

The behaviour change pilot

encouraging households to make better use
of their heating systems

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1. Executive summary

In October 2015 the Scottish Government commissioned the Energy Saving Trust, working in partnership with Changeworks¹ and SCARF² (who both operate Home Energy Scotland (HES) advice centres under contract to the Energy Saving Trust), to undertake a small pilot project to:

- Identify the techniques that best encourage people to make best use of their heating controls.
- Pilot the use of these techniques and evaluate their impact.
- Inform recommendations for a future larger-scale pilot or wider roll out of a programme to encourage people to make the best use of their heating controls.

The pilot ran until June 2016.

To ensure that the design of the pilot was informed by the existing behaviour change evidence base and by the experience of those “at the coal face” of advice provision (the HES advisors) a literature review and a workshop with HES advisors were undertaken. This work identified a number of barriers that appear to prevent householders from using their heating systems effectively and highlighted a number of key behavioural change techniques that could be employed to encourage householders to use their heating controls more effectively. This information was used to finalise the pilot’s design.

The pilot aimed to work with households that had recently had insulation installed as part of a HEEPS: ABS scheme. This was to reduce variability in the sample in terms house type, size and location and to ensure that the measures that had been installed in homes were consistent across the sample. It also provided a relatively large pool of householders that could be approached to receive enhanced heating related advice.

Households that had recently had insulation installed as part of a HEEPS: ABS scheme and were heated by electric storage heaters were identified by the North East HES advice centre while households that had recently had insulation installed as part of a HEEPS: ABS scheme and were heated by gas were identified by the South East HES advice centre. Each advice centre then split households into either a ‘low cost intervention’ group or a ‘high cost

¹ www.changeworks.org.uk

² www.scarf.org.uk

intervention group'. The 'high cost intervention' group received more intensive support from the advice centre than the 'low cost intervention' group.

All households were offered advice in the form of a number of simple experiments. These were small, simple and reversible changes that householders could make to their heating controls, such as adjusting their room thermostat or their hot water timer. Experiments were selected based on each household's requirements and offered in sequence. Up to three experiments were offered to each householder.

As well as advice via a series of experiments, households received newsletters and were invited to like the Energy Saving Trust (Scotland) Facebook page so they could see posts about getting the best out of heating systems. Households in the 'high cost intervention group' were also offered home visits. Smart thermostats were available to those in the 'high cost intervention' group with suitable central heating systems.

At least 96 separate interactions with heating systems were generated by the pilot (i.e. at least 96 experiments were carried out). The true figure is likely to be higher because there are likely to be householders who tried experiments but did not provide any feedback. This is likely to be particularly the case for the low cost intervention group as they were not called by advisors in order to record feedback. The evaluation results showed that:

- The advice and support provided during the pilot resulted in significant reported behaviour change, with 74% of participants reporting having changed at least one heating-related behaviour during the pilot.
- Where they had carried out at least one experiment, the vast majority of respondents (95%) said that they were persisting with the change(s); even where some experiments were temporarily redundant – due to seasonal changes – respondents expected to re-use the approaches in colder months.
- The advice and support provided during the pilot resulted in an increase in householders' reported levels of comfort with 49% of participants rating their property as comfortable pre-pilot and 88% rating it as comfortable post-pilot.
- The advice and support provided during the pilot increased householders' control over their heating systems. Only 18% of participants rated their degree of control

over their heating as high pre pilot, while 59% rated their degree of control over their heating as high post pilot.

- Pilot participants felt that the advice and support provided during the pilot supported their behaviour change through encouraging them to try things they would not have thought of, or even been aware were an option, prior to receiving the advice. Even where participants did not make changes, many still found participation useful as it reassured them that they were already doing the right things and as much as they could to control comfort in the property.
- The advisors felt that the iterative approach to experiments, advisor autonomy in selecting experiments, and the long term contact with participants, played a key role in allowing them to provide an effective support service to encourage behaviour change.

However, it proved a significant challenge for advisors to get to speak to householders in the first place and some aspects of the pilot worked better (e.g. the use of experiments) than others (e.g. the impact of social media was limited as was interest in home visits and smart thermostats).

The pilot's largely positive results suggest that there could be significant benefits associated with making the kind of support provided by the pilot more widely available. However, if this is to happen it will be important that the lessons learned from the pilot – in terms of what has worked well, and what has not worked so well – are considered and improvements made to any future methodology.

The report highlights the importance of adopting a more integrated approach, where heating advice forms an essential part of a HEEPS: ABS scheme rather than being provided separately afterwards and suggests that it would also be helpful to understand the impact of integrating equivalent advice into a different programme with a different demographic. This would provide a better sense of whether the enhanced advice offering could be effective when targeted at a wider audience and therefore provide a better idea of whether it would make sense to integrate such an offering into energy efficiency programmes more widely. It is recommended that further work is undertaken to build on this pilot which explores the impact of:

- The close integration of heating-related advice with one or two local authority HEEPS: ABS schemes.
- The integration of heating-related advice into the Scottish Government's HEEPS loans scheme.

There are, of course, other options for a future pilot, or wider roll out of a programme, to encourage people to make the best use of their heating controls. These include:

- The integration of enhanced heating-related advice into *all* Scottish Government supported energy efficiency programmes (for example all HEEPS: ABS schemes, Warmer Homes Scotland, Scottish Government funded loans schemes etc., etc.).
- The integration of enhanced heating-related advice into the HES advice offering.

We believe that it would make sense to consider these additional options after the options recommended above have been piloted further and evaluated. This would provide important insight into the impacts of integration and of targeting a different demographic that could inform consideration, and if appropriate roll out, of these additional options

2. Introduction

In recognition of the fact that improving the energy efficiency of Scotland's housing stock will help to reduce energy demand, mitigate climate change and tackle fuel poverty, the Scottish Government has, over many years, funded a series of energy efficiency programmes for the household sector. It is increasingly recognised that, if the full potential savings (in terms of comfort, energy, money and CO₂) from such programmes are to be realised, it is important that heating systems are used effectively.

The Scottish Government announced on 9 June 2015 that improving the energy efficiency of Scotland's buildings will be designated as a National Infrastructure Priority³ and that delivery would be primarily through a new programme – Scotland's Energy Efficiency Programme (SEEP). The Scottish Government is keen to ensure, as far as possible, that the benefits resulting from this new programme are maximised.

It is against this background that the Scottish Government commissioned the Energy Saving Trust, working in partnership with Changeworks⁴ and SCARF⁵ (who both operate Home Energy Scotland advice centres under contract to the Energy Saving Trust), to undertake a small pilot project to:

- Identify the techniques that work best in terms of encouraging people to make best use of their heating controls.
- Pilot the use of these techniques and evaluate their impact.
- Inform recommendations for a future pilot or wider roll out of a programme to encourage people to make the best use of their heating controls.

The pilot took place between October 2015 and June 2016.

³ <http://news.scotland.gov.uk/News/Climate-change-action-heats-up-19c8.aspx>

⁴ www.changeworks.org.uk

⁵ www.scarf.org.uk

3. Methodology

The pilot was delivered in six stages, as detailed below.

3.1 Stage 1: initial work to inform the pilot's design

To ensure that the design of the pilot was informed by the existing behaviour change evidence base and by the experience of those “at the coal face” of advice provision (the Home Energy Scotland advisors) the following activities were undertaken:

- A literature review.
- A workshop with Home Energy Scotland advisors.

These activities were delivered by Changeworks with input from Energy Saving Trust. At the Scottish Government's suggestion a meeting also took place with the Department of Energy and Climate Change's Trials Advice Panel who suggested some studies that would be particularly useful to include in the review. A summary of the literature review's key findings together with a copy of the workshop report can be found in Appendix 3.

3.2 Stage 2: finalising the pilot's design

The above work identified a number of barriers that appear to prevent householders from using their heating systems effectively and highlighted a number of key behavioural change techniques that could be employed to encourage householders to use their heating controls more effectively. It also used the evidence from the HES advisors to help determine the pilot's customer journey.

This information was used to finalise the pilot's design, which incorporated the following key elements:

- **Advice was delivered to pilot participants by HES advisors.**
- **Householders were encouraged to make a commitment** to taking part at the start of the pilot.
- **Householders were encouraged to try simple ‘experiments’ (small changes that householders could make to their heating systems) with a trial and error approach rather than relying on standard advice.** The focus here was very much on keeping things simple, relevant and most importantly actionable from a householders' perspective.

- There was a **focus on emphasising that others in the area were involved and making changes to their use of their heating systems** to ‘normalise’ the suggested behaviours. Available evidence suggests that people are more likely to adopt behaviours that they think are normal.
- **Householders were reminded and prompted to take action** on a regular, on-going basis.
- **The provision of either high cost (more intensive) or low cost (less intensive) support** to test the impact that different levels of support have on householder behaviour change.

In addition, in order to ensure that the advice provided was as relevant to each householder as possible and to maximise the chances of the advice being acted upon, advisors:

- **Collected information on the current heating practices** of each householder to ensure advice could be tailored.
- **Focused on more than just the cost saving benefits (e.g. they talked about warmth, comfort, efficient use of energy, managing your heating better and taking control of your heating/home).**
- **Kept the provision of advice simple** and this focused only on heating controls.
- **Emphasised the HES advice centre role as a trusted messenger.**

Home visits were also offered where appropriate to any household that the advisors felt needed additional support to help them use their heating system more effectively. **Smart thermostats** were also offered where appropriate⁶ to any household that the advisors felt would benefit from one.

3.3 Stage 3: development of materials and training HES staff

The following materials were developed for the pilot:

- **A series of 13 ‘experiments’** – suggested small changes to their heating controls that people could try out. These experiments consisted of six electricity experiments and seven gas central heating experiments which each focused on a specific way to control heating (see figure 1 below). They used a ‘trial and error’ approach where households were encouraged to try out small changes that they could reverse if they

⁶ Note: these were only suitable for gas heated homes.

did not find them appropriate. Further details about these experiments are provided in the appendices.

- **Two newsletters which were sent to all householders.**
- **Eight posts to the Energy Saving Trust (Scotland) Facebook page**
- **Two questionnaires:**
 - One to allow advisors to gather information about how a household heated their home (to help the advisor identify the correct experiment(s) for any given household).
 - The other for households to provide feedback on each experiment they tried out.
- **Templates for letters to households introducing the opportunity to benefit from advice on using heating controls and to households where three unsuccessful attempts had been made to contact them.**

Each advice centre identified two members of staff who would have responsibility for engaging with households in their area. These members of staff attended a training day. The purpose of the day was to:

- Brief staff in the behaviour change techniques that were to be used.
- Ensure they had an appreciation of the rationale behind the pilot.
- Introduce them to the tools they would use.
- Discuss the pilot timescales.
- Ensure everyone was clear about operational processes.
- Provide staff with an opportunity to role play the advice calls and receive some initial feedback.

Much of the training concentrated on how to recruit households into the pilot, how to promote key messages (e.g. simple easy to do experiment, people in your community are doing them), and how to secure householders' commitment to try out a suitable experiment and then provide feedback.

3.4 Stage 4: identification of householders

A target sample size of 400 private sector households was set (determined by available resources and the pilot's timescales), including a minimum of 80 to act as a control group split into two sub groups, 40 or more gas central heating and 40 or more storage heating). The target sample was split as follows:

Figure 1: target sample

Intervention type	Urban (gas central heating)	Rural (electric storage heating)
Low cost behaviour interventions	80	80
High cost behaviour interventions	80	80
Control group	>80	

The pilot aimed to work with households that had recently⁷ had insulation installed as part of a HEEPS: ABS scheme⁸. This was to reduce variability in the sample in terms of house type, size and location and to ensure that the measures that had been installed in homes were consistent across the sample. It also provided a relatively large pool of householders that could be approached to receive enhanced heating related advice. The aim was to work with households who, as far as possible:

- Were either owner occupiers or private renters⁹.
- Lived in a property that was heated by either gas central heating or electric storage heating.

Some of the HES advice centres had worked with HEEPS: ABS schemes in a way that allowed them to subsequently contact customers who had benefited from the scheme. This was not the case for all advice centres/all schemes¹⁰ as not all of the data protection agreements in place allowed the schemes to share household data with HES. This information (i.e. the location of schemes that did allow household data to be shared with HES) was considered together with information about the availability of key staff within the advice centres to work on the pilot and as a result the decision was made to work in conjunction with the south east and north east advice centres as follows:

⁷ i.e. at the time of selection households had not been through a winter since insulation was installed

⁸ HEEPS: ABS schemes are area-based schemes and are designed and delivered by councils, with local delivery partners. They target fuel-poor areas, to provide energy efficiency measures to a large number of Scottish homes while delivering emission savings and helping reduce fuel poverty

⁹ Some social housing was included in the north east HEEPS-ABS sample because there were insufficient owner occupiers and privately renting households.

¹⁰ Data protection proved a major hurdle. One possible HEEPS-ABS scheme was ineligible because there was no agreement to share household data with Home Energy Scotland. In other schemes data protection agreements were initially unclear as households had been signed up on the doorstep without data protection agreements being properly completed.

- **The south east advice centre** recruited households with gas central heating. Relevant HEEPS: ABS schemes were identified in Edinburgh, Howden and Kirkcaldy.
- **The north east advice centre** recruited households with electric storage heating. Relevant HEEPS: ABS schemes were identified in Aberdeenshire and augmented by a number of properties in Aberdeen that also had storage heating and where the property had recently benefitted from insulation measures under another government funded scheme (i.e. not a HEEPS: ABS scheme).

3.5 Stage 5: the provision of advice

The advice process is summarised in figure 2 below. Firstly, letters were sent out to households in selected areas informing that the advice centre was providing enhanced advice on heating system use and that they hoped to be able to call the household over the winter to see if they needed any assistance.

