



Evaluating the Impacts of Energy Efficiency Improvements on Health and Wellbeing across Shropshire

A research project conducted by
Marches Energy Agency
February 2017



Supported by a Healthwatch Shropshire Research Grant

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Executive Summary and Opportunity Development

Overview: Between April and October 2016, Marches Energy Agency (MEA) undertook an evaluation of the health impacts of energy efficiency installations in 105 homes through Shropshire Council's Heatsavers programme. There were 35 respondents, and 18 agreed to a follow up interview. This project was not corroborated against NHS records, as this was outside its scope.

Key Findings: Project findings indicate that energy efficiency measures can have a positive impact on health and wellbeing. The key findings are:

- 86% said the comfort level in their home had improved
- Over 65% reported feeling better or a lot better in winter
- More than 50% of householders reported less cold /coughs and other flu like symptoms
- More than 30% reported visiting the doctor a lot or a little less
- 25% believe they are now less likely to be admitted to hospital
- 48% reported that their energy bills had reduced.

Follow up interviews helped provide more substance, especially around householder conditions before and after the improvements were installed. In terms of mental health, householders verbally reported feeling anxious, stressed, depressed and fearful of winter, before a measure was installed. In addition the cold home was often impacting on physical health too, making it harder for householders to resist coughs and colds, or to cope with existing medical conditions.

Reflecting on her experiences of a new heating system one recipient said:

'The impact on my MS has been huge. The cold used to cause me spasms, and now I can maintain the temperature, I experience these less. I am no longer frightened of the cold'.

Shropshire Council has estimated NHS savings of £400k pa for the 35 respondents. By comparison the measures cost £70k to install, generating an estimated saving of nearly £6 for every £1 invested.

This project is strongly indicating that an investment in energy efficiency measures can produce real benefits. However these are subjective, and for a relatively small sample size. There is considerable scope to build on this work including more work to corroborate against health records, and include a pre and post intervention analysis.

A pre and post install evaluation would offer the richest data. This current evaluation could only assess the impacts retrospectively after the install, and required participants to recall what the situation used to be like. In an ideal scenario, data would be collected before the intervention takes place and then at a later date, allowing time for the participants to better assess the impacts of the intervention. An assessment of participants actual reduction (or increase) in healthcare support would also be sought to establish more accurate data and strengthen the case for further investment. Resource permitting a larger study over a longer period of time would also potentially offer a longer and more detailed data set.

There could also be potential to explore further the links between fuel poverty, mental health and other specific health conditions.

This project has shown that there is potential to deliver health savings and also to improve the health and wellbeing of vulnerable people. There is an opportunity to link the issues of fuel poverty and energy efficiency and associated programmes into the wider agendas associated with health and wellbeing such as social prescribing, the current neighbourhoods work, the Fire and Rescue Service Safe and Well pilot.

Introduction

Marches Energy Agency (MEA) were awarded a research grant by Healthwatch Shropshire to conduct a research project investigating the health and wellbeing impacts from the installation of energy efficiency measures in households suffering from fuel poverty.

Shropshire has one of the highest fuel poverty rates in England. Latest national figures show that 19,125 households live in fuel poverty, 14.6% of all households in the County. The multitude of effects that fuel poverty has on households and individuals is well documented and in the most severe cases, inability to access affordable warmth can result in Excess Winter Deaths.

In 2011, Professor John Hills released the Hills Fuel Poverty Review, looking specifically at the impacts of cold homes. The review found that:

- Countries with more energy efficient housing have lower Excess Winter Deaths (EWD's).
- There is a relationship between EWD's, low thermal efficiency of housing and low indoor temperatures.
- Approximately 40% of EWD's are attributed to cardio-vascular diseases while 33% are attributable to respiratory problems. There is a strong relationship between cold temperatures and cardiovascular and respiratory diseases.
- Children living in cold homes are twice as likely to suffer from a respiratory illness than those living in a warm home.
- Mental health is negatively affected by cold homes, across all demographics.

This research project sought to assess the impact on health and wellbeing of various energy efficiency improvement schemes and interventions that have been available to vulnerable fuel poor households in Shropshire over the last 2-3 years.

It aimed to answer the following research question;

For householders suffering from fuel poverty and cold-related ill health, has the installation of energy efficiency measures and associated advice reduced their use of medical /social care services in the County. If not, why not?

The aim of the research was to build a clearer and stronger evidence base around whether reliance on healthcare support (be it visits to the GP, accessing medication or admission to hospital) can be reduced through the installation of energy efficiency measures in cold homes.

Although there has been some level of energy efficiency help and support available to those in need in Shropshire, both at a county and national level, support schemes remain unstable and generally under-resourced. It is hoped that this research may help strengthen the case for the development of more stable and well-resourced intervention schemes in future.

The 'Heatsavers' Scheme

In order to target our research towards households which had recently received energy efficiency improvements and support to install such measures, MEA worked with Shropshire Council, who have been running the 'Heatsavers' scheme for the last 4 years. The 'Heatsavers' scheme is operated by Shropshire Council and can provide financial support to help towards the cost of replacing heating systems for vulnerable fuel poor householders. Funding is supplied by Public Health and the Council's benefits department, whilst match funding from any national schemes is also utilised where available.

Over the past four years, the scheme has provided energy efficiency measures (heating replacements) to 105 households across Shropshire. The improvements range from replacement boilers (across all fuel types) to first time central heating systems and modern electric heating products.

These 105 householders who had received assistance through the Heatsavers scheme made up the sample set for this evaluation.

Methodology

The evaluation utilised the collection of both quantitative and qualitative data, through a combination of questionnaires and semi-structured interviews. In this particular evaluation, only post intervention research was possible (as the interventions had already been undertaken).

The quantitative approach allows data to be gathered and counted. It proved to be particularly useful when assessing the overall impact of a scheme, and allowed figures on the impacts to be drawn. Qualitative data was collected to gather a more in-depth picture in relation to the impacts that the scheme (and the interventions) had on people's individual circumstances.

Postal Questionnaire

All 105 households within the sample size (Heatsavers beneficiaries provided by Shropshire Council) were sent a postal questionnaire. The questionnaire had a series of questions, a number of which included a scale to attempt to capture the changes that may have occurred since the intervention (the installation of or replacement of heating systems). This was necessary because the evaluation was post-intervention.

The questionnaire was split into two sections. Section one sought to capture basic information about the beneficiary and their home. This included amongst other things their age, the tenure of their home and their occupational status. Relevant information regarding the beneficiaries' health was also collected. A table included some of the most common health conditions related to cold homes and attempted to measure the severity of these by asking whether beneficiaries had sought medical support for these conditions. A free comment box also allowed beneficiaries to add in further information about their health.

Section 2 was designed to capture any changes in conditions, comfort, health and wellbeing that may have resulted following the intervention. Questions used a scale to measure any change (negative or positive) or if there was no change in a particular parameter following the interventions. For example:

2.2 In the winters since the improvements I have

<i>felt worse</i>		<i>no change</i>	<i>felt better</i>	
1	2	3	4	5

In total there were 12 questions that used a scale to measure the impacts of the interventions. These covered a range of issues including;

- Changes in wellbeing
- Reliance on medical services
- Reliance on medication
- Comfort levels in the home
- Ability to achieve warmth affordably

The full questionnaire can be found in Appendix A

Results

Semi-Structured Interviews

The postal questionnaires that were sent to all 105 participants included a question asking the participant if they would be happy to undertake a short interview to further develop on some of the answers they provided through their completed questionnaire.

