

# Home Energy Events

Leveraging peer effects to increase the installation of energy efficiency measures in Ireland



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January 2020

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## Sustainable Energy Authority of Ireland

SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

SEAI is funded by the Government of Ireland through the Department of Communications, Climate Action and Environment.

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# Home energy events: leveraging peer effects to increase the installation of energy efficiency measures in Ireland

## Executive summary

Home energy events involve people from the local community inviting their neighbours, friends, and family to their homes to learn more about the importance of energy upgrades. An independent energy assessor provides energy efficiency information at the event and subsequently undertakes a free Building Energy Rating (BER) assessment of all attendees' homes, and advises them on how their homes could be made more energy efficient. The events are intended to increase the number of people that are more aware of energy efficiency upgrades, which should also lead to a higher number of people installing upgrades in their home.

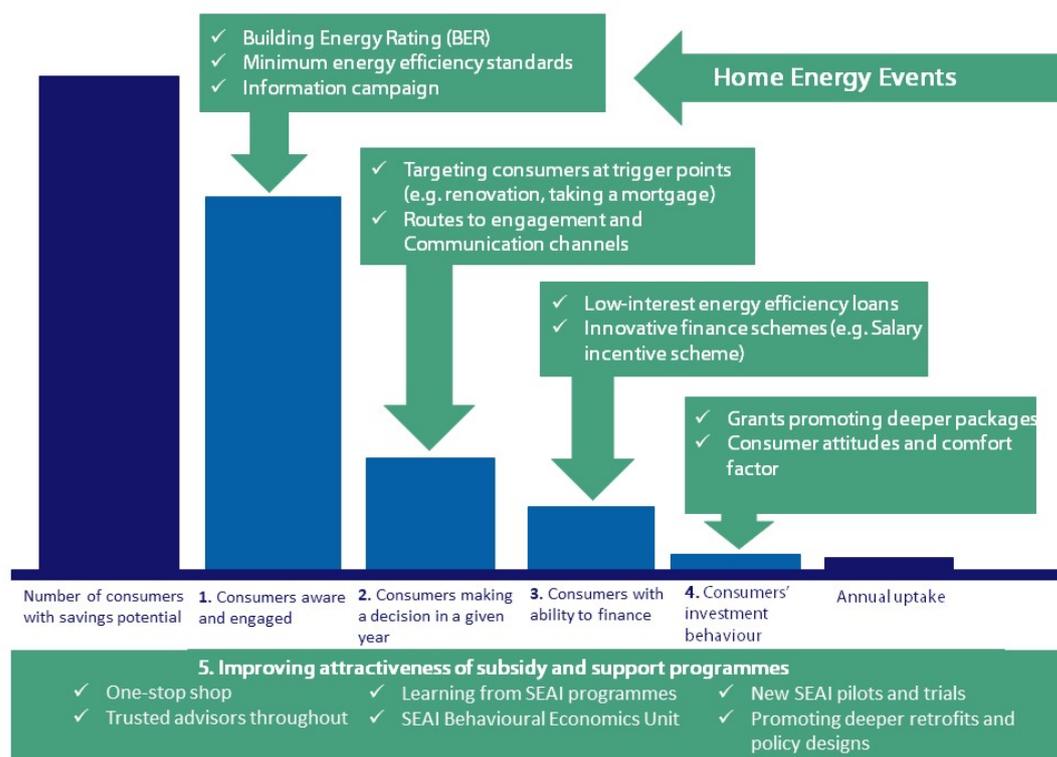
A significant number of homeowners could potentially attain savings through installing energy efficiency upgrades. However, as shown in *Figure 1.1*, only a small proportion of those homeowners actually install upgrades and avail of a grant.

Desk based research by the behavioural economics unit in SEAI found that hosting home energy events could potentially increase the number and depth of energy efficiency upgrades undertaken in homes in Ireland. To explore this further, a pilot programme was designed with the following objectives:

- To assess whether holding home energy events in Ireland was feasible and;
- Whether such events could be effective in increasing the number of energy efficiency upgrades completed in a community, compared to communities where no energy events are held.

The pilot would help to determine whether home energy events could encourage consumers to move from stage one (aware and engaged) of the consumer decision-making process to stage two (making a decision) and ultimately increase the annual uptake (see *Figure 1.1*). The home energy pilot event was designed to raise awareness of the benefits of conserving energy and support the decision-making process to install energy efficiency upgrades. It was not designed to tackle other barriers to retrofit, such as a homeowner's ability to finance the retrofit.