Householders were then contacted by telephone by a HES advisor and during an initial recruitment conversation they were offered the opportunity to undertake a series of experiments (up to 3) to help them use their heating systems more effectively. They were assigned to one of two groups prior to being called¹¹. These groups were:

- **Low cost intervention group.** This group was offered less intensive support than the high cost intervention group. Different experiments were discussed with an advisor over the phone and once an experiment/multiple experiments had been agreed the advisor issued information on them for the customer to follow. Householders then provided feedback online or by post.
- **High cost intervention group.** This group was offered more intensive support. As well as receiving the support outlined for the low cost group, customers in the high cost intervention group received a follow up phone call to see how they got on after each experiment and were then allocated a new experiment to try. In addition, home visits were offered, as were smart thermostats¹² where the advisors felt the household would benefit from one or both of these.

¹¹ This ensured that the results would not be skewed by a household's keenness to participate.

¹² The chosen device was selected because it offered households the ability to control the heating via a smart phone, tablet or computer outside their home, it was relatively simple to use and had been awarded a Which? 'best buy' in October 2015.

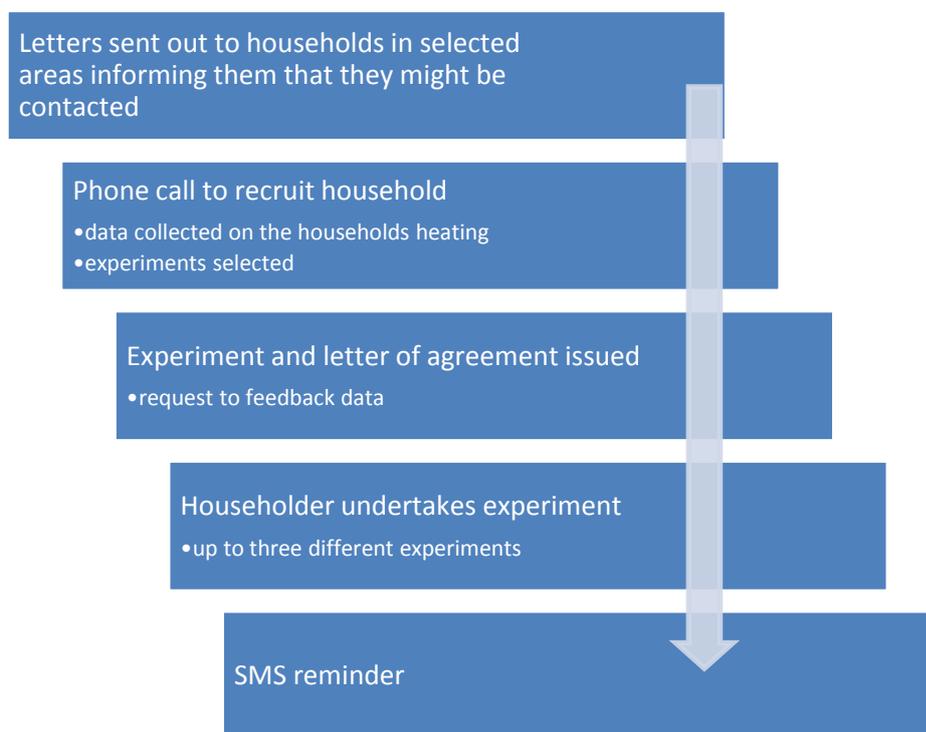
During this initial conversation information about the householders heating system and their use of it was also collected.

Where the advisor had a conversation and the householder was suitable (e.g. if calling the storage heating households, they still had storage heating) and the advisor was able to introduce the possibility of using their heating system more effectively by undertaking a number of experiments then those householders who were not willing to participate were nevertheless recorded as a specific type of participant ('decliners' below). It was useful data for the project to identify the proportion of those reached with the pilot proposition who were then willing to participate fully and the proportion who were not.

At the end of the conversation if the householder agreed to take part the advisor issued an experiment to the householder (by e-mail or regular mail) together with a letter of agreement which detailed what the householder had agreed to do (i.e. try out an experiment and provide feedback on that experiment). All households were sent a text message to remind them to complete and provide feedback each experiment and, as noted above, those in the high cost intervention group also received a phone call.

If a household did not answer the telephone a voicemail message was left, and after three unsuccessful attempts to contact the householder no more telephone contacts were attempted. A final letter was however sent as a final attempt to encourage the householder to take part.

Figure 2: the advice process



Householders were not told they were taking part in a pilot as doing so risked biasing the results. They were however informed that they would be contacted by a researcher at a later date, to understand the impact of the advice being provided.

The literature review highlighted that the available evidence points to the important role that social networks can play in reinforcing advice. The pilot therefore included weekly posts to the EST (Scotland) Facebook page (including links to EST videos on how to use heating controls¹³) and two newsletters were sent out to all householders taking part in the pilot. It was hoped that this activity would provide participants with a sense of being part of a wider scheme and highlight that others in the area were also involved and making changes to their use of their heating systems

3.6 Stage 6: evaluating results

The results of the pilot were evaluated using the following sources of information:

- Data collected by the pilot delivery team during engagement with householders. This consisted of:

¹³ See: <http://www.energysavingtrust.org.uk/domestic/thermostats-and-controls>, and <http://www.energysavingtrust.org.uk/domestic/electric-heating-systems>

- An initial survey with participants exploring pre-existing heating behaviour and attitudes.
- The short surveys circulated post-experiment which explored the participants' experience of implementing the experiment.
- The results of a formal, independent evaluation.

The formal evaluation involved the following surveys/interviews:

- A quantitative telephone survey of **pilot participants**, that is, those individuals who were in the low cost or the high cost intervention group, exploring motivations for participation, benefits derived and views on the different aspects of the pilot. 72 participants were surveyed.
- A quantitative telephone survey of **individuals invited to participate but who declined ('decliners')** after a conversation about using their heating system. This survey explored the reasons why they declined to participate, what might have persuaded them to participate, and what, if any, changes they had made to heating anyway. 20 decliners were surveyed.
- A quantitative telephone survey of **individuals who were in principle eligible to participate¹⁴ but had not been contacted; they functioned as a control group for the evaluation**. These 'non-participants' (as they are referred to in the report) were asked about changes they had made to heating behaviour post the HEEPS: ABS interaction, as well as any further sources of support that they had accessed, in order to provide a comparison with participants on key variables. 30 control group householders were surveyed.
- Qualitative telephone interviews with representatives of the teams delivering the behaviour change intervention in order to understand what they thought worked well and how the pilot could have been improved.

In addition, as part of their regular reporting on progress, the advice centre staff were asked to look out for interesting **case studies** that would illustrate how householders used the experiments. These provided useful additional insight.

¹⁴ i.e. they had participated in a HEEPS: ABS scheme (though whether their heating system was eligible is not known).

4. Results

This section summarises the findings of the pilot. It is split into three parts:

- A summary of the data collected during engagement with householders. Where equivalent questions were asked in the evaluation the responses to these questions are, for ease of understanding, also considered in the section covering the results of the pilot's evaluation.
- The case studies.
- A summary of the results of the pilot's evaluation.

4.1 Summary of data collected during engagement with householders

4.1.1 Engaging with households

By the end of March 2016, the advice centres had completed the process of recruiting households to the pilot. Engagement continued with the participating households until the end of April 2016.

The final numbers of households who took part in the pilot are shown in the table below.

Figure 3: final number of householders taking part in the pilot

Targets and actuals for offering support on using heating systems	Gas central heating (SE advice centre) mainly urban households	Electric storage heating (NE advice centre) mainly rural households
Low cost interventions		
Target (householders spoken to)	80	80
<i>Actual householders spoken to</i>	80	44
<i>Householders who agreed to try out experiments (participants)</i>	44	25
High cost interventions		
Target (householders spoken to)	80	80
<i>Actual householders spoken to</i>	112	42
<i>Householders who agreed to try out experiments (participants)</i>	48	23

A total of 278 householders were spoken to and 50% (140 householders) of these agreed to try out the experiments. This is a good conversion rate for this type of project.

4.1.2 Interactions with heating systems

As noted in figure 4 above the sample sizes for the high cost intervention group and low cost intervention group were 112 and 80 respectively. Of this sample 140 householders agreed to try experiments, 69 of these householders were in the low cost intervention group and 71 were in the high cost intervention group. A total of 113 pieces of feedback were received from these householders and 85% of which reported that an experiment had been tried. This means that the pilot resulted in at least 96 separate interactions with heating systems (i.e. at least 96 experiments were carried out). The true figure is likely to be higher because there are probably householders who tried experiments but simply did not provide any feedback. This is likely to be particularly the case for the low cost intervention group as they were not called by advisors in order to record feedback

Data was not routinely collected on the number of experiments completed by each household although some data is available on those who provided feedback on the maximum of 3 experiments. This is provided in section 4.1.3 below. However, it is important to note that the aim was not for householders to complete a certain number of experiments. Rather it was to encourage householders to start to engage with their heating systems. In some cases it would have been important for householders to engage more than once as a result of their knowledge and confidence at the start of the pilot but this would not necessarily have been the case for all householders.

4.1.3 Making calls, the effort required to speak to and recruit householders

In order to achieve the final levels of engagement with householders, a large number of calls and contacts were needed. The two advice centres reported on some aspects of their advice provision slightly differently. This has provided an opportunity to gain different insights into the challenges associated with making contact with householders.

The following results (see figure 4 below) from the north east advice centre provide an indication of the total sample size required to get a given level of engagement.

Figure 4: breakdown of households contacted vs. those finally recruited in the NE

Final results from NE advice centre	High cost intervention group numbers	Low cost intervention group numbers
Recruited (households that agreed to do an experiment)	23	25
Declined (households that advisors spoke to but who decided not to do an experiment)	19	19
Unobtainable (households who were unavailable (e.g. call barring, change of occupancy, unknown telephone number))	51	50
Voicemail (households who were left up to three voicemail messages)	50	40
New heating system (households whose heating system had changed)	26	21
Total	169	155

Those that took part in a conversation about how they use their heating are those in the recruited and declined categories above. It can be seen that approximately four households needed to be called to ensure that one household took part in a conversation about how they use their heating.

Data received from the south east advice centre provides a sense of the extent to which householders completed 3 experiments and provided feedback on these. A total of 1,335 calls were made by the south east advice centre over the course of the pilot. As noted in figure 4 above this resulted in sample sizes for the high cost intervention group and low cost intervention group of 112 and 80 respectively. Of this sample 92 householders agreed to try experiments, 44 of these householders were in the low cost intervention group and 48 were in the high cost intervention group.

In the high cost group 9 householders completed, and provided feedback on, 3 experiments, and in the low cost group 5 householders completed, and provided feedback on, 3 experiments. It is worthwhile reiterating here that the aim was not for householders to complete a certain number of experiments. Rather it was to encourage householders to start to engage with their heating systems and as noted above the pilot resulted in a total of at least 96 separate interactions with heating systems.

4.1.4 Strategies used to improve contact rates with householders

The advice centres adopted a number of different strategies to try and improve their contact rates when they telephoned households including:

- Sending out letters prior to calling households.
- Sending a final letter to households when they had left three messages on a voicemail. This letter highlighted that the advisor had been trying to contact them about their heating controls and to please call if they were interested. It was felt that leaving more than three answerphone messages would become intrusive and unwelcome.
- Making evening calls when householders were more likely to be in.

With the high levels of nuisance calls that many households receive it is unsurprising that it is becoming difficult to contact households over the telephone. This has implications for any future work as it becomes necessary to guard against a householder confusing a call from HES with other callers. Familiarity with HES and an expectation to receive a call about using heating controls would help this and could be accommodated into a process that was more integrated into an energy efficiency scheme.

4.1.5 Feedback on how people use their heating systems

As part of their initial engagement with householders advisors used an online questionnaire which asked about the heating system each household had and how they used it. This information was used by the advisors to help them determine the experiments that would be most appropriate for each household.

This feedback has also provided some useful insights about the participants in the pilot and how they used (or didn't use) their heating controls.

Figure 5: Pre-evaluation survey data on the frequency of use of heating controls

	daily	weekly	monthly	rarely or never
How often do you adjust the room thermostat in your home?	22%	22%	8%	49%
How often do you adjust the storage heater input in your home?	4%	17%	26%	52%
How often do you adjust the storage heater output in your home?	7%	18%	18%	58%

These results reinforce the literature review’s finding that most people are not particularly engaged with their heating systems, with around 50% of households saying they rarely or never adjusted their heating.

For households with storage heating, this is a particular issue as it suggests that they are not adjusting their storage heating to take account of the outside temperature. It also suggests that for storage heating there is a real opportunity to help people to use their heating systems more effectively. This point is also emphasised in the two storage heating case studies in section 4.2.

How does your home typically feel?

37% of those taking part in the pilot that completed the pre-pilot survey mentioned their house was cold (either partly or fully) or took a long time to heat up. Householders were not asked about whether they felt their property was too hot. However, they were asked about this in the formal evaluation (see section 4.3 below).

This suggests that over a third of households have either inadequate heating or do not use their heating system to best effect (given that most participating households had recently had solid wall insulation installed, it seems unlikely that poor insulation is a causal element).

What do you want to achieve by taking part in this programme?

When asked about what they wanted to achieve by taking part in the programme 16% mentioned comfort or warmth while 56% mentioned financial savings.

The fact that most people said they wanted financial savings with comparatively few mentioning comfort or warmth, is surprising considering the numbers of homes that felt cold or took a long time to heat up.

Confidence about using their heating systems

62% said they were confident or very confident about using their heating system, 18% said they were OK and 15% said they were unconfident or very unconfident. However, while the majority 62% of householders reported that they were at least confident using their heating systems, the extent to which this reported confidence translates into effective use of their heating systems is unclear.

Those that were unconfident were targeted as being likely candidates for home visits. These results are considered in greater detail in section 4.3 below.

4.1.6 Feedback on the experiments

Feedback from householders who agreed to try the experiments was promising. An analysis of all 113 pieces of feedback received from householders about the experiments¹⁵ they tried provided the following results.