In total 18 interviews were completed. The majority of these (14) were completed face-to face during a visit to the participant's home. The remaining 4 were completed over the telephone at the request of the participant.

In order to build and gain more in-depth information on the answers to the questionnaires, the interviews used a semi-structured approach to develop on the answers given in the questionnaire. To help with this, the completed questionnaires were used during the interview to help participants elaborate on what they had initially reported.

Sample Size

Table 1 below shows the number of responses to both types of evaluation and the associated response rates from the sample size.

Table 1 - Participant Response Rate per Evaluation Method

Total Number of Heatsavers beneficiaries	Post-Intervention questionnaires completed	Questionnaire response rate (%) -	Interviews completed	Interview response rate (%)
105	35	32%	17	16%

Profile of Data Set

As per table 1 above, there were 35 participants out of the 105 Heatsavers beneficiaries that took part in the evaluation project. From this sample size of 35 participants, there was good variety in regards to age (figure 1), occupational status (figure 2) and heating fuel (figure 3). Because of the nature of the Heatsavers scheme, all of the participants were owner occupiers. Figure 4 shows the health conditions that were prevalent amongst participants.

Figure 1 - Participants (by age group)

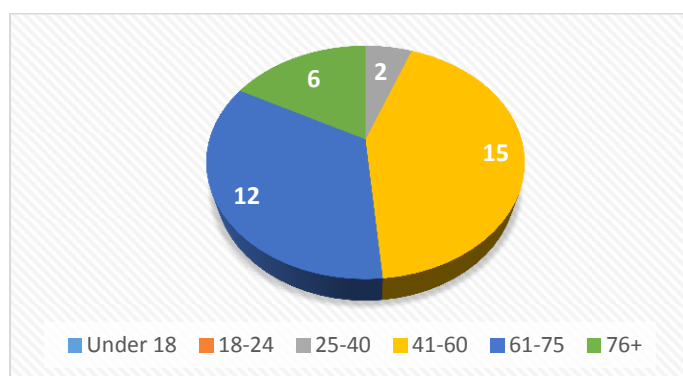
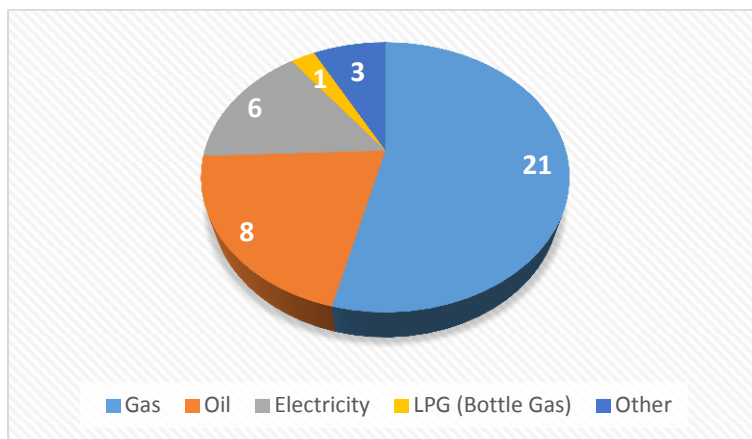
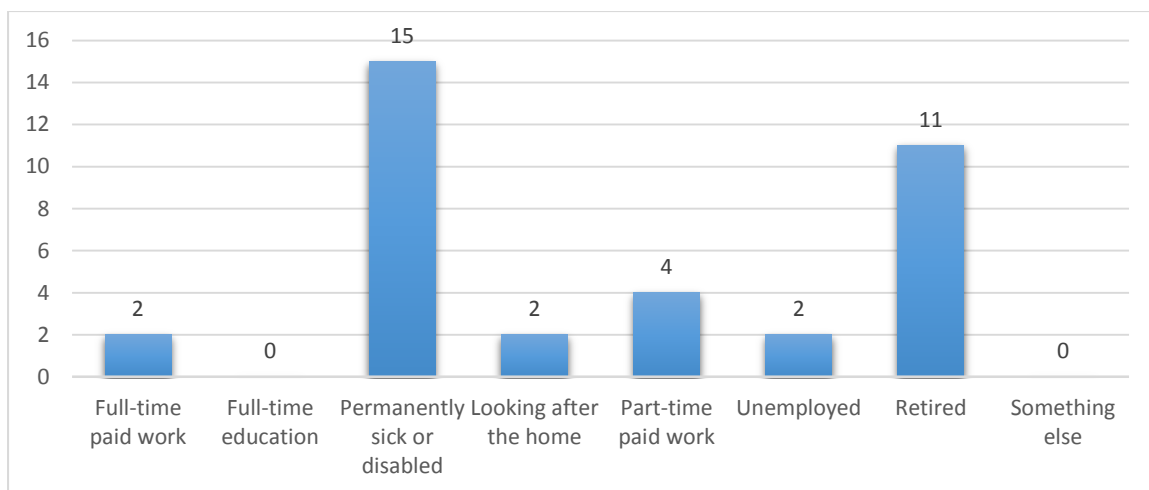


Figure 2 - Participants (by heating fuel)*



*please note, several households used more than one heating fuel (e.g. oil and electric).

Figure 3 - Participants (by Occupational Status)*



*please note, one participant selected two responses based upon the two residents.

Questionnaire Analysis

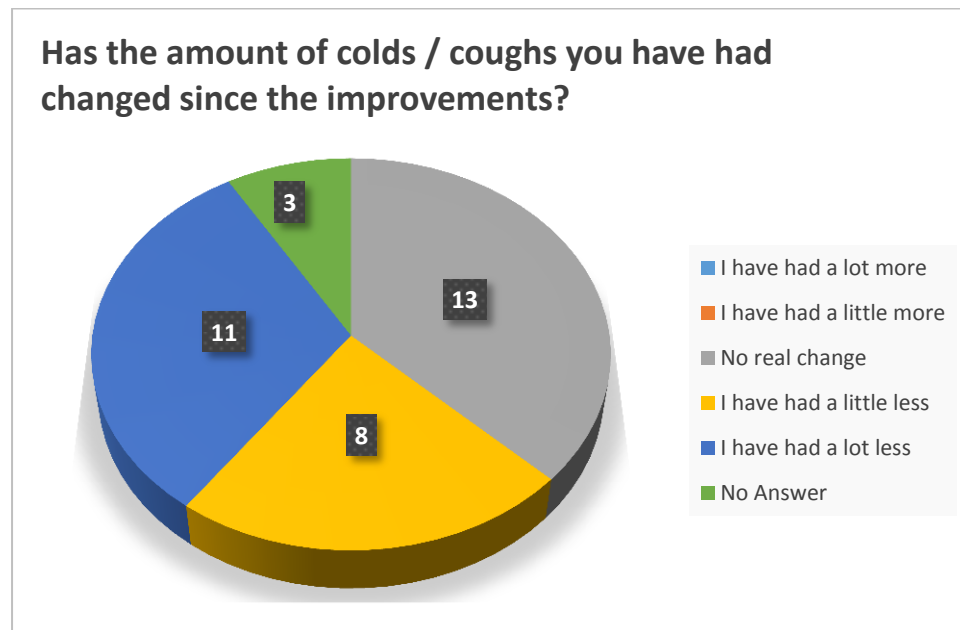
The questions within the postal questionnaire can be split into four broad categories: experience during winter months, reliance on healthcare support, perception of wellbeing, and comfort within the home. An analysis of the response from the 35 participants can be found below.

1. Experience during winter months

Participants were asked two questions focussed on their general health, wellbeing and experience during the winter months.