Figure 1.1: A conceptual framework of the consumer decision-making process



Results from surveys and interviews that SEAI conducted to evaluate the pilot programme indicated:

- An extremely high level of satisfaction with the information provided, and the format of the events. Satisfaction was high among both home energy event hosts and guests, both indicating strong intentions to install energy efficiency upgrades;
- The programme was therefore successful in generating awareness and engagement;
- **However, these intentions did not translate into action with very few hosts or guests installing home energy upgrades after a three-month follow-up period.**

The feedback from the pilot indicates that the process of installing energy efficiency upgrades is still considered costly and complex from the homeowners' perspective, with many failing to upgrade due to a lack of funds and lack of time. It is likely that multiple interventions, including customer support and access to finance, will need to be combined with programmes, such as the home energy event programme, if the number and depth of energy efficiency upgrades undertaken by homeowners are to be increased.

The programme generated a large number of learnings:

- There may be potential to modify and re-deploy the home energy event programme, potentially as part of other SEAI community programmes;
- For future home energy event programs to be a success, program managers should focus on reducing the lag time between events and BER assessments, as well as including decision deadlines and holding a wrap-up event in each area to encourage homeowners to invest in energy efficiency measures;
- The level of cost subsidisation required for the BER in future iterations of the home energy event format may be as low as €50;
- Other market players such as BER assessors and building contractors may be willing to provide discounted BERs to generate business, as is common practice in home energy event programmes conducted internationally.

| Pilot Programme Outcome  | Pilot Programme Outcome Achievement Rating  |
|--|---|
| Host and guest satisfaction  |  |
| Host and guest intention to install energy efficiency measures         |  |
| Successful Implementation of home energy events and follow-ups         |  |
| Hosts' and guests' measured installation of energy efficiency measures |  |

## Motivations for the pilot programme

### Literature review

As part of a joint research programme with Harvard Kennedy Business School, organised through Carr Communications, the SEAI Behavioural Economics Unit hosted a student of the 2018 class of Masters in Public Policy for a short research visit.

The visiting student conducted a policy analysis exercise which reviewed different options for leveraging peer effects to increase the installation of energy-efficient measures in Ireland. Peer effects occur when people are influenced by the behaviour of others around them. For example, a person might be more likely to install solar panels on their home if a number of their neighbours have installed them.

As part of this exercise, the student identified a number of case studies that examined the effectiveness of home energy parties, as well as a number of academic and grey sources that explored the role of peer effects in energy efficiency upgrade decisions.

The following section provides a brief summary of the literature on the relationship between peer effects and energy efficiency upgrades. It also contains a number of case studies of successful home energy party programmes undertaken in other countries.

### The relationship between peer effects and the adoption of energy efficiency upgrades

A number of studies show a relationship between peer effects and the adoption of energy efficiency upgrades. As the number of visible energy efficiency upgrades installed in an area increases, the rate of installation increases further, as people are influenced by their social interactions with peers such as neighbours/friends/family.

Bollinger and Gillingham, (2012) studied the diffusion of solar photovoltaic panels (PV) in California. They found that an additional installation of solar panels on a house increases the probability of another adoption in the same zip code by 0.78 percentage points. They found both a clustering of installations at the neighbourhood level, as well as an accelerated rate of installation in areas with more solar PV panels installed. As the number of installations in an area increases, the average size of the solar PV system size starts to increase, suggesting that peer information and adoption can reduce the perceived riskiness of installing solar PV. By looking at the street level, the authors also found that each installation increases the monthly probability of an additional installation by approximately 15 percentage points on the same street. These effects do not transfer to the zip code level suggesting that the peer effect decreases with distance. Similar effects are described in the UK by Richter, (2013).

Graziano and Gillingham, (2015) found similar results to Bollinger and Gillingham (2012). Graziano and Gillingham (2015) show that smaller population centres contribute to adoption more than larger urban areas. Adoption in small population centres takes on a wave-like centrifugal pattern, with peer effects decreasing as the distance from the installed system increases. These findings suggest that peer diffusion is more likely when the technology to be diffused is more easily visible. And that people may be more likely to receive useful information that will inform their investment decision from people that live nearby.

The adoption of other energy efficiency technologies is likely to be similarly influenced by peer effects leading to geographical clusters where these technologies become increasingly popular over time. An agent-based microsimulation approach conducted by McCoy and Lyons, (2014) shows that even if the total number of electric vehicle sales are low, electric vehicles can cluster tightly geographically even assuming only a mild peer effect. A study by Noonan et al., (2015) also found a modest geospatial clustering of residential heating and air conditioning system installations in the U.S.