Figure 6: feedback on experiments

Question	Response = Yes
Did you try out the experiment?	85%
Did you find the experiment easy to do?	81%
Did you think the experiment worked for you and your home?	64%
Will you keep the changes you made in the experiment?	65%
Would you recommend this experiment to your friends?	76%
Do you feel you can now more effectively manage your home heating?	81%

These results show that a considerable majority (81%) of householders who took part and provided feedback feel they can now manage their heating more effectively. Interestingly this appears to be the case even for some households who said an experiment did not work in their home. It is worthwhile noting here that feedback from householders in the formal evaluation (see section 4.3 below) suggested that around a third (34%) of households had not observed any benefits from taking part in the pilot. The reason given by most respondents for this was that it was simply too early to tell. It is important that the results in

¹⁵ Note: householders were asked to provide a response for each experiment they carried out.

figure 10 above – particularly those relating to keeping the changes the experiment(s) suggested - are viewed in this context as those who do not see any benefits over the coming months might revert back to previous behaviours.

4.1.7 Home visits

As part of the engagement process, householders in the high cost group were offered a home visit where advisors felt that this would be of benefit to them. In the south east, four householders took up the offer of a home visit, which led to five home visits, one household being visited twice. In the north east nobody took up the option of a home visit, despite these being re-offered in April to all high cost householders with storage heating.

Each visit conducted by the south east advice centre followed the process below:

- Assessment of customer's heating needs (occupancy habits and present use of controls).
- Inspection of heating system and controls.
- Provision of a tutorial on controls and adjustment where appropriate.
- Discussion of any other issues and of further assistance available through HES.

Details of each home visit can be found in the boxes below.

Person 1, Edinburgh

This customer had already changed her TRV settings as she was given this experiment before being booked in for a visit. She was previously turning her heating on and off manually but following the visit has a program set to fit her lifestyle. She has also expressed interest in going through an assessment with a HES advisor to see if there is anything further they could offer her.

Person 2, Edinburgh

This customer was previously unwilling to use any of her heating controls as she did not understand what they did. During the visit the advisor explained the operation of her TRVs and changed their settings to a more appropriate level. The advisor also adjusted her hot water thermostat as this was set higher than necessary. It was judged that setting a programme for the central heating would not be beneficial for this customer due to her lifestyle but the process was explained to her for future reference.

Person 3, Edinburgh

Person 3 has a full set of controls but prior to visit was using the on-off control on his programmer to control the system and was unwilling to adjust other controls. He was taken through a full tutorial for the system and a programme was set to match his lifestyle. The advisor also turned down his hot water thermostat as this was set higher than necessary.

Person 4, Edinburgh

This customer had a very recently installed a combi-boiler and controls which she was not comfortable adjusting. She was taken through a tutorial for the system and her central-heating thermostat was lowered as this was set very high. This customer did not wish to have a programme set as she felt it would not be beneficial given her circumstances. However; the process was demonstrated to her for future reference. The advisor was also able to advise on the process for changing to direct-debit from a pre-payment meter.

This customer had also had a wireless thermostat that had been incorrectly paired to the boiler (meaning it could not control the boiler) and the advisor was able to address this problem with the household's landlord.

These accounts suggest that, for some people, a home visit can be beneficial in terms of helping them to manage their heating system more effectively. However, they were not very popular.

In terms of why most householders refused the offer of a home visit feedback from the advisors suggests that apathy appears to play a role here, *“as long as the system can heat their home to a reasonable level they're unwilling to engage with it further”*. This view is in line with the findings of the literature review that suggests that, on the whole, householders are not very engaged with their heating systems. Despite the fact householders may be sceptical about the benefits of a home visit feedback from the advisors suggests that those who received them were positive about the experience.

4.1.8 Smart thermostats

High cost households who had combi-boilers were offered, free of charge, a smart thermostat. Despite this being a free offer, it proved not to be of great interest to householders. The advisors speculated that this was for a number of possible reasons:

- Advisors did not have the sales skills needed to persuade households to take up the offer. This was a departure from their core skills and experience of providing advice and information. This might be something that could be improved by appropriate training.
- Households were suspicious of free offers.
- Although a number of households expressed an interest, they were not really particularly interested, this was evidenced by the fact that it was challenging to get households to return the necessary paperwork.

Eventually four households were referred to have the smart thermostat installed. Of these, three were installed and (at the time of writing) the fourth household was not responding to the installer's attempts to make contact and arrange an installation date.

4.2 Case studies

During the process of engaging with households, the advisors were asked to gather case studies to illustrate how people responded to the pilot. The following three case studies use householders' own words to illustrate their stories. The storage heating case studies illustrate the benefits of correctly controlling the heaters, while the gas central heating case study shows how improving insulation may require adjustments in how heating is controlled.

4.2.1 Case Study 1 - Storage heating (1)

I started trying out the experiments about a month ago. I started the experiments by reducing the input control on my storage heating and only using the boost/output at night. This is the first winter that I adjusted the input controls on my storage heaters. I've received my electricity bill and received a rebate and reduced monthly payments for the year. Since then I have noticed that even though the bills have gone down the home has maintained a comfortable temperature.

The experiments were very easy to do and I am definitely happy with the outcome.

After I received the rebate from my energy company I spoke to my niece who has just moved into her new home and has storage heating. She was looking into replacing the storage heating with a gas central heating system but could not afford it. I suggested that my niece should try these experiments and see how she gets on.

Storage heating has a bad name for being unreliable and gas is cheaper to run but when you understand how to control/ manage the heating before making a change of heating you find that it does make a massive difference!

4.2.2 Case Study 2 - Storage heating (2)

I found the experiments very easy to do, a couple of tweaks and they were done. The advice and experiments were common sense things to do. When I find the temperature dropping and becoming uncomfortable I just turn the thermostat (i.e. output – ed.) up a notch, then when it gets warm and comfortable I turn it back down. The comfort appears to have been maintained whilst saving money on electricity use. When you actually try doing it, you will find that it does make a difference.

I am happy with the experiments sent and advice given to me. The outcome has been worthwhile. I would definitely recommend these to a friend.

4.2.3 Case Study 3 - Gas central heating

The difference the external wall insulation has made is huge. I also had new windows installed, which has no doubt made a difference. The experiments I was set made my home more comfortable. It used to get too warm and I'd have to open the windows. I've recommended the experiments to my sister and one of my friends.

4.3 Formal evaluation

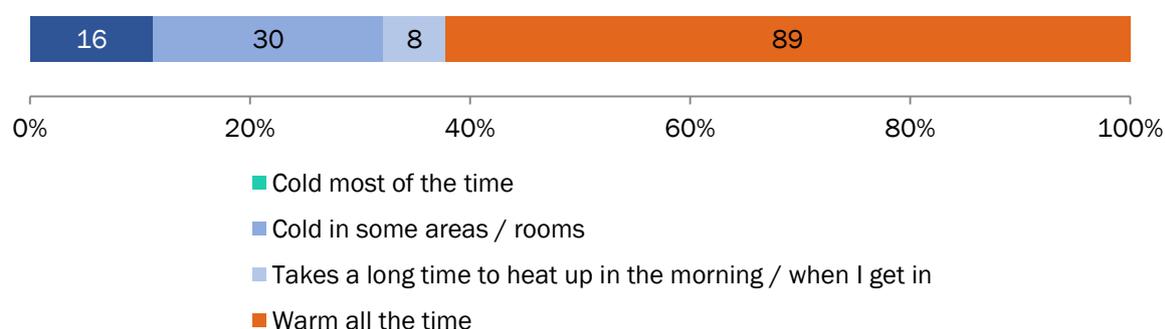
The pilot's formal evaluation took place in May 2016, and its results are summarised below.

Note on terminology: as noted earlier 'participant' is used to describe a household who agreed to undertake the experiments. The term 'decliner' is used to describe someone who was given a chance to undertake an experiment/experiments but declined, and the term 'non-participant' is used to describe the control group (a group who were eligible to take part in the pilot but who had not been contacted). Profile information for each of these groups can be found in the appendices.

4.3.1 Participants

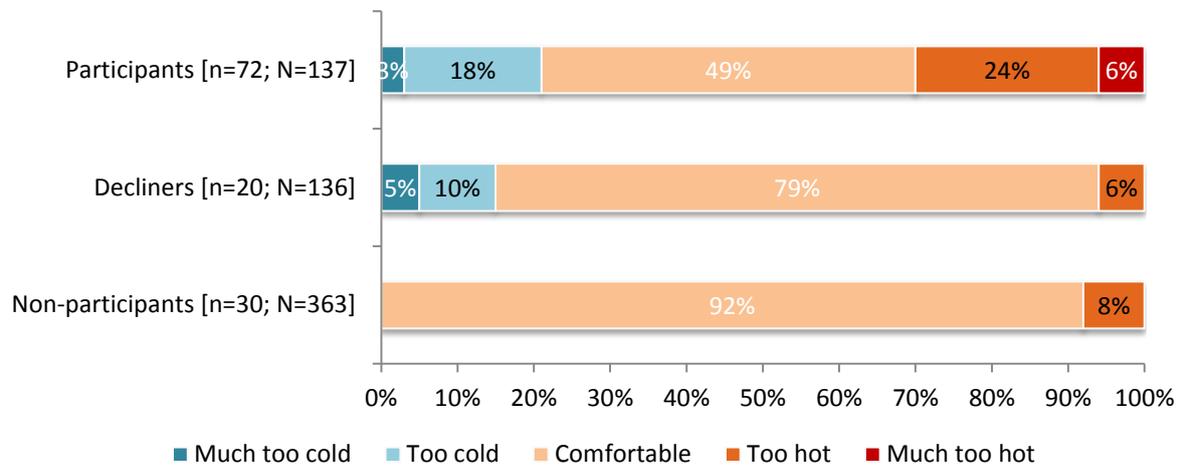
In the pre-experiment survey, all those agreeing to participate were asked about the level of comfort in their property. The results are outlined in figure 7 below.

Figure 7: participant rating of property comfort on the pre-experiment survey [n=143]



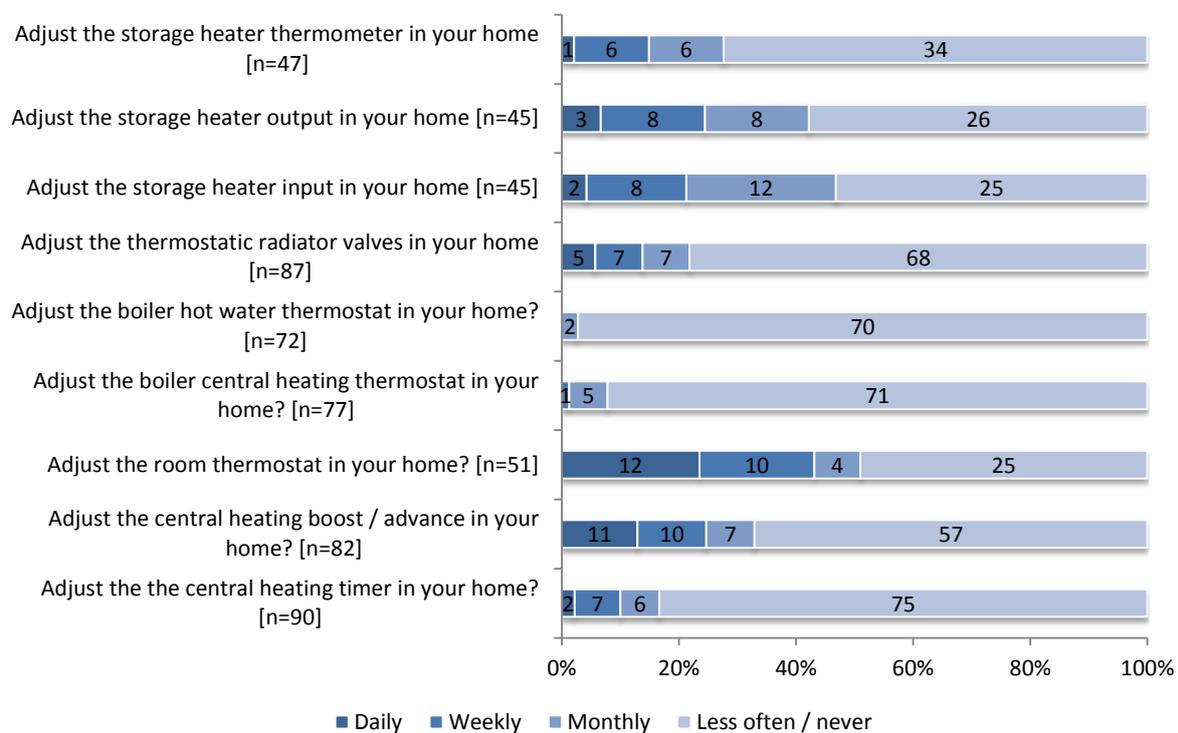
The evaluation explored whether or not the pilot's participants were those whose participation in the pilot was likely to be of benefit to them. Survey respondents were asked to rate the comfort of their property either now (for non-participants) or prior to the pilot support (for participants). Figure 8 below shows that the participant group were those most likely to see their property as uncomfortable, mostly on the basis of it being too warm (potentially as a result of the HEEPS-ABS insulation measure). This suggests that people's level of discomfort may have been a factor in them deciding to take part in the pilot.

Figure 8: evaluation survey respondent rating of property comfort either now (for non-participants) or prior to the pilot support (for participants)



A number of questions explored the extent to which respondents interacted with their controls and had the confidence to do so. The pre-pilot questionnaire asked participants to assess how often they were interacting with different elements of their heating system.