The first question attempted to ascertain whether participants had experienced fewer colds / coughs (and other general less serious winter ailments, cold like symptoms) since the improvements had been installed. Of the 35 participants, none said that the amount of colds and coughs that they had experienced had increased. The general trend was that the occurrence of such illnesses had not changed (37%) reduced a little (22%) or reduced a lot (31%).

Figure 4 - Responses to question 2.1

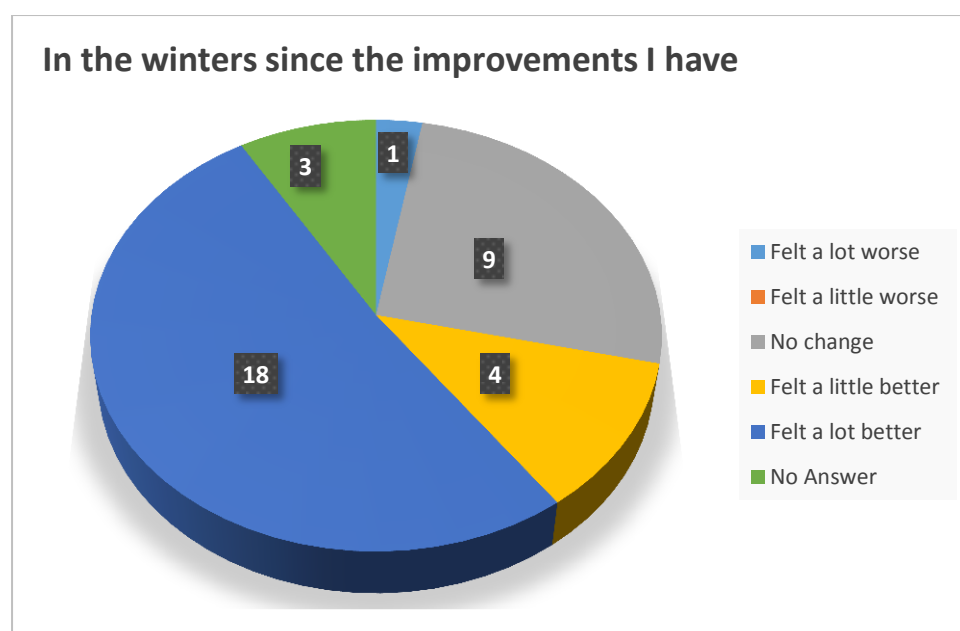


Another question in this category asked how participants had felt over winter, since the improvements. Being unable to adequately heat the home to a comfortable level is likely to have its most profound impacts on health and wellbeing during the coldest winter months. Participants were asked whether they felt worse, better, or the same following the improvements. They were also able to indicate the magnitude of the changes (e.g. a lot better or a little better).

As displayed in figure 5, 63% of participants reported feeling better in the winter (or winters) since the improvements. 18 participants (making up over half of the sample size) reported feeling 'a lot better'. 9 participants reported feeling no real change in how they felt over winter. Only one participant reported feeling a lot worse* and none reported feeling a little worse. 3 participants decided not to answer this particular question.

*This participant was having ongoing issues with the heating post install which had resulted from poor workmanship since the installation. Issues are ongoing.

Figure 5 - Responses to question 2.2

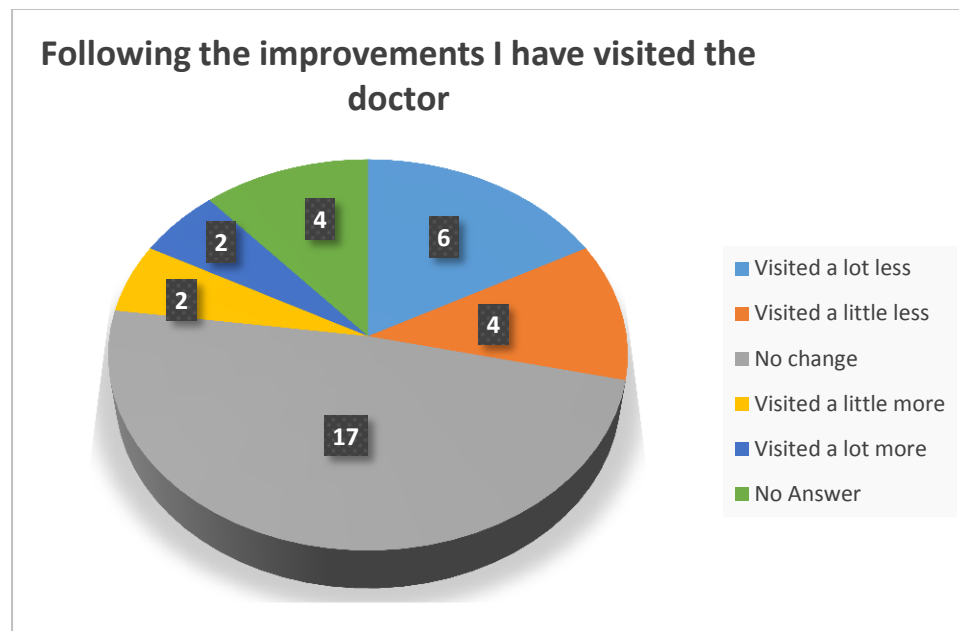


2. Reliance on healthcare support

A total of 5 questions focused on understanding impacts that had been made in relation to the participant's reliance on medical or healthcare support, including the amount of medication they received, the likelihood of admittance to hospital and visits to the doctor.

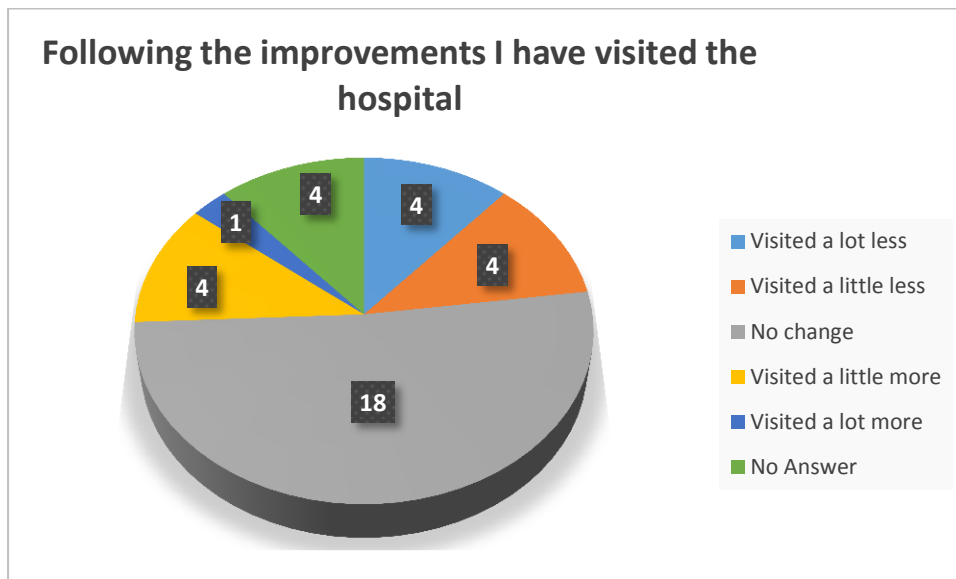
Responding to a question asking whether they had visited the doctor more or less since the improvements to their homes, 29% of participants said they have visited the doctor less (18% a lot less and 11% a little less). The majority of participants (49%) said that there was no change in the amount of times they visited the doctor. Around 11% said they had visited the doctors more (5.5% a little more and 5.5% a lot more) whilst 5.5% did not answer the question.