There is less evidence available as to whether peer effects exist for less-visible energy efficiency measures such as internal wall insulation or attic insulation. Given that these upgrades are less visible, it may be expected that less peer effects are generated. But it is noticeable that there is no available evidence on the peer effects associated with external wall insulation, which is visible on the street level.

Peer effects can also be generated by explicitly comparing a person's behaviour to that of their peers. For example, peer comparison feedback, as typically delivered through home energy reports, compares a household's energy use to that of their close neighbours. A study by Allcott and Rogers, (2014) found that, not only do home energy reports encourage households to engage in habitual curtailment behaviours, but that they also encourage households to invest in small capital energy efficiency upgrades. This suggests that providing peer comparisons and feedback, which allow homeowners to benchmark their energy use against their peers, may also encourage them to install energy efficiency measures in their homes over time.

Structured community organisations such as SEAI's community network and grants may also generate peer effects, stimulating investment behaviours (Collins and Curtis, (2017)). This may occur because structured community organisations can deliver locally trusted information and provide people with access to contractors which help to convert their intention into action.

For example, Noll, Dawes, and Rai, (2014) found that the creation and maintenance of solar community organisations<sup>1</sup> in U.S. communities is likely to result in increased numbers of solar PV panels adopted in an area. The authors present four case studies of particularly successful solar community organisation. They found that a common thread of why they are successful involves effectively leveraging trusted community networks combined with putting together a complete information and financial-tools package for use by interested communities. This suggests that, not only is it important for people to be able to see and experience the energy efficiency upgrade and talk to their peers about it, which might provide the motivation to change their behaviour, but that they similarly need other supports to increase their capability of changing their behaviour.

### Implications for policymakers

Michie et al.'s, (2011) Behaviour Change Wheel, and associated COM-B model, of how policy interventions can change behaviour is a useful model to understand how policy supports, designed to leverage peer effects, may lead to increased investment in energy efficiency upgrades.

For example, programmes like Solarize Connecticut motivate people to install solar PV by amplifying peer effects and support capability building in communities. By providing fiscal measures (low-cost loans), communications and marketing, and services (for example sign-up assistance) through a trusted network, structured community organisations provide opportunities to allow homeowners in the community to act on their motivations. This combination of interventions, which provides capability, opportunity, and motivation, is likely to lead to a change in behaviour.

The evidence reviewed above suggested that there was an opportunity to leverage peer effects in local communities to encourage more homeowners to retrofit their homes. Encouraging homeowners to host home energy events was identified as a practical intervention that could be tested relatively easily and quickly. In order to inform the design of the home energy event and maximise the event's potential for encouraging energy upgrades, a number of case studies from the United States were reviewed.

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<sup>1</sup> Solar Community Organizations (SCOs) are formal or informal organizations and citizen groups that help to reduce the barriers to the adoption of residential solar photovoltaic (PV) by (1) providing access to credible and transparent information about the localized benefits of residential PV and (2) actively campaigning to encourage adoption within their operational boundaries.

## Case study 1 - Energy Impact Illinois

Energy Impact Illinois, organised house parties (i.e. group energy assessments) where attendees watched contractors use thermal cameras and blower doors to pinpoint specific energy- and money-saving opportunities. Homeowners received a free BER assessment in return for bringing 5 to 10 friends and neighbours to the event. The homeowners' guests were also offered the chance to sign up on the spot for a \$99 energy assessment for their own homes, or volunteer to host their own house parties and thereby receive a free energy assessment. In addition, on top of an existing financing product for home energy upgrades (that is: 0% financing for the first year, and no more than 8% interest for the life of the seven-year loan), homeowners would also receive a rebate of up to \$1,750 or 70% of their upgrade costs.

Over the course of the year, 3,100 people attend 652 house parties supported by Energy Impact Illinois; an estimated 2,000 attendees signed up for assessments at the house parties and, an additional 540 attendees phoned their call centre to sign up to host a house party. This represented a conversion rate of 82% for house party attendance to assessment sign-up. More than 900 house party participants completed upgrades, making the conversion rate of assessment sign-ups to completed upgrades around 41%. **The conversion rate from either hosting or attending a party (3,110) to completing upgrades (900) was 29%.**



The learnings from this case study, which future programmes should take into account include:

- Make energy efficiency a party – keep things fun and light while limiting technical knowledge transfer;
- Offer an incentive for hosts – encourage hosts to sign up by offering them a free assessment and other incentives;
- Keep it short – initially the parties lasted three to four hours but, based on feedback, this was reduced to a cap of two hours; and
- Create a comfortable, pressure-free environment – it was made clear to participants that the event staff were not there to make a hard sell, but to offer free independent energy advice.