Figure 9: extent to which participants were using their heating systems pre-pilot

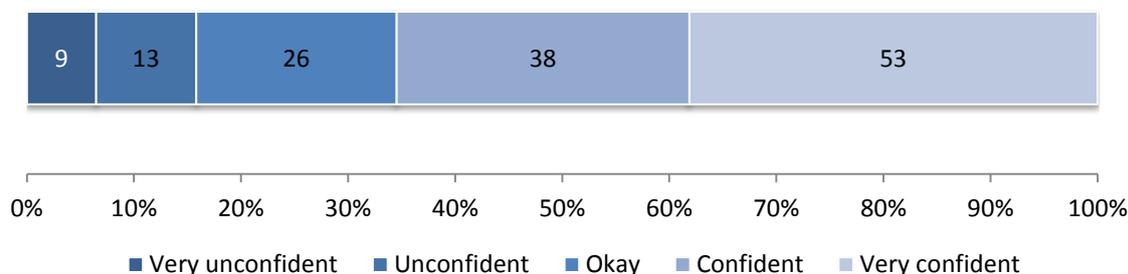


The data shows that heating controls, in the majority of cases were rarely or never used despite the relatively high levels of reported discomfort with property temperature. Where participants were adjusting their heating controls, some were struggling to make their property comfortable.

The results outlined above suggest that the pilot’s participants were generally appropriate for inclusion in the pilot because less than half were comfortable in their property and few were using their heating controls. There was therefore scope to encourage these householders to better engage with their heating controls.

The same group of respondents were also asked pre-pilot to rate their confidence in adjusting their heating controls:

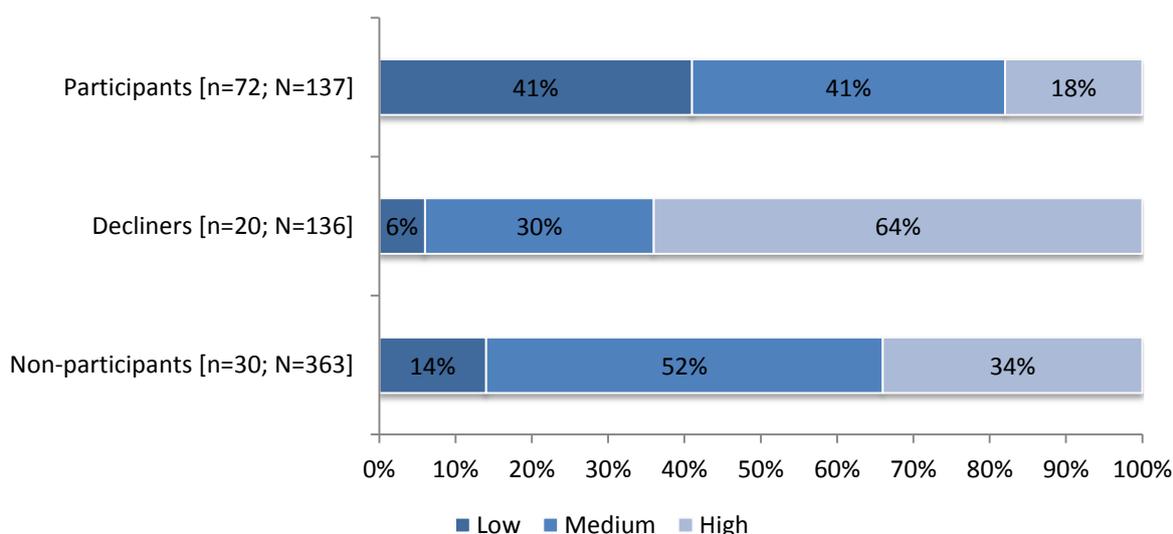
Figure 10: participants’ pre-pilot rating of their confidence in adjusting heating controls [n=139]



There was little correlation between participants’ confidence in using heating controls and their reported use of those controls.

Participants were also asked about the extent to which they felt able to control the heating in their home prior to receiving support under the pilot. Two fifths felt that they had a low level of control.

Figure 11: respondent assessment of their ability of control the heating in their home prior to the pilot support

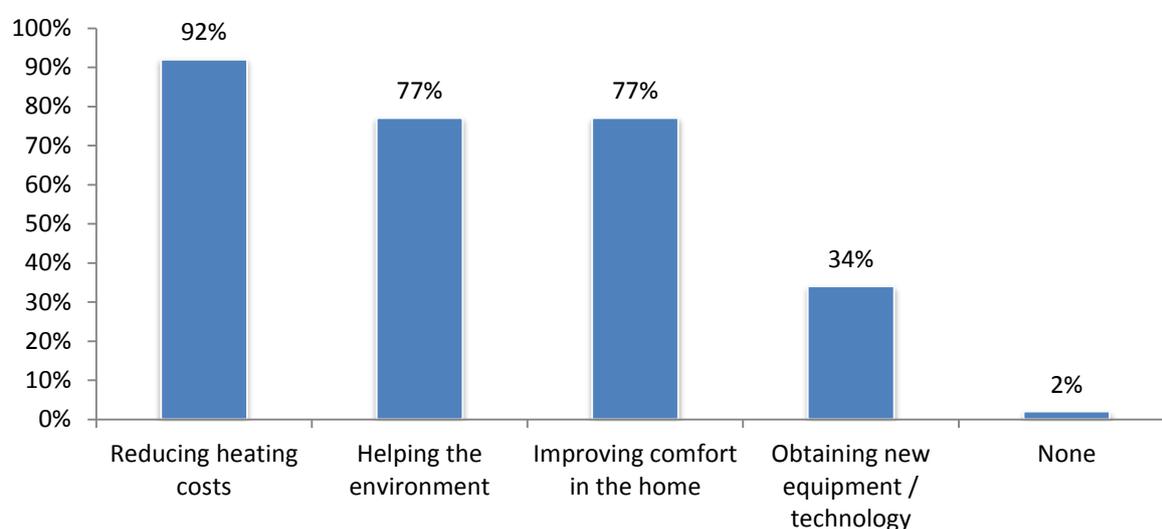


One fifth of the pre-evaluation questionnaire sample (see figure 10) reported that they were unconfident with controls at the start of the pilot, and when asked a similar question in the evaluation survey double that number (two fifths) reported that they had a low level of control

(see figure 11) at the start of the pilot. This contrast, arising as it does from a similar question asked to a similar group, with only pre and post pilot timing as a differentiating factor implies that the pilot support helped some participants to retrospectively appreciate how little control they had before the pilot.

Participants were asked what motivated them to accept advice and support on heating. They were offered a number of possible motivations and could suggest further ones. The results are as follows:

Figure 12: motivations for seeking support with heating [n=72; N=137]



The biggest motivation was householders' desire to have lower fuel bills. This is broadly consistent with the findings for the pre-pilot questionnaire where a (small) majority of respondents described saving money as being their objective. However, while in the pre-pilot questionnaire very few other motivations were mentioned, helping the environment and improving comfort were mentioned as motivating factors for more than three quarters of participants in their responses to the evaluation survey. This could have resulted from the fact that possible motivations were prompted by the interviewers in the evaluation survey but were not prompted in the pre-pilot survey. When respondents who selected multiple motivations were asked which of these had been their main motivation 74% selected reduced heating costs.

Participants were asked to explain how they envisaged the pilot would support them in achieving that objective i.e. their expectations. Almost all respondents felt that the support

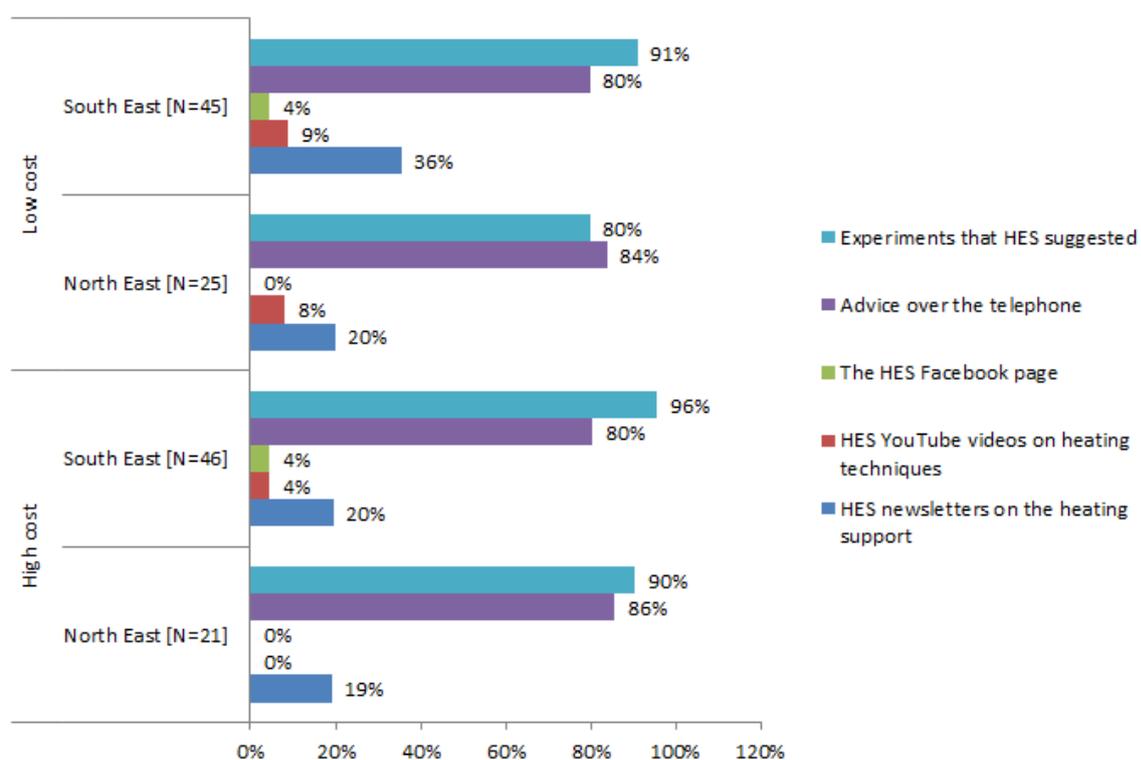
would do this by giving them ideas on their management of heating controls. Comments included:

- “I wanted to know how to use the storage heaters more effectively (I hadn't used the temperature setting before).”
- “I thought it would give me a better idea of how the heating works. My husband died some years ago and since then I haven't touched the settings.”
- “I thought I might be setting the radiators wrongly. I hoped they might be able to give me some advice on that.”
- “I have an overnight storage heating system so I wanted more support on how to use this.”

4.3.2 Support received/accessed

All participants were prompted with a list of the possible support that they should have received over the course of the pilot and were asked to confirm which types of support they recalled receiving / accessing.

Figure 13: respondent recall in response to the evaluation survey of receiving/accessing different pilot support elements, split by cost group and region¹⁶



¹⁶ Note: In order to ensure comparability only support elements that were offered to all householders are included in this figure

Where support had involved either talking to someone or actively doing something then recall of this support was high with 80% or more of all participants across both high and low cost intervention groups recalling receiving/accessing advice over the phone and the experiments that were suggested. Where these parts of the support were not recalled this could, in some cases, reflect those participants who ceased to actively participate in the pilot soon after initially agreeing to do so. Where support did not involve either talking to someone or actively doing something then recall of this support was low. This low level of recall could have been due to the lower level of prominence of these parts of the support within the pilot. Overall, recall of the specific elements of the support offered by the pilot was broadly similar regardless of region or level of intervention. Similar recall by region indicates consistency of the offering in each area. The only disparity is the slightly greater engagement with social media tools in the south east, although this was low for both regions.

The fact that recall of support amongst low cost participants was as high, or in some cases higher, than that of high cost participants is surprising. However, the depth/level of recall of advice interactions was not explored.

Home visits

As noted earlier in the report not all householders were offered a home visit and where they were offered there was relatively little interest in having one. However, where they were taken up home visits were deemed very useful by both recipient and advisor. Respondents to the survey who had received a visit described the value of being shown how certain controls worked/certain changes could be implemented: *“The home visit was good as they showed me how to make the changes.”*

Where householders could recall a visit being offered [four cases], respondents were asked why they had declined this. In three cases they cited the logistical challenge of arranging a visit (*“I am out of the house a lot”*) and in one case the respondent could not see any value in it: *“I could do everything he was suggesting myself so I didn't see the need for a visit to be honest.”*

This latter reason was the one cited by advisors in explaining low take up of the home visits; most participants felt that they could cope well with the experiments and did not need a visit to help them to implement these. This is a positive finding.

Smart thermostats

Where householders could recall a smart thermostat being offered [two cases], one respondent did not see the need/value of installing, whilst another recalled having made an initial enquiry about getting one.

One advisor noted that for some potential participants the offer of the free smart thermostat had the adverse effect of making them perceive the offer of additional support as a sales pitch, and therefore made them wonder what the ‘catch’ was i.e. the intended incentive instead became a source of suspicion for some customers.

4.3.3 Changes made

Extent to which participants changed behaviour

All respondents were asked whether - at the time of the support – they had made the changes recommended by HES - or any additional changes - to the way they heated their property / managed their heating. Overall 74% of participants reported having changed at least one heating-related behaviour during the pilot. Although there are large confidence intervals when comparing small sample sizes, Figure 14 provides some interesting contrasts between certain groups. ¹⁷:

¹⁷ There were no strong correlations between changes being made and household income or insulation levels.