Figure 6 - Responses to question 2.3



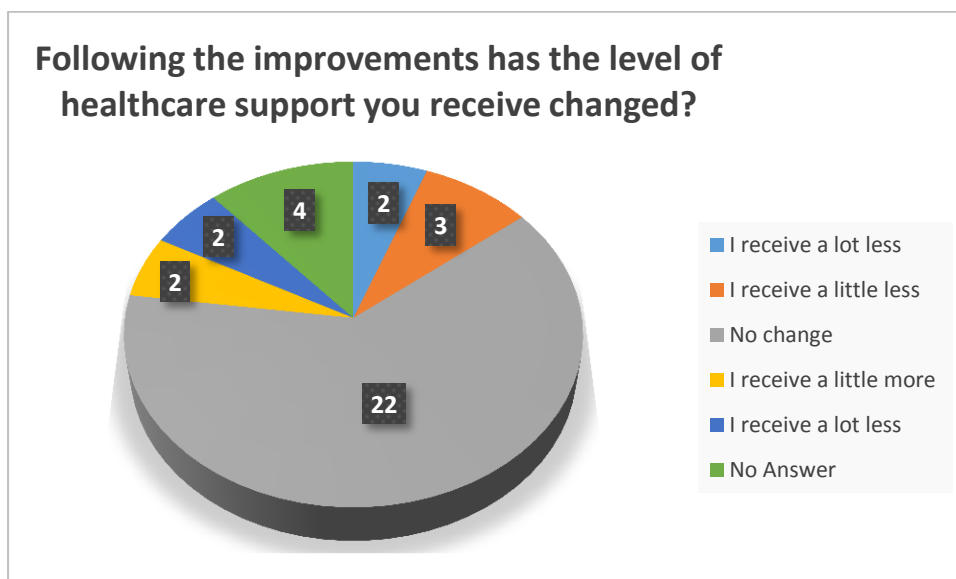
Participants were also asked whether they had visited hospital less since the improvements. The results show that the over half of participants (51%) recorded no change in the frequency of hospital visits. However, 29% said they have visited the hospital less. 14% of participants said they had attended more. The questionnaire offered a section for participants to note any changes to their health (e.g. new diagnosis) and a number of those who responded by saying they were experiencing more frequent hospital visits had used this section to detail any changes. Participants included any new diagnosis in this section, which ranged from a new eye diagnosis to a referral for tests for irritable bowel disease. In such cases, new diagnosis played a part in increased hospital or doctor visits.

Figure 7 - Responses to question 2.4



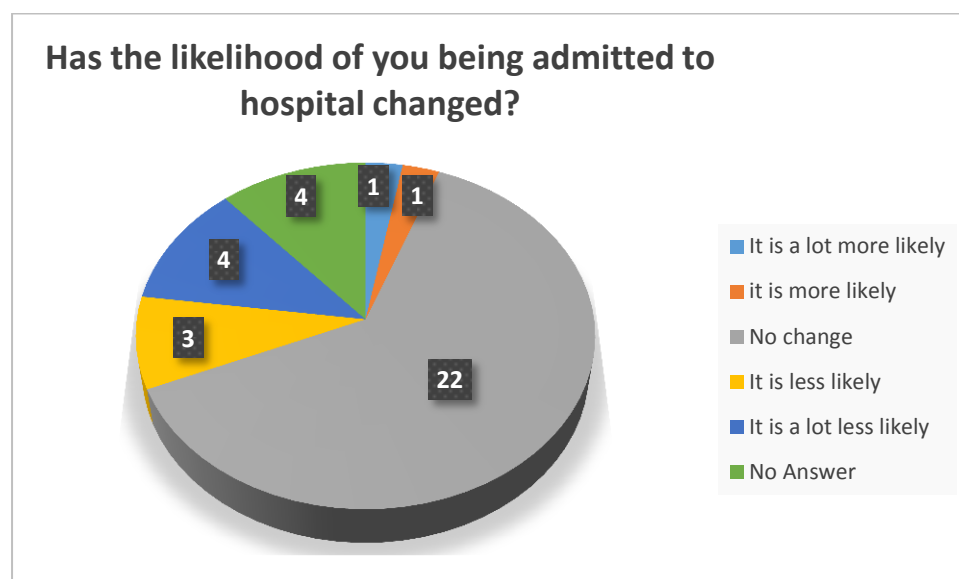
Question 2.5 sought to assess any changes in the level of additional healthcare support that participants required (post intervention). This was separate from accessing support from the doctor or hospital. 22 of 35 participants said their access to additional healthcare had not changed. 14% said they receive a little less and 11% said they receive a little more. 11% did not answer this question.

Figure 8 - Responses to question 2.5



Question 2.6 was designed to assess what impact the improvements may have had in a preventative sense, by asking participants if they thought that the changes (improvements) had altered the likelihood of them being admitted to hospital.

Figure 9 - Responses to question 2.6

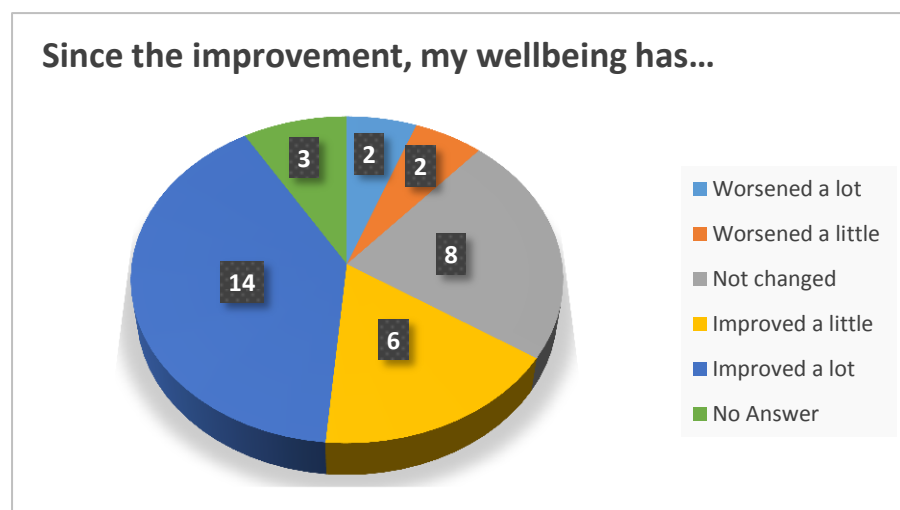


As shown in figure 9 above, the majority (63%) of participants reported no real change in the likelihood of being admitted to hospital. 7 participants (20% of the total) reported it was less likely whilst only 2 participants said it was more likely. 4 participants did not record an answer.

3. Perception of Wellbeing

The third section of the questionnaire looked to measure any changes in the participants' (and other household members) perception of their wellbeing post intervention. It included one question which asked whether the participant believed their wellbeing had worsened a lot, worsened a little, not changed, improved a little or improved a lot since the intervention. Figure 10 shows participants' responses.

Figure 10 - Responses to question 2.7



In summary, 57% of participants (20 from the data set of 35) reported their wellbeing as having improved post intervention. 14 of these participants said their wellbeing had 'improved a lot'. Of participants, only 4 (making up 11%) said they believed their wellbeing had deteriorated.

4. Comfort within the home

The fourth and final element of the postal questionnaire was aimed at trying to establish any improvements or otherwise that the intervention(s) may have had on comfort within the home. One question attempted to establish whether the comfort level had changed. The final two questions

sought to establish how often the participants could heat their home to a comfortable level, prior to and following the intervention.