## Case study 2 - Green Madison

Green Madison is a community-based organisation in the city of Madison, Wisconsin. As part of a challenge to win \$5 million to further the city of Madison's sustainability goals, Green Madison ran a number of home energy parties to encourage homeowners to retrofit their homes.

Their home energy parties were similar in structure to the events run by Energy Impact Illinois. A home energy assessor ran the event with the host receiving a free home energy assessment in return for inviting 5 to 10 friends and neighbours to the event. Guests were offered a reduced rate (\$99 compared to the usual \$400) for having their own homes assessed. Green Madison's energy parties included a more detailed set of energy assessments than those undertaken by Energy Impact Illinois<sup>2</sup>. Tests included a blower door test, an infrared camera test, a manual insulation check, and a heating system/water heater efficiency check, performed by the energy assessor. Both guests and hosts could avail of rebates and incentives if they chose to carry out upgrade works. The host would also receive a free written report with results and recommendations from the assessment, from air sealing to high-efficiency appliances to do-it-yourself improvements.



According to Green Madison's website, as of February 2016, the organisation successfully organised 19 home energy parties in under five months with over 125 people in attendance. Unfortunately, no evidence as to the effectiveness of these parties is available online and no figures are provided to estimate the number of party attendees who completed a home energy upgrade.

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<sup>2</sup> This video shows what a Green Madison Home Energy Party was like to attend:  
<https://www.youtube.com/watch?v=e28MedWFJNw>

### Case study 3 - Heat Squad

HEAT (Home Energy Assistance Team) Squad is a one-stop shop service of NeighborWorks of Western Vermont, which is a not-for-profit organisation. They provide low-cost energy audits for homes and businesses as well as access to low-cost loans for energy-upgrade projects. They encourage and motivate homeowners and businesses to upgrade the energy efficiency of their homes through home energy parties, community outreach efforts, contractor training, and through providing a service to make it easier for people to convert their energy upgrade intentions into action.



Their approach focuses on telling relatable stories and on the multiple benefits of energy upgrades, such as improved comfort and improved health. While HEAT Squad undertook a large and varied portfolio of community outreach work following a community-based social marketing approach, their home energy parties were an important part of increasing energy upgrade installations.

The parties included a presentation on the basics of building science, a short energy assessment which took place throughout the home and allowed guests to sign up for an energy audit for their own homes at the reduced rate of \$100 (usually \$400). At the end of the audit, homeowners were handed a report summarising the upgrades which best suited their needs (see *Appendix 1*). While the home energy parties themselves were not individually evaluated, the overall community outreach programme operated by HEAT squad was evaluated by an independent third-party and was found to have a positive benefit to cost ratio of 1.72 and the programme was deemed to be successful in increasing the number of homes upgraded. The evaluation also included a number of recommendations for similar programmes to consider, namely:

- **Experiment with incentives** – subsidised audits were originally offered at \$50 each but a large number of already upgraded homeowners applied to earn a “pat-on-the-back” for their previous work. After changing the cost to \$100, conversions to upgrade increased.
- **Find a community champion** – the programme was most successful when a local community leader was energised and worked with the HEAT squad to encourage people to upgrade their homes.
- **Use data to track effectiveness** – the programme carefully monitored the success of different outreach strategies and eliminated methods that were not leading to conversions
- **Build trust with contractors** – HEAT SQUAD and NeighborWorks of Western Vermont worked to encourage local contractors to see each other as a source of support and advice through holding workshops and hosting frequent meetings with local contractors.
- **Modify messaging to fit communities** – HEAT Squad changed its messaging to suit different communities; for example, using different messaging for rural and urban communities.
- **Provide Sales training** – NeighborWorks of Western Vermont initially offered sales training to contractors taking part in the programme but saw a larger increase in conversions after they made it mandatory for participating contractors to attend a sales training course.

The learnings from these three case studies informed the design of the home energy events piloted by SEAI.

### Aims of the pilot programme

The main aims of the pilot programme were:

- To assess the feasibility of running home energy events in Ireland;
- To assess the willingness of homeowners to participate and host home energy events in their homes;
- To assess whether home energy events would be attractive to other members of the community and generate strong attendance numbers;
- To identify potential barriers to uptake, event attendance, and investment in energy efficiency measures;
- To identify learnings to inform a potential expansion of the home energy event concept; and
- To provide an initial assessment of the effectiveness of home energy events to stimulate investment in home energy efficiency measures.

The pilot programme would also help to provide answers to the following questions:

- Were there providers in the Irish market who could deliver this intervention to a high standard?
- Would attendees be willing to have a free BER assessment conducted on their homes?