Figure 14: the proportion of pilot participants – and sub-groups within this population – that made changes during the pilot support, based upon responses to the evaluation survey

Group	Categories within the group [with sample sizes of each sub-group in brackets]	% of the category taking action
Overall [N=137]		74%
Region and support type	South east High Cost [N=46]	76%
	South east Low Cost [N=45]	89%
	North east High Cost [N=21]	76%
	North east Low Cost [N=25]	44%
Evaluation survey response as to main motivation for participating in the pilot	Saving money [N=102]	76%
	Improving comfort [N=21]	91%
Occupant numbers	Respondent is the only occupant [N=58]	71%
	Multiple occupants [N=79]	75%
Evaluation survey response from multi-occupancy households on alignment of heating preferences	All occupants have fairly similar heating needs and preferences [N=56]	84%
	Heating needs and preferences amongst occupants vary considerably [N=23]	56%
Response to evaluation survey question seeking recall of property temperature pre-pilot participation	Much too cold [N=4]	100%
	Too cold [N=25]	92%
	Comfortable [N=67]	58%
	Too hot [N=33]	82%
Response to evaluation survey question seeking respondents' perception of control over heating pre-pilot participation	Much too hot [N=8]	100%
	Low [N=56]	84%
	Medium [N=56]	71%
	High [N=26]	54%

Of particular interest is that:

- In terms of region and support mix, the high cost offers in both regions resulted in identical proportions of participants changing their behaviour. However, there was a clear disparity between regions in terms of low cost offers with the south east low cost group being the most likely to have made a change to their behaviour.
- Those whose principal motivation to take up the support offered was cost savings were those less likely to have changed their behaviour (76%) than those seeking comfort (91%).

- There were fewer multiple occupancy households with varying temperature and/or comfort preferences that had reported making changes to their behaviour than multiple occupancy households whose occupants did not have varying temperature and/or comfort preferences.
- Those whose felt their properties were already comfortable were less likely to have made at least one change to their behaviour.
- Similarly, those who felt that they already had a high degree of control over their heating systems were the less likely to have made at least one change to their behaviour

Amongst those participants who had not made changes, the most common reasons given seemed to align with this latter finding i.e. respondents stating that they were already doing the things that HES suggested. This could explain the overall lower level of implementation of advice in the north east, where – as noted by the advisors – there were generally fewer things to recommend than for gas central heating and controls on storage heaters are arguably more straightforward (although less intuitive) i.e. those in the south east had a greater likelihood of learning something new.

Reasons given by participants for not making changes included:

- *“I was already keeping the thermostat quite low and turning radiators up and down as I needed them anyway.”*
- *“I was given some advice about the thermostats, but I don't know how to use it or do what they told me to do so I left it.”*
- *“When the information came through there was a lot going on and I didn't get round to it straight away..... I might try in the autumn.”*
- *“I was doing it all anyway - adjusting radiator valves, keeping the boiler thermostat low, keeping the heating off when we didn't need it.”*

It is also worthwhile noting that responses to the questionnaires completed during the pilot show that 15% of participants found the suggested experiments hard to do (this group overlapped strongly with those that did not implement) and 36% were not convinced that the experiment worked for them or their home.

Specific behaviours adopted

The figure below provides a summary of behaviour changes reported by respondents. The questions were asked in an open ended way with no prompts so there is the possibility that

some respondents may have forgotten to mention one or more changes if they had made several:

Figure 15: extent to which different experiments were cited by respondents when asked to describe changes made during the pilot [n=44; N=101]

Experiment	No. of respondents [N]	Examples of specific changes made
Turning down / off radiators	32% N = 43 n = 22	<ul style="list-style-type: none"> • “We turned two radiators off as we don't need them in those rooms.” • “I have turned down all radiators, even turning some of them off because the rooms were too warm.” • “We turned down all the radiators in the house from the highest setting to around 3.” • “HES suggested turning off the radiators in the rooms I don't use and turning them down in others. They were all on 4 so I turned the ones in the bedrooms down to 2. I turned the one in the hall down to 2 but it was too cold so I turned that one back to 3 and I have kept the one in the living room at 5.” • “I turned the radiators down a notch (I had it on the highest level 5 but now it is on level 3).”
Turning central heating down	32% N = 43 n = 22	<ul style="list-style-type: none"> • “We turned the main thermostat in the hallway down to 18 from 21.” • “We turned down the thermostat on the boiler (it was at 4 and we turned it down to 3.5 and then 3). They advised not to go lower than that.” • “We turned the heating on the boiler down a notch and about a month later turned it down a bit more - we didn't actually notice the change in temperature.” • “The boiler was on far too high. My son is a plumber and he turned it down for us.” • “Turned the thermostat down - used to be on 22 but reduced it to 18.”
Altering of input and output on storage heaters	18% N = 25 n = 14	<ul style="list-style-type: none"> • “I've changed how I use the storage heater. I turn it down during the day and turn it up at night. Before it was always set at 6, never touched it. I was leaving it on all day.” • “Turned down the input on the storage heater by 1.” • “They told me about using the temperature boost in the evening.” • “I had the output and input settings wrong; they are both at 3 now whereas they were at 6 and 2 before.”
Putting the heating on less overall	10% N = 14 n = 7	<ul style="list-style-type: none"> • “It was mostly what I was doing anyway but they did suggest not having the hot water on all the time if I wasn't using it so I only have it on two or three times a week now.” • “Shortening the length of time the heating was on - so half an hour less in the morning and half an hour less at night.”

Persistence

Where they had carried out at least one experiment, participants were asked if they had sustained these or whether the change was a one-off that did not work for them. The vast majority of respondents (95%) said that they were persisting with the change(s); even where some experiments were temporarily redundant – due to seasonal changes – respondents expected to re-use the approaches in colder months. Only two respondents had not sustained the changes at all; in both cases this was due to feeling too cold. The nature of the

experimental approach meant that householders were empowered to make small and simple changes that were reversible. They could therefore continue with those that suited them and discontinue those that did not.

To further explore participants' propensity to sustain behaviours, those who reported carrying out at least one experiment were asked how confident they were that they would sustain these:

Overall, 86% of respondents were either very or quite confident that they would sustain the behaviour. Those respondents that responded that they were quite confident, not very confident or not at all confident were then asked why they felt this way. Responses varied from those definite that they would discontinue the changes (due to feeling uncomfortable) and those who envisaged potential discontinuation due to certain circumstances:

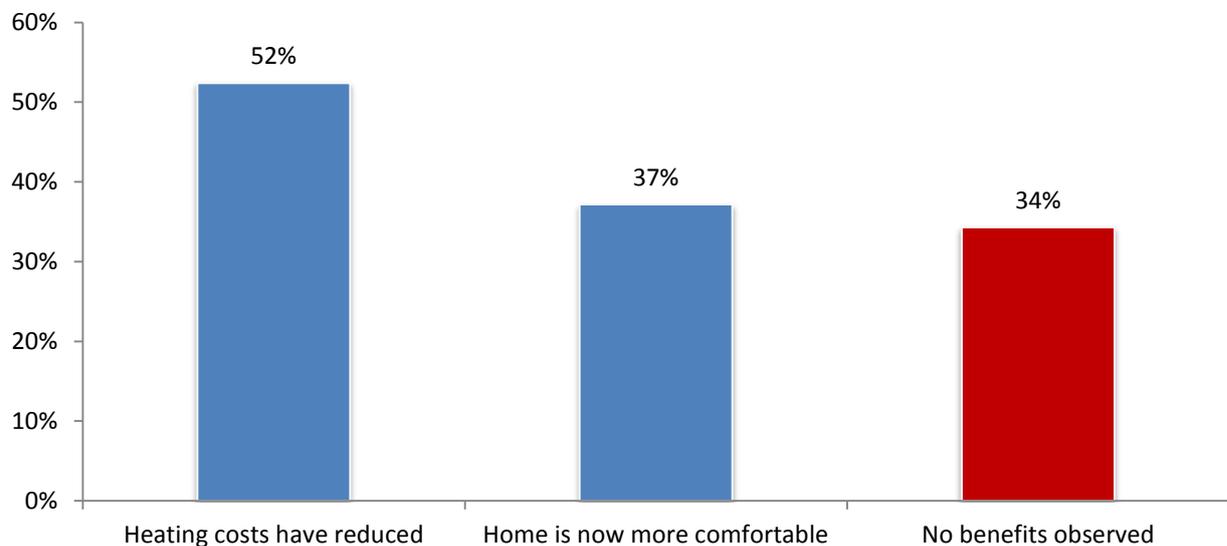
- *"The changes didn't work for us at all, didn't make a difference to our bills."*
- *"A setting of 1 on my heating is too cold for the winter."*
- *"Lowering the temperature by 1 degree made it uncomfortable to sit in."*
- *"I have already gone back to how it used to be as it wasn't working. Was too hot and was costing more. But I would be happy to try doing something else."*
- *"I have left it as it is for the moment. But I am not very confident I will keep it because the water isn't quite as hot as it used to be."*
- *"It depends on the winter. I'll give it a go though."*

The level of confidence aligns closely with responses to the questionnaire completed mid-pilot, whereby 15% of implemented experiments were not expected to be continued.

4.3.4 Benefits of changes

All participants that had made changes to their heating related behaviour were asked whether or not they had seen any benefits resulting from the action taken:

Figure 16: benefits observed by participants subsequent to implementing experiments [n=55; N=105]



Around two thirds (66%) of respondents had already observed at least one benefit as a result of implementing the pilot experiments. However, in some cases participants found it hard to disaggregate these benefits from those resulting from the HEEPS: ABS improvements. Even where they had not observed benefits, the reason given by most respondents was that it was too early to tell. They did not assert that there were not benefits. In addition, some respondents who made regular fixed payments for their heating (e.g. monthly direct debits) didn't expect to see a financial benefit until the current charge was reviewed.

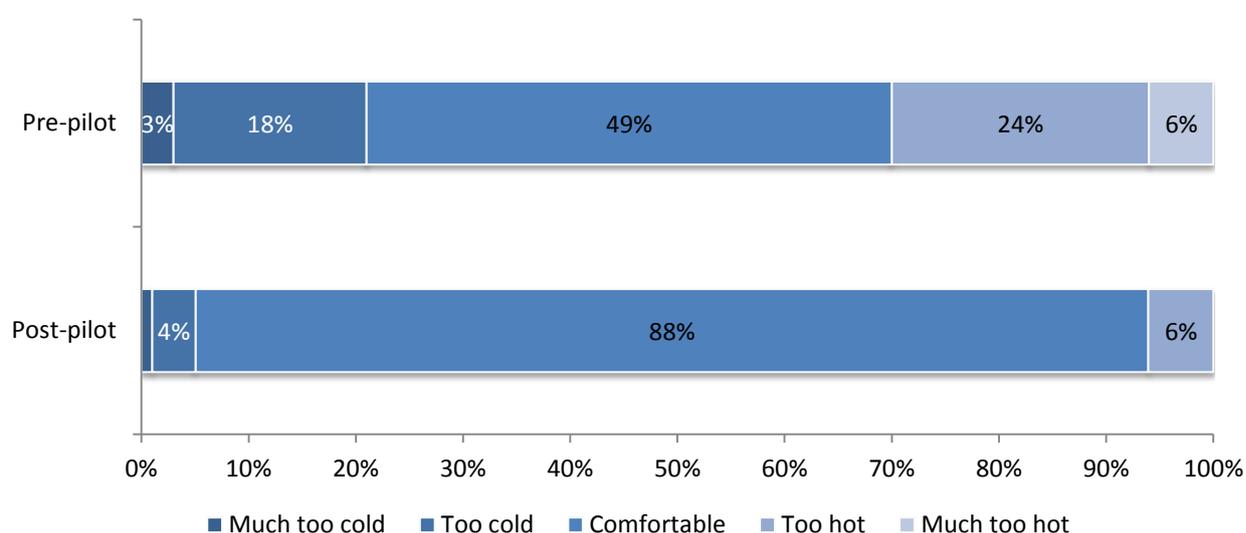
Where they had observed / felt benefits, descriptions from respondents included:

- *“The house is a lot warmer since we set the heating. It is better controlled - before it was too hot then too cold.”*
- *“Lower bills and the house stays warmer for longer as we have the heating on for longer on a low heat setting. Previously we had the heating on full blast.”*
- *“The house is comfortable and I received a letter from our gas supplier saying that they were reducing my bill by £10 a month.”*
- *“The house is still warm but it's costing less to heat it. I'm on a pay meter so I can see the money lasts longer.”*

All respondents were asked to rate the comfort level of their property before the pilot and after it¹⁸. It is worthwhile emphasising here that all householders had had insulation measures installed before the pilot started. This together with the fact that questions about respondents' comfort levels were framed in terms of the behavior change pilot and the experiments offered means that we can be confident that the householders' reported comfort levels related to the period before and after the pilot interventions as opposed to before and after the installation of insulation under HEEPS: ABS.

Reported comfort levels can be seen in the chart below.

Figure 17: participant rating of home comfort levels pre and post pilot [n=72; N=137]



The chart shows an increase in reported levels of home comfort, such that 88% of respondents now (post-pilot) rate their property as comfortable, with only 12% now rating it as uncomfortable. This compares to 49% rating their property as comfortable and 51% rating it as uncomfortable pre-pilot.