Figure 11 - Responses to question 2.10

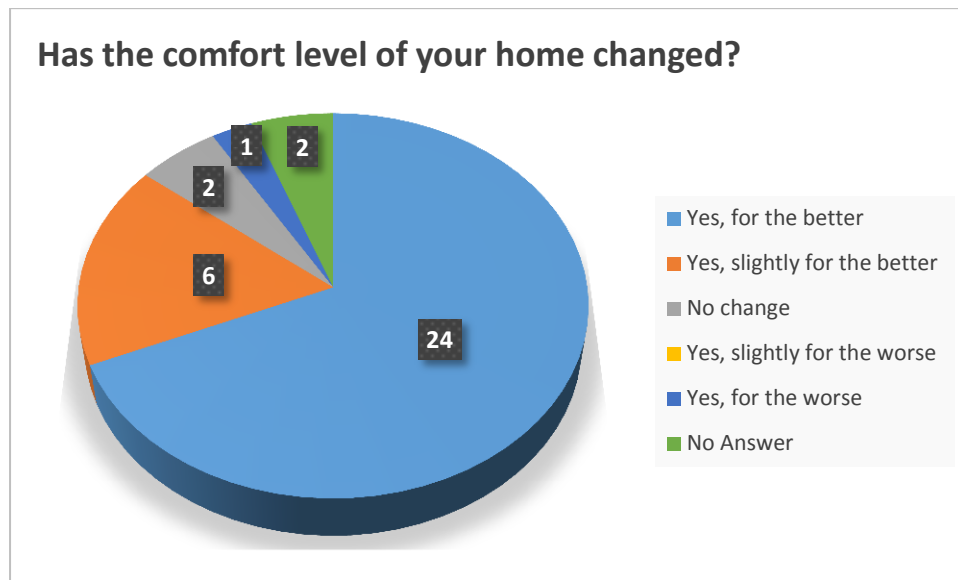


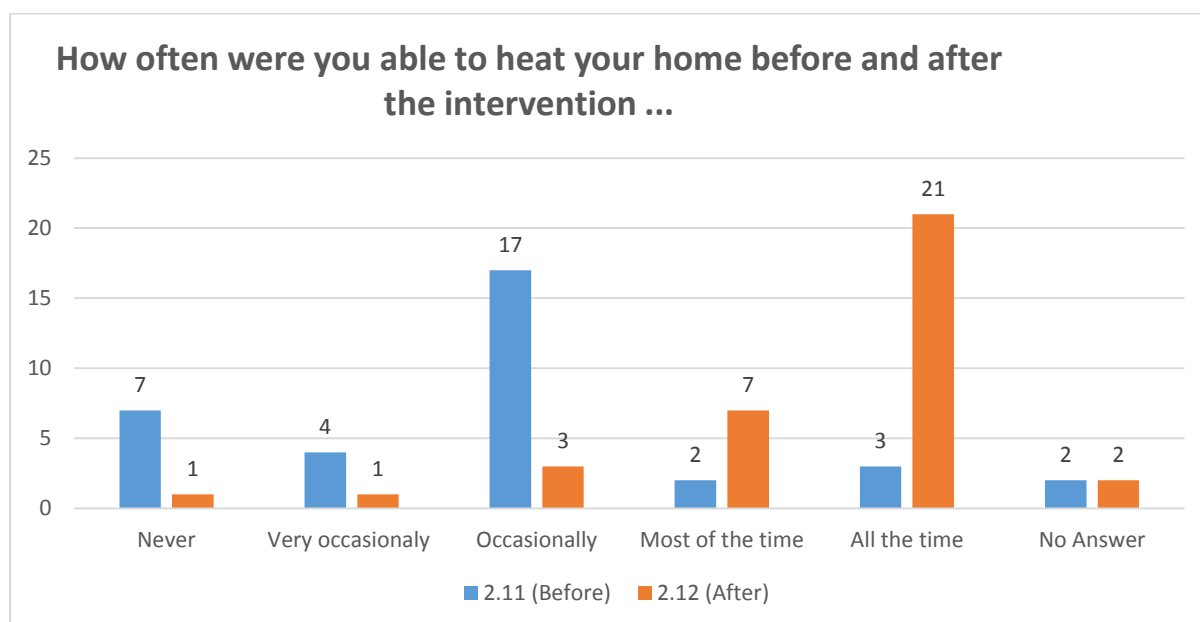
Figure 11 shows that a significant majority of participants (84%) reported the comfort level as improving either slightly for the better (17%) or a lot for the better (67%). Only 2 participants said there had been no discernible change, whilst 2 did not answer the question. A single participant reported the comfort within her home worsened. Close examination of responses highlighted that this participant was having ongoing issues with the system that had been installed (the intervention), which was behind the nature of the response.

Questions 2.11 and 2.12 asked participants how able to heat their homes they felt both before and after the intervention. Figure 12 (below) shows the change in responses across the two questions, showing that on the whole, the interventions across the sample size have had a positive effect in relation to how able participants are to heat their home comfortably.

Asked the question 'How often were you able to heat your home to a comfortable level before the intervention?', only 2 participants (6%) reported being able to heat their home to an adequate level all the time (this being all the time they needed to). When asked this question again but thinking about post intervention, this rose to 21 participants (60% of all participants). Before the interventions 11 participants, just under a third of the sample size reported only being able to heat their home very occasionally or never to a comfortable level. Post intervention this dropped to only 2 participants.

In summary, after the interventions, out of 35 participants, 28 reported being able to heat their home comfortably most of the time or all of the time, against only 5 participants who said they were able to do this before the interventions.

Figure 12 - Responses to question 2.11 and 2.12



The final section of the postal questionnaire gave participants an opportunity to list in their own words any other comments in relation to the impacts of the intervention.

Below is a list of the comments that participants left in this section.

An absolutely 'life changing' charity. I could see no change in my circumstances and wasn't looking forward to Christmas let alone Winter. Fitting of a new boiler changed my outlook lowering my depression. Thank you.
I have a lovely warm home. Thank you for installing all my central heating. I would never afford that myself, my husband never felt the cold as I did, so I was happy when I was told I could get it. Thank you again.
House is dry, no mouldy cupboards + wardrobes, less condensation. Mentally relieved to be able to turn on heating + not have to light fire + wait for heat. Heat in all rooms, not just lounge.
I was hoping the new heating would dry out the window in the bedroom. It gets a lot of water inside and it never goes out.*
Joint pain a lot better from being warmer
My house has gone from 5° - 15° degrees daily, which has improved my well being
I really don't need any help - I had a new boiler fitted due to age of old one + it wasn't working well.
The boiler had had intermittent problems, retaining temp and often drops into the red pressure zone. *
The heating is now on 24 hours a day
We haven't seen any benefits as we were not in the house prior to the improvements. We were informed by the previous owner about loft insulation being installed.
It was totally brilliant, like I said, I had mental issues, I think all your team and Les Poultney all have saved my relationship, my life with your massive help, I will pay it back, will try and arrange a charity fund . You've helped me, (client inserted name), thank you.
Health has improved significantly and home comfort is a lot better
The new boiler didn't heat from its first inception. The boiler company had to dismantle the boiler within three weeks and found it had burst its innards. Now the radiators take up to two hours to get warm. To make them work I have to put the room thermostat up to its maximum 30° and over. It can take one double radiator to work on only one part. The cost for all this has been expensive and very upsetting.*
Very happy with improvements. Thanks for the help
Made a huge difference being warm in cold, damp days is a massive step into working towards

maintaining my health. Being on my own I do not have the luxury to get the normal amount of help and support.
Since improvement quality of life improved medical conditions before causing more problems due to being extremely cold and cost of heating one room was excessive. Able to heat all house and have hot water
We are very grateful, but it has only recently been done so hard to answer all the questions really.
My home is still chilly due to the fact the windows and doors do not fit snugly so causing draughts.*
I am very happy with my heating system. The house gets nice and warm and I have running hot water (when the boiler is lit)
The improvement has helped us as a family massively not only physical but mentally as well for the better

*Denotes ongoing issues / concerns raised in the questionnaire that have been followed up by Marches Energy Agency through alternative work activity.

