no easy way of searching for installers for retrofit measures. There does exist a database to help find installers of heat pumps and PV systems, but not for insulation and draught proofing measures. None of the existing online trade websites or databases allow you to search for an internal or external wall insulation installer. Until this is addressed this will be a barrier for people wishing to do retrofit.

#### Lesson 5. Reconciling payments

One minor issue we encountered is that we have realised is that it has proved difficult to reconcile payments of the £35 against specific clients. We ask for payments via bank transfer, and asked for the client to include an identifier which we give them as a reference in their payment. Most do, but some forget to include the reference meaning that we have some payments that we cannot identify to a client. This is made more difficult because all invoices (and payments) are for the same sum of £35 so the amount cannot identify the payer. Hence, we have clients that we cannot tell if they have paid or not, because their payment could have been one of our unidentified ones. This has not been a problem to us in the past as our surveys have either been fully funded and we have not had to ask for payment, or we have accepted payments via cheques which are easier to identify.

### Conclusions

This project was able to introduce into several communities in Powys the concept of a grassroots retrofit advice service that could provide retrofit advice to households at a more affordable scale than any of the commercial opportunities which are completely outside the budget of most households.

The problem with projects like this is that it is hard to put in place a service can be a permanent service, which is what is needed. There is clearly need for this, and interest in retrofit has rapidly increased over the last couple of years, but we currently have no way of making this available on an ongoing basis.

Response to the reports delivered is generally positive. The caveat is that in many cases the measures recommended are expensive and this means that immediate actions in response to the surveys is limited. This just emphasises the reality of the situation which is that retrofit is essential for us to meet our carbon targets, but achieving this at scale is extremely challenging because of the costs involved.

There is a lack of any national programme to provide this type of advice. Programmes like this just highlight that we are really with this type of programme only chipping at the edges of the problem and must greater resources need to be deployed to address this challenge.

### Appendix A – Sample HES survey (redacted)

4 sample redacted client reports attached.



## Appendix B – Feedback from communities

Feedback from Crickhowell, Llandrindod Wells and Presteigne.

### **Feedback from Crickhowell and Llangattock.**

*Llangattock Green Valleys (LGV) welcomed this initiative and is pleased to have taken part. Five volunteer surveyors were recruited and trained by Lightfoot (one further recruit withdrew due to a house move) and surveys were publicised mainly via electronic media over the region covering Llangynidr, Cwm Du, Glangrwyney, Llangenny, Llanbedr, Crickhowell and Llangattock.*

*Generating survey requests was harder than anticipated despite local awareness of home energy issues. Many people have already instituted the basic measures and the response to some reports was “we’ve done all that”. From conversations during visits, it’s unlikely that clients will follow up recommendations for major improvements requiring professional advice and capital expenditure, such as wall insulation. Shortly LGV will do a survey to identify those recommendations which are being adopted.*

*For LGV, this scheme has enabled us to expand our activities into home energy efficiency and with this experience we are seeking means to continue this work. We are reviewing how best to publicise surveys and tailor the “offering” to this community, in what is a relatively affluent area, to “mobilise” more householders. The process would also benefit from dedicated, paid, part-time help to be more responsive to enquiries and to enable recommendations to be followed up and responses analysed.*

*In summary, in addition to providing bespoke energy efficiency recommendations to local householders, the PACE-funded scheme has enabled LGV to obtain valuable experience and has provided the basis for applications for funding to continue work on energy efficiency.*

*PB 22 October 2022*

*For Llangattock Green Valleys.*

**A**

**personal observation.** *The ultimate objective of the survey scheme is for homeowners to take action to improve their properties, to reduce carbon emissions helping to save the planet and reduce their energy use and cost. This requires them to spend their own money; not unreasonable if they own the house. However, without some financial “pump priming”, for example for a full professional survey quantifying cost and benefit to guide them making an investment decision, it is unlikely people will commit to this expenditure\*. Unfortunately, draught excluder, lots of loft insulation, and even triple glazing, all together are not going to save the planet.*

*\*One client, early 70s, not in fuel poverty, said “All we’ve left to do now is external wall insulation, but I don’t know that the benefit will justify the cost at my time of life”. For many properties inadequate wall insulation is the major source of heat loss, and the house will still be losing heat when sold to another owner! We are custodians of our houses for future generations.*

*PB. 22 October 2022*

## **Feedback from Presteigne**

*Feedback from the 5 householders in Presteigne has all been very positive.*

*Specifically -*

- 1. Really pleased with it.....particularly liked the range of options of materials. Resident has forwarded it to her stepchildren (owners of the property) as the starting point for discussion about how to maintain and improve it.*
- 2. Very pleased with the report - much more thorough than was expected, with very useful details.*
- 3. Resulting in immediate action! Going to start with the DIY Loft insulation and is contacting pv panel installer.*
- 4. Useful as guidance for ongoing and future retrofit work. Helpful in weighing up the choices.*
- 5. Going to talk to previous builders about coming back to put insulation onto outside of coldest section of house walls.*

*From us, as surveyors -*

*simple system to navigate, from training to processing,*

*technical support when needed*

*Several householders were unclear about when to pay their £35. Perhaps it could be made more explicit in the letter/email that comes with the report.*

*Kate and Piet van den Ende*

### **Feedback from Llandrindod Wells and Llanbister**

*I put the initial information around the TLT mailing list but as far as I know no volunteers came forward, at least not through me.*

*At least 2 or 3 repeated offers via the lists to carry out a survey produced only 1 response, but there were 2 through personal networking contact at our Green Coffee and Chat.*

*Of the remaining 2, one was through my village contacts, the other from a board meeting of another organization.*

*As per Green Doors, don't recall seeing anything in the papers or online local news, but might have missed. My hunch is that things sometimes need a sort of background awareness-raising over a period, then more targeted stuff is more likely to gain a response.*

*The 'offer' seems very topical in view of the energy crisis but maybe there is something that didn't quite click with people whom we'd otherwise expect to flock to it.*

*I'm sure I/we in TLT could have done more, but it's a small pool to fish in in terms of people taking on new things. I have been feeling pulled in too many directions recently and trying to divest or scale down some commitments, even though they are things I am interested in or concerned about.*

*The questionnaires were awkward to complete e.g. boxes too small to clearly write in, and some things are not entirely clear. If the exercise repeated, they would benefit from some redesigning and proof-testing by volunteers before finalising.*

*Some were interested in a Carbon Footprint, but the extra time involved and need to research their household/car/etc data was a bit off-putting. There are a lot of relatively simple C Calculators around already of varying degrees of comprehensiveness and reliability, and I wonder if the added benefits of ours are sufficient to outweigh their deficiencies?*

*Best wishes*

*David Strachan*

*For Trawsnewid Llandrindod Transition*