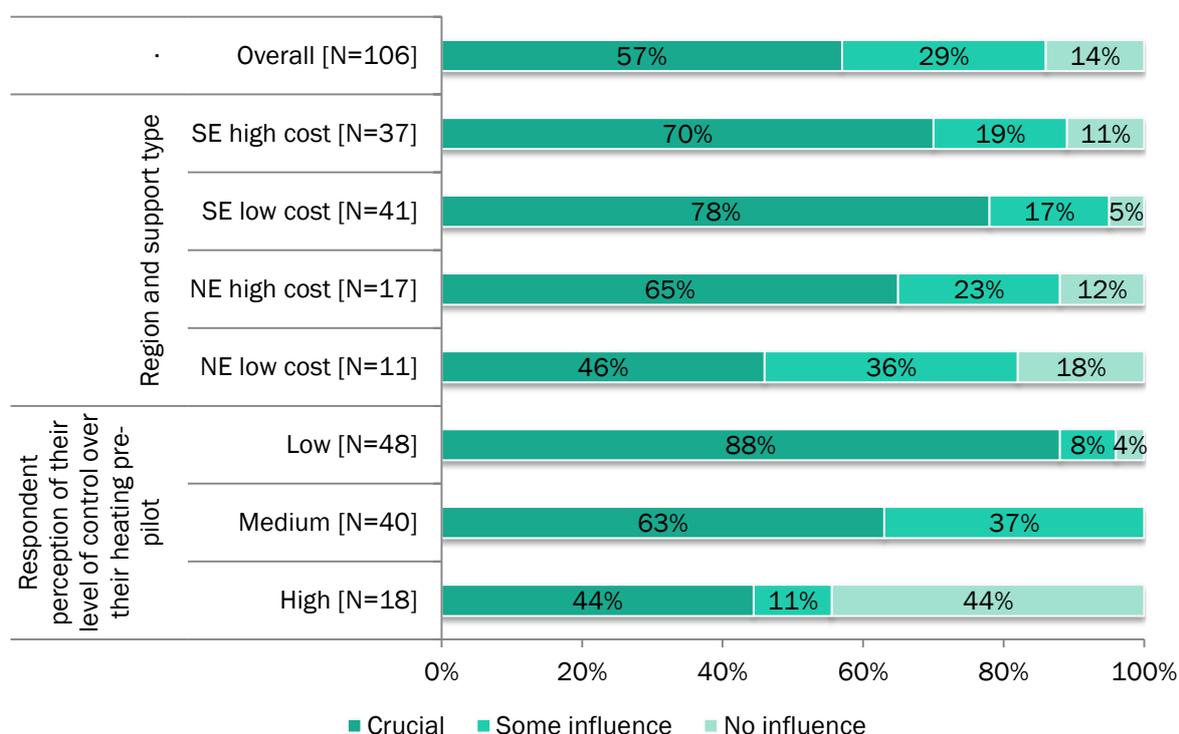
¹⁸ For clarity, both ratings were provided in the evaluation survey conducted post-pilot, therefore the pre-pilot rating from respondents is based upon recollection.

4.3.5 Attribution to the pilot and how participants thought it helped

Summary influence upon behaviour change

Where participants had at least temporarily made a change to their heating behaviour, they were asked to assess the importance of the pilot support to this; rating it either crucial, some influence or no influence:

Figure 18: extent of overall attribution of changes made to the pilot support



86% of those making changes at least partly attributed this to the pilot support and over half viewed the pilot as crucial to the changes made. Figure 18 mirrors a number of the findings outlined earlier which show whether – at the time of the support – participants had made the changes recommended by HES or any additional changes to the way they heated their property/managed their heating. Specifically:

- The south east support and high cost support in the north east enjoyed higher than average levels of attribution, whilst the north east low cost group were the least likely to attribute (though still 82% attributed at least in part).
- Those feeling least confident in their ability to control heating prior to the pilot were those most likely to attribute. 96% of this group at least partly attributed, with 88% reporting that the pilot support had been crucial to action.

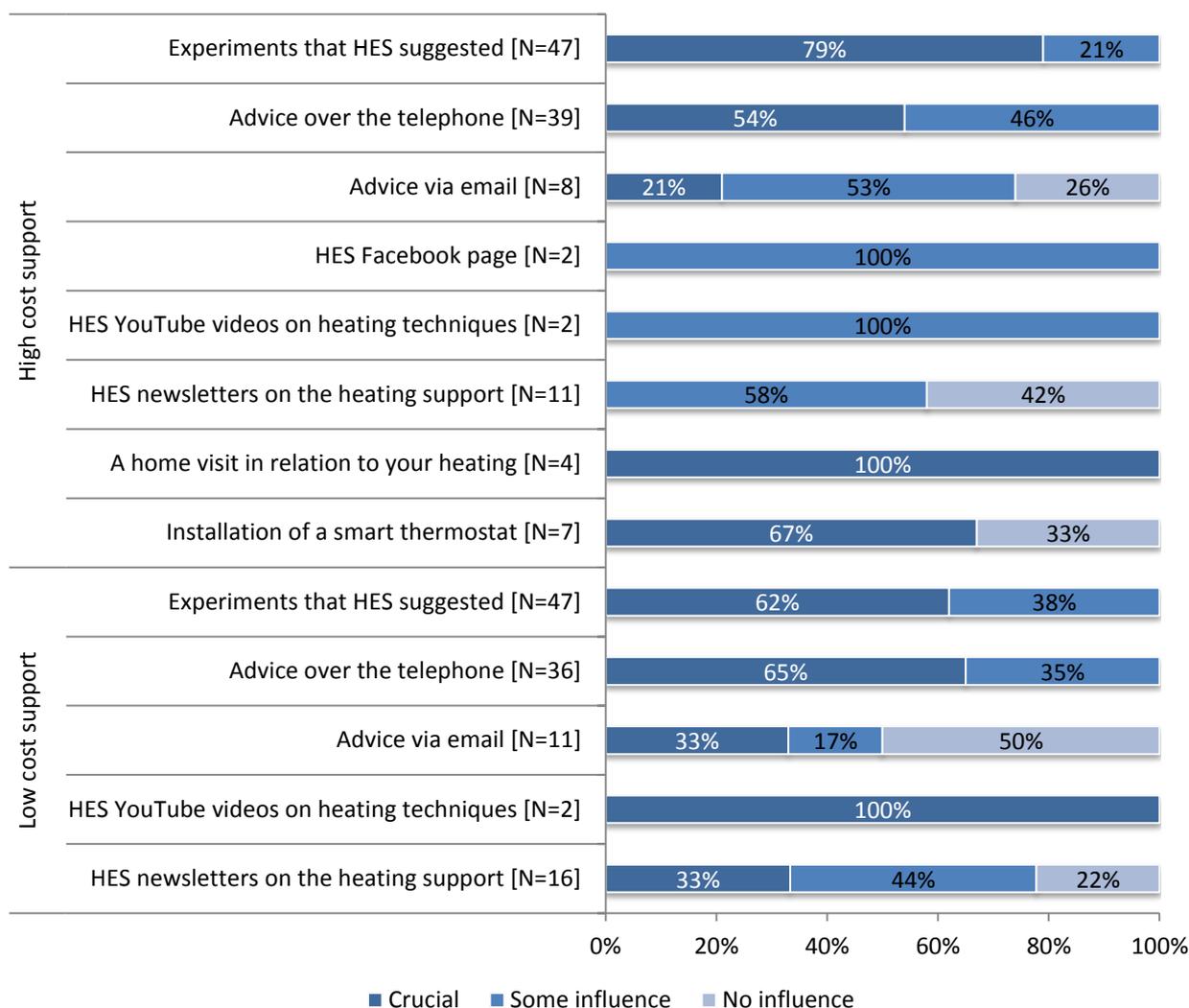
As another measurement of the influence of the pilot support upon action taken, those in the control group were asked if they had made any changes to their heating behaviour in the last year. 36% reported having done so¹⁹, less than half of the 74% of pilot participants that had made changes in a much smaller period of time. This further evidences the effect of the pilot in encouraging heating behaviour change.

Summary effects of different pilot elements

To better understand the elements of the pilot support that added most value, all respondents that had at least partly attributed change(s) to their heating related behaviour to the pilot were then asked to assess the contribution to this of the specific elements of the pilot that they had used. The results, broken down by high cost and low cost groups, are as follows:

¹⁹ Although not a true control group, the same figure amongst those that declined to participate in the pilot was 56%, again in the last twelve months.

Figure 19: attribution to specific pilot elements



Again bearing in mind the very small samples for some elements, the chart shows that:

- For all elements, at least half of those accessing them felt they had at least some influence on changes made.
- For comparable elements, attribution ratings for the high cost and low cost versions were broadly similar.

Ways in which the pilot support helped

All respondents who had made changes and provided an overall attribution rating were asked to explain that rating. For the majority that viewed the pilot support as crucial, the reasons given were almost always related to the fact that they would not have thought of making the change, or even been aware that it was an option, prior to receiving the advice. Other reasons given for rating the support provided as crucial related to HES providing

guidance on how to make a change that the participant would not otherwise have felt confident in making. Responses included the following:

- *“I wouldn't have thought to turn the water down if they hadn't suggested it.”*
- *“Without the support I wouldn't have thought to make the changes.”*
- *“Before I didn't think about touching the thermostat because I thought it would affect the heating and make it not work, but after the experiment I found that wasn't the case. If they hadn't phoned me up I wouldn't have done what I did.”*
- *“Without their advice and assistance I would never have made changes. The house would still be too hot and bills would be too expensive.”*

Where participants felt that the support had had some influence on the changes they had made and the resulting benefits, this tended to be because they had recognised the need to change their heating (due to discomfort or cost) and probably would have tried to do something, but not the same thing, or not as well, as they did after receiving the support.

Responses included:

- *“Our heating costs had been going up constantly so we were already thinking about ways of reducing our bills. We have had our boiler for years and it hadn't crossed our minds to turn it down.”*
- *“I was trying to be more efficient but the programme was influential. I already switched off the heating when it was not in use but then I was advised to turn it down when on as well.”*

Where participants felt the support had been of no influence [n=5], this related to respondents having tried experiments and feeling that they had not delivered any benefits or, in some cases, that they had resulted in unintended detrimental outcomes. These respondents therefore acknowledged that the pilot influenced them to try the experiment, but they could not attribute any subsequent benefits to having done it.

It is also important to note that even where participants did not make changes to their heating related behaviour, many still found participation useful from the point of view of confirming and reassuring that they were already doing the right things / as much as they could to control comfort in their property.

The advisors delivering the pilot were also asked for their insights on the effectiveness of the pilot. The key elements highlighted were as follows:

- The provision of experiments one at a time was felt to have ensured a better level of implementation (compared to presenting participants with a range of experiments at the same time). Those surveyed felt that because participants were making changes one change at a time they were able to assess the impact of each change separately. Had they made a number of changes concurrently this would not have been possible and participants would not have known what adjustments to make had there been a loss of comfort. In addition, one advisor felt that the pilot was effective because they (the advisors) were given the autonomy to decide which experiments to recommend in which order to which customer. This meant that the advisors would tailor the experience and provide bespoke advice depending on participants' circumstances and priorities.
- One advisor described how issuing the experiments one at a time enabled them to start participants with *"an easy one, such as turning down the radiator valves"* and then build participant confidence up to experiments they may have viewed as too challenging if these had been recommended at the outset, such as changes to boiler settings: *"some customers thought that change was for an engineer to make!"*
- Encouraging householders to participate in an ongoing communication with HES (as opposed to a one-off communication) was felt to have played an important role in delivering the reported levels of behaviour change. All advisors talked about the benefit of being able to build a relationship with the customer over multiple interactions, and in doing so they felt they were able to build trust and improve participants' likelihood of acting.
- The team found it hard to gauge the impact of the pilot's social norming element (i.e. focusing on emphasising that others in the area were involved and making changes to their use of their heating systems), partly due to the disparate geography of the participant group. No participants mentioned this type of pressure when discussing why they took action and very few participants engaged with the Energy Saving Trust (Scotland) Facebook page, which was intended to act as a hub for social norming.

Over the course of the pilot (i.e. not as part of the formal evaluation) advisors also highlighted that:

- They would welcome more information on the financial savings householders might expect to make from improved use of heating controls. If it was possible to provide this information advisors felt that they would be able to provide householders with greater clarity about the benefits that might be achieved.

- Where a HEEPS: ABS scheme was comparatively recent, the advisors found there was more interest from householders in taking part in the pilot.
- When face to face with a householder in their home, it made sense to provide a householder with the full range of advice and support on how to use their heating system, rather than limit the visit to discussing a single experiment.

Participant knowledge

Participants were asked to what extent participation in the pilot had enhanced their ability to manage the heating in their property. Participants rated their degree of control over their heating pre and post pilot²⁰:

Figure 20: participant rating of their control over their heating system pre and post pilot [n=72; N=137]

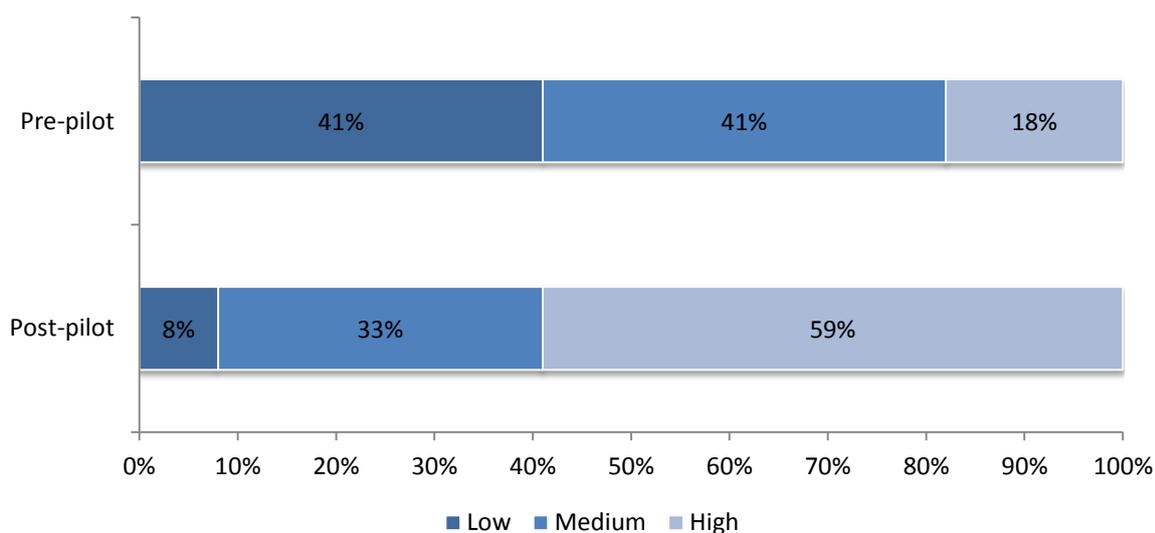


Figure 20 shows a threefold increase in the proportion of participants reporting the degree of control they have over their heating system as high and a fourfold reduction in the proportion of those rating their degree of control as low.