Interview Analysis / Case Studies

Semi-structured interviews were carried out with 18 participants who had signalled a willingness to undertake an interview using their completed questionnaires. 14 of the interviews were undertaken face to face in the participant's home whilst the remaining 4 were undertaken over the phone at the participant's request.

Participants were also offered impartial advice as part of the interview (part of MEA's current day to day work). It was thought that this may encourage participants' co-operation.

All participants who undertook an interview had previously completed and returned a postal questionnaire. This questionnaire was used during the interview, as participants were asked if they could elaborate on some of their responses.

Below is a selection of some of the responses to the interviews that were carried out. Transcripts from all the conducted interviews are available.

- 1) Single female aged 41-60, suffering from MS and arthritis, relying on an open fire and a few broken storage heaters. Received new whole house electric heating system through Heatsavers. Referred into the scheme by an Occupational therapist.**

Can you recall the situation before the intervention?

Yes, it was absolutely awful. I used to fear winter. I literally used to sit on the hearth in winter, and sometimes I used to sit in the car as it was warmer in there. I wanted to do things and keep active, but was beaten down by the cold.

In the winters have you felt better or worse since the improvements?

There is something very depressing about being cold. I feel much better in the winter. Now, I know whatever happens I will be warm. The impact on my MS has been huge. The cold used to cause me spasms and now I can maintain the temperature I experience these less. I'm no longer frightened by winter.

Have you visited the Doctor / hospital more or less?

I have visited more to both, due to other issues linked to my condition. However, I have no doubt that without the changes I would've gone a lot more.

Has the comfort level of your home changed?

Yes, there has been a huge difference. I wouldn't go in the kitchen and wouldn't cook because it was so cold in there. I use it a lot more now.

Have your energy bills changed?

Yes, they have gone down, by half. The solid fuel was costing me a fortune and it still was not warm.

How often could you heat your home to a comfortable level before and after the interventions?

Never. I was relying on the one open fire, which only heated one room. I huddled around it. Now I can warm the house all the time and in all the rooms. I have independent remote controls too. This helps me maintain a comfortable temperature and I can get the house up to temperature for when I get home.

Do you have any more comments?

The intervention has helped me maintain my independence. It absolutely has.

- 2) Single female aged 25-40, with two young children. Child suffers from ASD (Autism Spectrum Disorder), ADHD (Attention deficit hyperactivity disorder) and has other sensory problems. Had three old electric storage heaters that were not working. Received new infrared heating (electric system) through Heatsavers. Referred into the scheme by an occupational therapist.**

Can you recall the situation before the intervention?

Yes, it was freezing. The kids were always grumpy. I didn't want to do stuff. It was depressing. We had more colds and it seemed harder to shift things like coughs and colds. Going from cold to cold.

Has the amount of coughs / colds you have had changed?

Yes. The kids have had less. And when they have had them they've shifted them quicker.

In the winters have you felt better or worse since the improvements?

Felt better. The comfort of the home has improved.

Since the improvement has your wellbeing worsened or improved?

Everything has improved. I'm a lot less anxious. The kids didn't want their friends coming around because it was cold. They can now. Morale was very low.

How often could you heat your home to a comfortable level before and after the interventions?

I could never heat it. There were days I couldn't put it on at all. Upstairs was hardly ever heated, as the heaters up there didn't work. Now I can have it on when we need it. It has rapid warm up too and is great to control. Every room can be heated to some extent. The timers allow me to warm it up when I'm out to get the temperature up for when we get home.

- 3) Couple aged 41-60. Both out of work due to ill health. Suffering from mental health issues and partner with a blood clot and complications. Had an old gas boiler that kept breaking and was very inefficient. Received a gas boiler replacement from Heatsavers. Referred through support worker at Perennial**

Can you recall the situation before the intervention?

Yes, the boiler kept breaking. We kept buying new parts which didn't help. We ended up relying on a small calor gas bottle fire. We were wearing coats all the time and were full of colds. Used lots of extra blankets. Caused anxiety and stress.

Have you visited the Doctor / hospital more or less?

We were ill a lot, and were often at the doctors. This has reduced since, and we think this is due to the improved conditions.

Since the improvement has your wellbeing worsened or improved?

Definitely improved. It is one less worry, on top of other things going on. We are a lot warmer in winter.

Have your energy bills changed?

Yes, they have gone down. They were very high because we had to use plug in electric heaters. On our meter now we are able to top up less and it lasts a lot long.

How often could you heat your home to a comfortable level before and after the interventions?

We struggled to heat the home. We just couldn't warm up the house. We had to use a plug in electric fire and huddled around it.

Do you have any more comments?

We wouldn't have survived without the help.

- 4) Female aged 41-60. Self-employed but often unable to work due to chronic fatigue. Went for a year without heating and hot water. Received a gas boiler replacement through Heatsavers. Referred from the Citizens Advice Bureau.**

Can you recall the situation before the intervention?

It was a tough situation with my illness. I had no heating or hot water and this was making my conditions worse.

In the winters have you felt better or worse since the improvements?

Felt better. Generally I have been feeling more comfortable. Having heating has eased my anxiety which in turn impacts on my condition (chronic fatigue). It takes a lot of energy to keep warm, and when you don't have that energy it is even harder.

Have you visited the Doctor / hospital more or less?

I was struggling. I don't know if I visited more. If I had continued much longer without heat I would've more likely come into more contact with health services.

Since the improvement has your wellbeing worsened or improved?

Improved. Being cold I worried a lot more and worried about how I could try and change my situation. This impacted on my health. It has reduced my anxiety. I'm now able to concentrate on my condition and getting better. It's become easier to look after myself.

How often could you heat your home to a comfortable level before and after the interventions?

Very occasionally. I was just living upstairs, relying on one little fan heater. Only sometimes I felt able to use the heater. I would go to bed fully dressed. I could only put it on when I

couldn't bear the cold anymore. Now, as soon as I start to feel the cold I can flick the heating on. The timer and programmer help a lot.

Do you have any more comments?

I think my health would've deteriorated further without the help. I have not had any further health issues in the past 24 months.

- 5) Single Female aged 61-75. Severe arthritis, asthma and depression. Heatsavers scheme installed a new gas boiler. Was referred by a support worker for assistance.**

Can you recall the situation before the intervention?

It was terrible. I could see no change in my circumstances. I was depressed and dreaded winter and Christmas.

Has the amount of coughs / colds you have had changed?

Yes. I've had less. I've generally felt healthier despite the cold weather.

In the winters have you felt better or worse since the improvements?

Felt much better. I've been able to stay warm and haven't had to worry about the cold.

Have you visited the Doctor / hospital more or less?

Yes I have. The cold has reduced my anxiety and helped with my depression. I've visited the psychiatrist less.

Since the improvement has your wellbeing worsened or improved?

It has improved significantly. My mental wellbeing has improved no end. My arthritis has been lessened.

How often could you heat your home to a comfortable level before and after the interventions?

Comfort in my home has changed drastically. I could only use the heating occasionally and I had to ration it, despite the fact I needed it. Now, almost all the time I feel I need the heating on I can put it on.

Do you have any more comments?

The improvements have been life changing.

Calculating Cost Savings to the NHS and wider Society

The interventions included in this evaluation were all undertaken through Shropshire Council's Heatsavers scheme. The total cost of the interventions was £70,000. Based on the Building Research Establishment's (BRE) Housing Health Cost Calculator (<https://www.housinghealthcosts.org/>) these interventions will have saved the NHS and Society as a Whole in the region of **£400K** (savings which should continue year on year). This is made up of NHS savings of an estimated **£120K** and social care savings of around **£280K**. This is in addition to the positive impact on the health and quality of life of those assisted, as shown throughout this report.

Conclusion

This evaluation project sought to assess the impacts of energy efficiency improvements on the health, wellbeing and comfort of vulnerable fuel poor residents across Shropshire, and subsequently measure whether such improvements have resulted in a reduction in the use of health services from the vulnerable residents (the sample size).

The analysis of both quantitative and qualitative data suggests that there have been positive impacts from the interventions undertaken through the Heatsavers scheme.

The postal questionnaire showed that (after the interventions);

- More than 50% of householders reported less cold /coughs and other flu like symptoms
- Over 65% reported feeling better or a lot better in winter
- More than 30% reported visiting the doctor a lot or a little less
- 25% believe they are now less likely to be admitted to hospital
- 57% said their wellbeing had improved since the intervention
- 86% said the comfort level in their home had improved
- 48% of participants reported that energy bills had reduced.

The follow-up interviews provided some more detail on the reasons behind some of these changes. In general, the interviews showed that participants are less afraid of winter and the cold, feel more able to keep their homes warm and comfortable and feel better able to manage their existing health conditions or illnesses.

Those participants who were interviewed were clear of the impact that no heating / or the cold had and was having on existing conditions, ranging from worsening arthritis to not being able to eat well enough because the kitchen was too cold to use.

The impact on a participant's wellbeing and mental health was reported as being profound. Question 2.2 (How do you feel in winter after the improvements?) and question 2.7 (Since the improvement my wellbeing has...) resulted in some of the most definitive responses. The interventions have considerably improved participants wellbeing.

A number of participants described experiencing feelings of anxiety, fear, stress and worry about impending cold weather and the likely decision of whether or not to put the heating on. A number of participants could still not derive the required amount of heat even if they made this tough decision. Responses in both the questionnaire and interviews highlighted that the likelihood of participants experiencing such feelings in future has lessened significantly.

Gathering information on heating cost reductions was challenging. This was due to some key factors, including people:

- not using adequate heating, before a new boiler is installed (e.g. effectively had no heating, so very small energy bills),
- not having a record or an idea of their previous bills, pre intervention,
- and people not being able to run their heating frequently enough because of prohibitively high energy costs.

When a more efficient and usable heating system is installed, beneficiaries feel more able to utilise this and therefore heat the home more, and thus use more energy. In this case, energy bills are likely to stay the same or even increase slightly but at the same time provide the warmth and comfort needed. Previously, participants may have been spending the same amount but not receiving the required level of comfort due to the poor efficiency of the installed system.

Anecdotally, through the interviews however, a number of participants said that their bills had reduced, and that even if they hadn't they could now achieve comfort from the money they were spending. Comments such as electricity bills going down because participants no longer rely on expensive plug in electric heaters were common.

The estimated cost savings to the NHS are equally impressive, showing an NHS saving of £400,000 from an initial £70k investment in the interventions. More accurate cost savings could be possible in additional studies by working more closely with the health sector (see below).

Recommendations for further research

There is considerable scope for build on this work including:

A more in-depth study

Accessing health data was not possible during this evaluation, although logically this would be a good next step. This report has had to use participant feedback and the BRE health cost calculator to consider potential savings to the NHS and reductions in healthcare need. An assessment of participants actual reduction (or increase) in healthcare support should be sought to establish more accurate data and strengthen the case for further investment. Resource permitting a larger study over a longer period of time would also potentially offer a longer and more detailed data set.

Pre and post evaluation

Likewise, a pre and post install evaluation would offer the richest data. This current evaluation could only assess the impacts after the install, and required participants discussing what the situation used to be like. In an ideal scenario, data would be collected before the intervention takes place and then at a later date, allowing time for the participants to better assess the impacts of the intervention (e.g. pre install and after 6/12 month). It remains however, a challenge to align intervention works with such ambitious and thorough evaluation projects.

There could also be potential to explore further the links between fuel poverty and cold homes with mental health and other specific health conditions.

This project has shown that there is potential to deliver health savings and also to improve the health and wellbeing of vulnerable people. There is an opportunity to link the issues of fuel poverty and energy efficiency and associated programmes into the wider agendas associated with health and wellbeing such as social prescribing, the current neighbourhoods work, and the Fire and Rescue Service Safe and Well pilot.

Oliver Rothwell

MEA, Project Manager

25 Jan 17

Appendices:

Appendix A – Participant letter outlining the evaluation project

Appendix B – Copy of the postal questionnaire

Appendix C – Copy of the Consent Form for interviewed participants

Appendix D – Copy of the semi-structured form of interview

Glossary of terms:

Intervention: The energy efficiency measures that were installed in the participants' home. Across the Heatsavers project this ranged from replacement heating systems and replacement boilers through to the installation of a heating system for the first time.

Participants: Refers to those householders and or individuals that were part of the Heatsavers scheme and who responded to the postal questionnaire, therefore becoming participants within the evaluation project.

Interviewees: Those participants (as above) who agreed to undertake a face-to-face or telephone interview in relation to their questionnaire answers and the impact of the intervention.



Marches Energy Agency
The Pumphouse
Coton Hill
Shrewsbury
SHROPSHIRE
SY1 2DP
14th June 2016

HeatSavers Evaluation Project

Dear Occupier,

Shropshire Council is working in partnership with local energy charity Marches Energy Agency (MEA) to evaluate the impacts of the HeatSavers scheme. You have received this letter because records show that you have previously received help from the Council's HeatSavers scheme.

Heatsavers has supported many hundreds of people over the last 4 years to install heating and/or energy efficiency measures in their homes, helping to improve their health and well-being. To help continue the success of HeatSavers, it is important that evidence is collected to ensure that the scheme can continue to support the people of Shropshire into the future.

We'd therefore like to have your views about the impacts the support from HeatSavers has had on you, especially if the interventions have helped to improve your health and wellbeing.

We'd be grateful if you could take some time to complete the **enclosed questionnaire**. In addition, we would like to talk to people who have benefited from the scheme in person, and can arrange a convenient time to come and visit you. We can bring a free energy pack with us to say thank you, including some useful things like energy efficient lightbulbs. We can also talk through any current issues you may have in relation to energy and keeping warm.

If you would be happy for us to visit, please notify us using **the question on page 5** of the questionnaire.

If you have any questions regarding this letter, please feel free to contact me using the details below. Alternately, you can contact Les Poultney who operates the HeatSavers scheme at the Council on 01743 251812 to confirm this is a genuine approach endorsed by the Council.

I would like to take this opportunity to thank you for your time and your assistance in this matter.

Yours faithfully

A handwritten signature in black ink, appearing to read "Oliver".