Participants were also asked about the extent to which they agreed with three statements about improved control over heating subsequent to the support:

²⁰ For clarity, both ratings were provided in the evaluation survey conducted post-pilot, therefore the pre-pilot rating from respondents is based upon recollection.

Figure 21: extent of participant agreement with three statements concerning pilot influence on their ability to manage heating in the property [n=72; N=137]

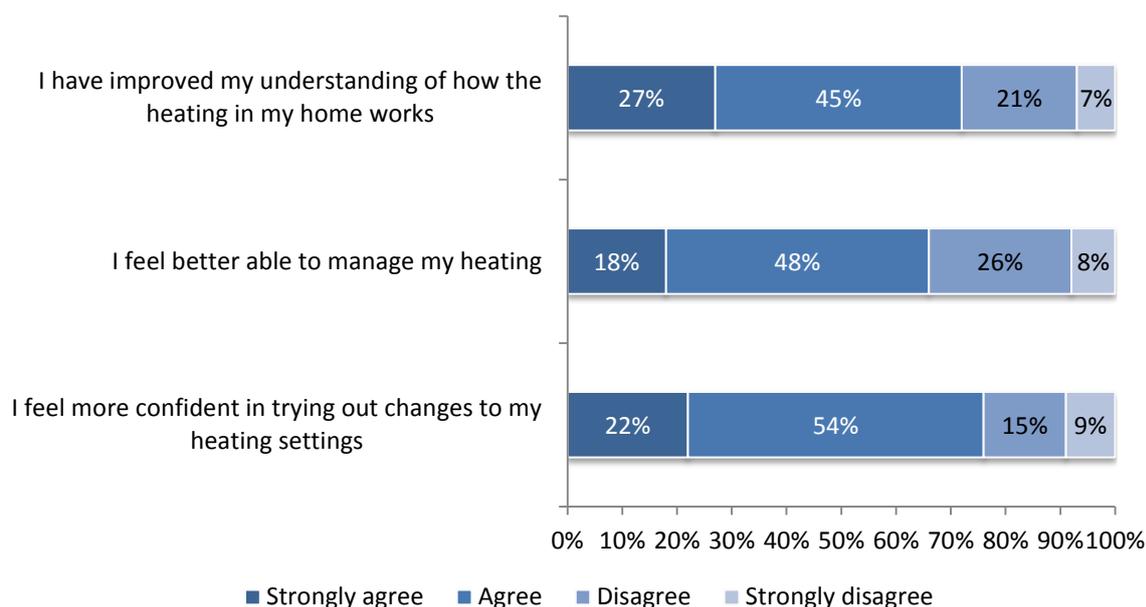


Figure 21 shows that for each statement, a clear majority of respondents agreed. Even where they did not, this was usually because they felt their understanding was already good. These results support those in the questionnaire completed during the pilot, in which 91% of participants felt that – subsequent to the experiments being shared - they could now more effectively manage their home heating. Responses from participants regarding the improvement in their knowledge and understanding of their heating included the following:

- *“Before I was scared to use them in case I was doing it wrong and I get panicked about it. They explained it to me in a way I could understand.”*
- *“I would now be able to make my own changes if I needed to. Before the support, I was just putting it on randomly. I can now work it on a schedule that suits me.”*
- *“Before I would just leave things because of how they were set up. Now it's been pointed out, I'm confident with it.”*

4.3.6 Satisfaction

Participants were asked to assess the extent to which their initial expectations of the support offered had been met. More than half of those able to assess this²¹ felt that their expectations had either been met or exceeded. Where expectations had not been completely met in most cases this was because the pilot had either not provided the

²¹ 16% felt that it was too soon to assess as they have yet to assess heating costs subsequent to making changes.

participant with any new ideas, or had provided them with ideas that ultimately did not generate benefits/were not appropriate for them. Despite this 84% of respondents rated themselves as either satisfied or very satisfied with the pilot overall (91% of high cost participants were either satisfied or very satisfied compared to 77% of low cost customers). Participants were also asked to weigh up the benefits derived from the pilot against the time/effort it required of them, and assess whether or not it had been worth participating – 82% felt that it had been. The split between high cost and low cost participants was 85% and 80% respectively.

Participants were also asked if they could recall anything good about their pilot experience or anything they did not like/did not think worked well. Aspects that participants felt were good included:

- The provision of new ideas
- The clarity of the guidance
- The manner of the advisors
- Establishing key profile information from the outset
- Provision of guidance by post/e-mail to better enable recall

Aspects that participants felt didn't work as well included:

- E-mails going straight to 'junk' folders
- Inconvenient calls
- Advice that was insufficiently tailored

5. Conclusions and recommendations

At least 96 separate interactions with heating systems were generated by the pilot (i.e. at least 96 experiments were carried out). The true figure is likely to be higher because there are likely to be householders who tried experiments but simply did not provide any feedback. This is likely to be particularly the case for the low cost intervention group as they were not called by advisors in order to record feedback. The evaluation results showed that those taking part in the pilot were those who would be likely to benefit from additional support to help them use their heating systems more effectively. The results also showed that the interventions being trialled were a success.

The advice and support provided during the pilot resulted in significant reported behaviour change, increases in householders' reported levels of comfort in their homes and increases in the degree of control they had over their heating systems. It also encouraged householders to try out changes they would not have thought of making, or even been aware that they were an option, prior to receiving the advice. The advisors who supported householders over the course of the pilot felt that the iterative approach to experiments, advisor autonomy in selecting experiments, and the long term contact with participants, played a key role in allowing them to provide an effective support service to encourage behaviour change.

However, it proved a significant challenge for advisors to get to speak to householders in the first place and some aspects of the pilot worked better (e.g. the use of experiments) than others (e.g. the impact of social media was limited as was interest in home visits and smart thermostats).

The pilot's largely positive results suggest that there could be benefits associated with making this kind of support more widely available. However, if this is to happen it will be important that the lessons learned – in terms of what has worked well, and what has not worked so well – are considered and improvements made to any future methodology. Specifically, we believe it will be important to:

- **Ensure that the provision of heating related advice is integrated into HEEPS: ABS schemes (or other relevant schemes) from the beginning of those schemes.** This would mean that householder data could be shared with HES opening up a significantly larger pool of householders that could benefit from such

enhanced advice. In addition, householders should be easier to contact for a number of reasons:

- Householders could be informed from the beginning that, as part of the support they were receiving, HES would be contacting them about using their heating more effectively. Schemes could request a commitment from customers that, as a condition of receiving the physical measures such as insulation and heating systems, they agree to participate with the experiments and provide on-going feedback.
- When they sign up for a HEEPS: ABS scheme householders could be asked for the correct telephone number to call them on and suggest suitable times for calls.

This, together with the fact that householders may be more receptive to advice if they see it as an integral part of the support and measures they are receiving under a HEEPS: ABS or other relevant scheme should mean that more householders could benefit from such advice.

- **Maintain the use of experiments.** The evaluation suggests that the use of experiments has been successful. Of all the respondents that had at least partly attributed change(s) to their heating related behaviour to the pilot 100% of those in the high cost and low cost intervention groups said that the experiments had either been crucial (79% for the high cost intervention group and 62% for the low cost intervention group) to or had had some influence (21% for the high cost intervention group and 38% for the low cost intervention group) on their reported heating related behaviour change. The experiments also suggested changes that many participants would not have thought of, been aware of, or simply were not confident enough to make. This suggests that there would be merit in using this approach, rather than more standard advice as at present, as part of future activities to encourage householders to get the most out of their heating systems. It would also be useful to consider expanding the coverage of the experiments to cover other fuels (e.g. oil fired central heating or plug in heaters²²)
- **Explore how reinforcing advice via social networks could be enhanced.** The evaluation suggests that the impact of social media appears to have been limited. Given this and the available evidence²³ of the important role that social networks can play in reinforcing advice we believe that further work should be undertaken to

²² This might need to consider how to encourage households to use the most cost effective heating system(s) where they have a choice, such as an electric panel heater or a storage heater.

²³ Ref: The pilot's literature review

explore how this aspect could be enhanced in future offerings. This could include working with local marketing staff at the advice centres and with the Energy Saving Trust's marketing team to ensure that activity is better targeted and timed for greater impact and resonance with participating householders.

It is difficult to comment conclusively on the impact of home visits and smart thermostats and whether or not they should feature in future activities to encourage heating related behaviour change due to the low interest from participants and the consequently small numbers of households that received these. There was not significant interest in receiving home visits or smart thermostats. However, given that where they were received householders appeared to value them it may be prudent to maintain these aspects as part of any future offering. In line with the pilot's findings these should be offered at the discretion of the advisors.

5.1 Recommendations for any future pilot or roll out - possible options for the future provision of enhanced heating-related advice

The Scottish Government has asked for this report to include recommendations for a future pilot, or wider roll out of a programme to encourage people to make the best use of their heating controls. The Scottish Government should consider taking the following recommendations forward:

- **Run a further pilot that is integrated with one or two local authority HEEPS: ABS schemes.** This option would build on the lessons learned over the course of this pilot and involve an enhanced pilot that would be integrated with a new HEEPS: ABS scheme (i.e. the provision of enhanced heating-related advice would be an integral part of a HEEPS: ABS scheme or schemes from the start of that scheme or schemes). This would have a number of benefits. Specifically it would mean that householder data could be shared with HES opening up a larger pool of householders that could benefit from such enhanced advice. This, together with the fact that householders should be easier to contact for the reasons outlined in the conclusions above and the fact that householders might be more receptive to advice if they see it as an integral part of the support and measures they are receiving under a HEEPS: ABS scheme should mean that more householders could benefit from such advice.

We envisage that this integration would be the key difference between any new enhanced pilot and the current pilot. It would however, clearly also make sense for tweaks to be made to the methodology for any new pilot to ensure that other lessons

learned from this pilot (e.g. enhancing the methodology around reinforcing advice via social networks) are taken on board

We recommend that a small number of HEEPS: ABS schemes are used as the basis of a future pilot that would test such a revised methodology. This would seem like a sensible way to beta test any wider roll out. It would provide the opportunity to include all the lessons learnt from this pilot and refine techniques.

A further evaluation would be required to assess the extent to which the changes do or do not result in proportionally more householders benefiting from such advice.

- **Run a further pilot that is integrated into the Scottish Government's HEEPS loans scheme.** This option would also build on the lessons learned over the course of this pilot, but instead of working with HEEPS: ABS clients it would seek to work with clients of other Scottish Government support programmes – in particular those in receipt of HEEPS loans. In doing so it would focus on the integration of enhanced heating related advice within a different programme and the delivery of such advice to a different demographic.

As with the option above, the fact that householders should be easier to contact and the fact that householders might be more receptive to advice if they see it as an integral part of the support and measures they are receiving under a HEEPS loans scheme should maximise the number of householders that can benefit. In addition, because the HEEPS loans scheme is administered by Energy Saving Trust householder data would be able to be shared with HES from the outset.

Again, a further evaluation would be required to assess the extent to which the changes do or do not result in householders taking out loans benefiting from such advice, and the impact of targeting support at a different demographic.

There are, of course, other options for a future pilot, or wider roll out of a programme, to encourage people to make the best use of their heating controls. These include:

- The integration of enhanced heating-related advice into *all* Scottish Government supported energy efficiency programmes (for example all HEEPS: ABS schemes, Warmer Homes Scotland, Scottish Government funded loans schemes etc., etc.).

However, this approach would arguably be going too far too soon. If a wider roll-out were to happen it would be important that it was done correctly and to do so would require that the approach is refined and tested further and that lessons are learned from doing so.

- The integration of enhanced heating-related advice into the HES advice offering. This option would involve all of the HES advice centres and their advisors using the methods and materials that have been developed during this pilot and offering enhanced heating-related advice to their clients. The experiments would be offered to callers who indicated that they had difficulty with, or wanted more information about, using their heating systems. However, as noted in the workshop with advisors at the beginning of the pilot, most householders don't call specifically about their heating systems. This together with the fact that a normal advice call covers a considerable amount of information means that the impact of such advice could be diluted.

We believe that it would make sense to consider these additional options after the options recommended above have been evaluated. This would allow important insight relating to both the impacts of integration and targeting a different demographic to be gathered and this could then inform consideration, and if appropriate implementation, of these additional options.

6. Acknowledgements and thanks

The Energy Saving Trust would like to thank the steering group who met over the course of the project to take feedback and provide input and guidance.

The steering group consisted of all the participant organisations, namely:

The Scottish Government

Changeworks

SCARF

Home Energy Scotland

The Energy Saving Trust

In addition the Energy Saving Trust would like to thank the advisors and staff from the two Home Energy Scotland advice centres who threw themselves into the pilot with such enthusiasm and commitment. They were essential for the pilot's success.