Oliver Rothwell, Project Manager, Marches Energy Agency

Oliver@mea.org.uk / 01743 277 114

Healthwatch Shropshire – Evaluating the impact of Energy Efficiency Measures

Section 1 - You and your home

Your name:

Your contact telephone number:

Your address:

Your email address:

1.1 How old are you?

Under 18 ☐ 18-24 ☐ 25-40 ☐ 41 – 60 ☐ 61-75 ☐ 76 + ☐

1.2 Which of these best describes what you are doing at the moment? (if more than one, please select the main *ONE* only)

Full-time paid work	<input type="checkbox"/>	Part-time paid work	<input type="checkbox"/>
Full-time education	<input type="checkbox"/>	Unemployed	<input type="checkbox"/>
Permanently sick or disabled	<input type="checkbox"/>	Retired	<input type="checkbox"/>
Looking after the home	<input type="checkbox"/>	Something else	<input type="checkbox"/>

1.3 Do you own or rent your home?

Own outright ☐ Own (with mortgage or loan) ☐ Live rent free ☐
Shared Ownership ☐ Rent from relative or friend ☐
Rent from private landlord / letting agent ☐ Rent from Housing Association ☐ Other ☐

1.4 How long have you lived at your current address (approximately?)

1.5 What heating fuel do you use for your main heating at the moment?

Gas ☐ Oil ☐ Electricity ☐ LPG (Bottle Gas) ☐
Other (please state) _____

1.7 Do you use any other forms of heating? If yes, please state what form of heating

Yes ☐ _____ No ☐

1.8 Under the HeatSavers scheme, which measure(s) were installed?

Heating repair ☐ Heating Replacement ☐ Heating provided for first time ☐
Loft Insulation ☐ Wall insulation ☐

1.9 Do you suffer from any of the following health conditions? (Please tick one box in each row)

	NO , I do not suffer from this	YES , but I have not seen a doctor	YES and I have seen a doctor
Joint Pain, Arthritis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respiratory problems, breathing, wheeze (including asthma)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Psychological / emotional conditions (e.g anxiety / depression)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heart problems, angina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Circulatory problems, high blood pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persistent flu symptoms, headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allergies, e.g. hay fever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falls or accidents in the home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobility constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please use the box below to give us more detail about any medical conditions you may have:

Section 2 – The Impact of energy efficiency improvements

Please select **one answer** for the following questions. These questions seek to evaluate the impact of the energy efficiency improvements that were carried out in your home and use a scale.

Thinking about the time since the installation of heating or energy efficiency measures.....

2.1 Has the amount of colds / coughs you have had changed since the improvements?

<i>I have had more</i>		<i>no real change</i>		<i>I have had less</i>
1	2	3	4	5

2.2 In the winters since the improvements I have

<i>felt worse</i>		<i>no change</i>		<i>felt better</i>
1	2	3	4	5

2.3 Following the improvements I have visited the doctor

<i>less</i>		<i>no change</i>		<i>more</i>
1	2	3	4	5

2.4 Following the improvements I have visited the hospital

<i>less</i>		<i>no change</i>		<i>more</i>
1	2	3	4	5

2.5 Following the improvements has the level of healthcare support you receive changed?

<i>I receive less</i>		<i>no change</i>		<i>I receive more</i>
1	2	3	4	5

2.6 Has the likelihood of you being admitted to hospital changed?

<i>it is more likely</i>		<i>no change</i>		<i>it is less likely</i>
1	2	3	4	5

2.7 Since the improvement, my wellbeing has...

<i>worsened alot</i>		<i>not changed</i>		<i>improved alot</i>
1	2	3	4	5

Are there any other factors that may have affected your wellbeing? (e.g. new diagnosis, significant change in lifestyle)

2.8. Has the level of medication you require changed?

<i>yes, gone down a lot</i>		<i>not changed</i>		<i>yes, gone up alot</i>
1	2	3	4	5

2.9 Since the improvements, my energy bills have....

<i>gone down a lot</i>		<i>not changed</i>		<i>gone up alot</i>
1	2	3	4	5

2.10. Has the comfort level of your home changed?

<i>yes, for the better</i>		<i>no change</i>		<i>yes, for the worse</i>
1	2	3	4	5

2.11. How often were you able to heat your home to a comfortable level BEFORE the improvements?

<i>never</i>		<i>occasionally</i>		<i>all the time</i>
1	2	3	4	5

2.12. How often are you able to heat your home to a comfortable level AFTER the improvements?

<i>never</i>		<i>occasionally</i>		<i>all the time</i>
1	2	3	4	5

If you would like to give more information about the impact of the energy efficiency improvements in your home, please use the box below. This may relate to impacts on your health, wellbeing, the comfort within your home or any other benefit you may have

experienced.

As part of this evaluation project we would like to visit householders to talk through some of these questions in more detail. This visit should take around 1 hour. We would bring a free energy pack with us to say thank you, including some useful things like energy efficient lightbulbs. We can also talk through any current issues you may have in relation to energy and keeping warm.

Would you be happy for an advisor to arrange a visit to discuss this questionnaire with you?

☐ YES

☐ NO

Thank you for completing this questionnaire. The results of this evaluation will help to improve the service in future and will hopefully enable more people in Shropshire to benefit.

Please return your completed questionnaire to Marches Energy Agency, using the prepaid envelope that was enclosed with this questionnaire.

If you have any questions regarding this questionnaire, please contact Oliver Rothwell, Project Manager at Marches Energy Agency on 01743 277 114.

Marches Energy Agency are a registered charity based in Shrewsbury.
Registered charity number 3443349.

Marches Energy Agency - Healthwatch Evaluation Project – Summer 2016

CONSENT FORM

This evaluation project is being undertaken for the purpose of research and analysis to measure the impact interventions which increase the warmth, safety or energy efficiency of a home have on a households health and wellbeing; and if there are any consequential impacts on the health services.

I understand that by ticking each box I am consenting to partake in an interview element of the evaluation project.

☐ I understand that my participation in this evaluation is voluntary and that I am free to withdraw at any time without giving any reason. Doing so will not affect my access to support through Marches Energy Agency and partner organisations in future.

☐ I understand that any data collected about me or my circumstances throughout this evaluation will be handled and processed in accordance with the UK Data Protection Act 1998.

☐ I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publication of the evaluation data or report.

Date _____

Signature _____

Name of person taking consent _____

Signature _____

Healthwatch Evaluation

Interview structure

Can you recall the pre-intervention situation – what was it like at home in winter? How was this affecting you? How did you feel? How was the cold affecting your health?

How were you told about the Heatsavers scheme? Were you referred?

Details of the measures installed;

Specific detail in relation to responses from the questionnaire

Q 2.1 – Has the amount of coughs /colds you have had changed?

Can you give detail?

Q2.2 – In the winters I have felt worse or better?

Which and why do you think this is? Are there other factors?

Q2.3 & 2.4 – I visited the doctor less or more? I have visited the Hospital less or more?

Type of change? Numbers? Do you think this is directly attributable to the improvements? Were you being admitted to hospital with issues impacted by the conditions in your home?

Q2.5 & 2.6 – The Healthcare support I receive has changed. I receive, less, more or no change? / Has the likelihood of admission to hospital changed?

Q2.7 – Since the improvement my wellbeing has worsened or improved?

Can you tell us a bit more about this? What has been behind the change? Did you expect this change?

Q2.8 – Has the level of medication you require changed?

If so, what's behind this change?

Q2.9 – My energy bills have.....?

By how much? If no real change or increase, is this an issue? Are you able to use heating more and are bills still lower? Do they have bills to show us?

Q2.10 – Has the comfort level of your home changed?

Explain

Q2.11 & 2.12 – How often could you heat your home BEFORE and AFTER?

Explain the change. Can you give examples of when you couldn't and now you can? Hours per day? Heating routine? How does this make you feel?

Any more comments or information