7. Appendices

The 13 ‘experiments’

Electric storage heating experiments	Gas central heating experiments
<p><u>Storage heater output controls</u></p> <p>This experiment explains the operation of the output control. It encourages the householder to turn down the output unless a room becomes cooler in the afternoon or evening, in which case the output control should be turned up. The householder is reminded to turn the output back down to minimum before going to bed.</p>	<p><u>Thermostatic radiator valves for gas central heating</u></p> <p>The experiment explains the operation of thermostatic radiator valves (TRV). It asks the householder to check the settings of each TRV, initially aiming to set them at a midpoint on their scale. It then goes on to ask the householder to try adjusting their TRVs further, e.g. TRVs in bedrooms can have lower settings.</p>
<p><u>Storage heater input controls</u></p> <p>This explains that the input control determines how much heat is stored overnight. It explains that if it is colder outside then more heat will be needed by turning up the input. The householder is asked to adjust the input of their storage heater depending on whether they have sufficient heat at the end of the day. For example, if they have more than enough heat at the end of the day they can try turning down their storage heater by ‘1’, or up if the house feels cold. By making these small adjustments the householder can optimise their heating.</p>	<p><u>Room thermostats for gas central heating</u></p> <p>This experiment explains that a room thermostat turns off the gas central heating when a pre-set temperature is reached. It advises the householder to ensure their room thermostat is set between 18 and 21°C (or up to 23°C if older or unwell). If the room thermostat is already set within this range, the householder is asked to try turning it down by 1°C.</p>
<p><u>Hot water thermostats for electrically heated hot water</u></p> <p>This experiment explains that hot water in a tank should be heated to at least 60°C for health reasons, but that heating the water too much will waste energy. If the thermostat on the boiler is set above 65°C the householder is asked to try setting it at between 60 and 65°C.</p>	<p><u>Boiler heating controls for gas central heating</u></p> <p>This explains that the boiler heating control determines the temperature of the water in the heating system and this can affect how quickly the home heats up and the temperature of the radiators. The experiment asks householders to try reducing the boiler thermostat by 5 to 10°C (or one mark) if the home heats up quickly enough or the radiators are too hot.</p>
<p><u>Hot water controls for electrically heated hot water (note: for homes with storage heating)</u></p> <p>This tells the householder that the best way to heat hot water is overnight, to take advantage of the cheaper overnight electricity tariffs. The householder is encouraged to check that the water is being heated during the overnight lower electricity tariff period and that the daytime boost is switched off unless additional hot water is required.</p>	<p><u>Boiler hot water controls for combi gas central heating</u></p> <p>This experiment explains that the temperature of the hot water is determined by this control, and that the hotter the water the more energy is used. It asks the householder to try reducing the boiler hot water thermostat by one mark or 5°C.</p>

<p><u>Advanced storage heater timer controls</u></p> <p>Advanced storage heaters have timers to allow heat to be released at specific times of the day. The experiment explains that it is economical to have the heating on only when it is required. It provides suggested timings for when the heating should be on and asks the householder to set their timer according to these suggestions.</p>	<p><u>Hot water tank thermostat for gas central heating</u></p> <p>This experiment explains that hot water in a tank should be heated to at least 60°C for health reasons, but that heating the water too much will waste energy. If the thermostat on the boiler is set above 65°C the householder is asked to try setting it at between 60 and 65°C.</p>
<p><u>Advanced storage heater thermostats</u></p> <p>Advanced storage heater thermostats turn off the heating completely when a room reaches a pre-set temperature. The experiment recommends that the pre-set temperature should be between 18 and 21°C, or up to 23°C for people who are older or unwell. This experiment asks householders to check their thermostat is set within this range, and if it is to try turning down the thermostat by 1°C.</p>	<p><u>Hot water tank timing controls for gas central heating</u></p> <p>This experiment explains that it is not necessary to continually heat the hot water in a hot water tank. It asks the householder to try setting the timer for an hour in the morning and an hour in the evening, and thereafter to adjust the timings if more hot water is needed.</p>
	<p><u>Timer controls for gas central heating</u></p> <p>This experiment explains that it is economical to only have the heating on when it is required. It provides suggested timings for when the heating should be on and asks the householder to set their timer according the these suggestions.</p>

Example of an experiment

Each experiment follows a similar format as in the example below. The experiment combines advice and information. It encourages the householder to carry out simple reversible alterations to their heating that encourage the householder to use their controls more effectively.

Managing your heating: Storage heater output controls

The output controls on your storage heaters (sometimes called 'boost' or 'room temperature' controls) manage how quickly the heat is released during the daytime (usually by simply controlling a flap to let the hot air out faster or slower).



Photo copyright © 2015 [Changeworks](#)

Even when output is set to minimum, heat is still released from the storage heaters.

The best way to manage your heat from your storage heater is to turn your output down fully and let the heat escape slowly. This helps the heat to last the whole day.

Try the following experiment to more effectively manage the energy you use

If your rooms are warm or hot in the morning but cool down before the end of the day, turn down the OUTPUT on your storage heater to minimum when you go to bed.

- If it gets cool during the day, turn the output control up during the evening or late afternoon to let more heat out.
- Make sure you turn the output back down to minimum before going to bed.

See if you notice a difference in how your home or different rooms feel during the day. If the heat lasts longer throughout the day, or if your rooms are now not too hot in the morning when you wake up - congratulations, you are managing your heating better!

Remember

Storage heaters 'save up' electricity at night when it is cheaper - if the output control is not on minimum overnight you might be letting this heat out when you are asleep and not saving it for when you need it later in the day.

You could also try

If your heat still doesn't last the day, you might want to try increasing the INPUT controls on your storage heaters.

Examples of Facebook posts and newsletters

Posts to the Energy Saving Trust (Scotland) Facebook page were used to encourage households to think about their heating. Householders had been encouraged to like the Facebook page and the posts were intended to create a sense that other households were also taking part. This was intended to help create the sense that paying attention to heating controls was a normal behaviour and something many people did.



As well as regular posts to the Facebook page, householders were sent two newsletters. An example of the newsletter is given below. Once again these were intended to encourage households to feel this was something happening in their community.



Myth-busting

Below are some popular home heating myths:

Myth 1: Keep the heating on all the time, it's more efficient than switching it on and off

Fact: We recommend you switch the heating off when it's not required, and only heat the areas of your home that you need (i.e. turn the radiators off in rooms you're not using).

Myth 2: When it's cold outside, turn the thermostat up

Fact: The thermostat controls the temperature your home is heated to; it can't control how fast your home is heated up. Turning the thermostat up higher will not mean your home gets warm more quickly.

Myth 3: Keep the hot water on all day, it's more efficient than heating it when you need it

Fact: A well-insulated hot water tank will keep hot water warm all day. Heating it up through the day will mean you use fuel to top up the heat of the hot water, when it is staying sufficiently warm.

And lastly, should you keep your heating on if you are going away?

This one is not a myth. In winter you are best to heat your house to a low temperature when away, to avoid the possibility of burst or frozen pipes. When going away keep your heating on, but turn your thermostat down to around 10°C.

Interested in more home energy information?

Your local Home Energy Scotland advisor will be in touch soon with your next experiment. In the meantime if you have any other questions about improving the energy efficiency of your home please call us on 0808 808 2282.

Social media

For more information about saving energy (or to share tips of your own), search for Energy Saving Trust (Scotland) on Facebook and Twitter.



For clear and impartial advice, call Home Energy Scotland free on 0808 808 2282. Home Energy Scotland is funded by the Scottish Government and delivered by Energy Saving Trust.

Registered Office: 21 Dartmouth Street, London, SW1H 9BP

Literature review and workshop with Home Energy Scotland advisors

The full literature review is available on request.

The main points that emerged from the literature review and workshop were as follows:

Heating control use

A range of key findings related to householder heating control use. These are summarised in the following bullet points:

- Lack of engagement: heating controls do not appear to be something that households consider greatly.
- Know-how: difficulty of use of controls: heating controls are often difficult to use, typically this might be because they appear to be complex to use or because they may be situated in locations that are awkward to access or out of sight (e.g. heating controls hidden away in a linen cupboard).
- Know-what: householders may be unaware of the need to set heating for time periods rather than setting it to be on all the time.
- Limited belief that any difference will be made.
- Householders want more control and feedback on the use of their heating.

Levers for change

A number of levers for change were identified from the review, and these are summarised in the following bullet points. These identified levers provided the rationale for the experiments.

- There is no universal driver for change, no one thing that would encourage households to adopt more active effective control behaviour
- Social networks and trusted neutral agencies are important. This means that it is important to ensure that advice comes from a trusted neutral source and that this advice is reinforced through the use of social networks. The use of social networks can help to 'normalise' behaviours. Available evidence suggests that people are more likely to adopt behaviours that they think are normal.
- Relevance: the heating advice should be relevant to the householder who is being advised. This means that it needed to be bespoke and requires advisors to understand how a particular household uses their heating and ensures the advice fits those circumstances.
- A trial and error approach should work, where households are encouraged to try out small changes that they can reverse if they do not find them appropriate.

- Advice works best when it is more focused, avoiding generalisations.
- Advice is most effective when the focus is on stopping waste; improving use of current heating (i.e. making what you have work).

Feedback from the workshop with energy advisors

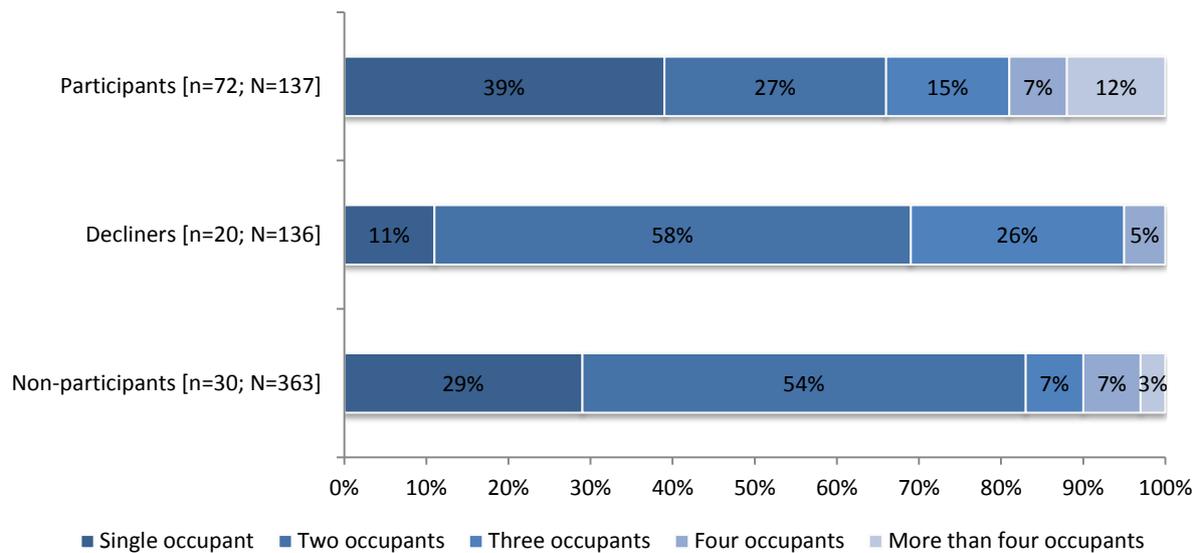
As part of the literature review, energy advisors were consulted on their views about delivering advice on using heating controls. The main points of feedback were:

- Households do not call specifically about heating controls.
- Household's expressed knowledge may not reflect reality.
- Advisors want to give greater certainty on impact of changes. They felt it would be useful to provide more information about the specific benefits of a particular action. "For example, 'how much will I save if I turn down my thermostat by 1 degree?'"
- There are numerous variations in heating system type. This is especially true for items like thermostatic timers which vary from model to model. The implication of this was that it becomes difficult to provide advice over the telephone on exactly how to set such devices correctly.
- There is not enough time in a standard advice call to cover controls (and limited opportunities). In a standard advice call, an advisor may cover a range of different topics and it would be difficult to add on another topic (i.e. heating controls) without risking that households find their calls to the advice centre overly long.
- There is a lack of feedback on heating control changes and whether these have been made or the difference any change has made.

Profile information for each sample (participants, decliners and non-participants)

Respondents to all three surveys were asked a number of questions about the household; this included the number of occupants (figure 22), the age breakdown of these occupants (figure 23), and household income (figure 24):

Figure 1: Breakdown of occupancy levels by survey group



All but one multi-occupancy household were related i.e. families.

Figure 2: Breakdown of the age band representation across the sample of households in each survey group

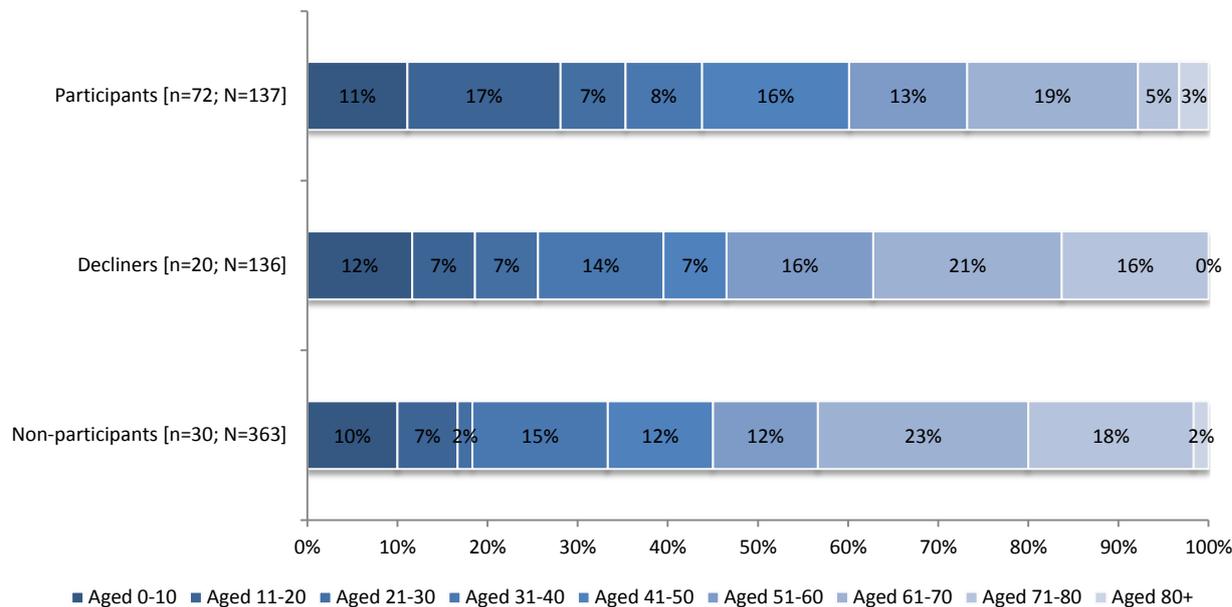


Figure 4: Annual household income band breakdown by survey group



Although only focusing on a small number of aspects, in terms of occupant numbers, age bands and household income the charts show no *statistically significant* differences between the three groups; this indicates that comparisons between the participant and control groups are valid.