## Design of the Home Energy Event pilot programme

There were two main elements to designing the home energy event pilot programme:

1. Designing the structure of the overall programme; and
2. Designing the individual elements of the home energy events.

### Designing the structure of the overall programme

A behavioural barrier analysis, assessing the barriers to completing a home energy upgrade, informed design of the overall programme structure. Completing a home energy upgrade can be a complicated task for even a motivated homeowner, so it was important to design interventions that would alleviate as many barriers as possible. For example, while participants were free to choose any contractor to complete their upgrade, the details of a large reputable contractor were included in the leaflet and other materials to simplify the decision.

Similarly, a one-page Home Energy Advice Report was produced for the programme, so that homeowners could easily assess which upgrades were best suited to their homes. *Table 1* describes each of the behavioural barriers to home energy upgrades and lists the solutions included in this pilot programme to attempt to overcome them.

**Table 1: The event was designed to address a number of behavioural barriers to retrofitting**

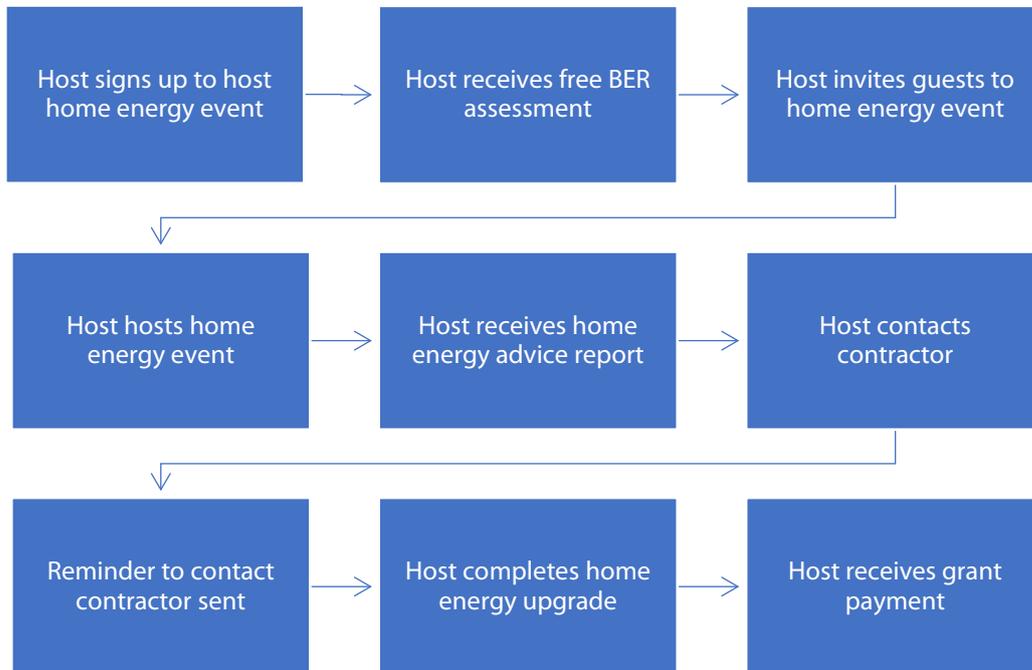
| Behavioural Barrier  | Explanation   | Why is it relevant?  | Solution(s)   |
|----------------------|---|--|---|
| Information overload | People struggle to make decisions when presented with too much information. Presenting too much information can demotivate people and result in them doing nothing. | Upgrade options are often varied and complex.  | Provide simple one-page Home Energy Advice Reports.<br><br>Remove all technical language from reports and discussions with homeowner.<br><br>Provide a simple takeaway leaflet.<br><br>Break the homeowner journey into concrete steps. |
| Availability bias    | People make judgements about how likely something is based on the ease with which examples can be recalled from memory.   | People often overestimate energy usage from devices such as lights, which they use and see frequently. They underestimate the energy use associated with less visible uses, such as heating. | “Where is Energy Used in the Home” – use an interactive game to help people learn which areas of the home use the most energy.  |

| Behavioural Barrier                | Explanation  | Why is it relevant?   | Solution(s)  |
|------------------------------------|--|---|--|
| Low salience of benefits/heat loss | People are more likely to pay attention to and make decisions on information which is particularly noticeable or prominent.                      | The benefits of home energy upgrades are not usually made salient and are usually described in cold technical language.                         | <p>Train the independent BER assessor to use salient language and imagery.</p> <p>Include salient images of heat loss through the use of a game where guests have to “guess whose attic has been insulated”</p> <p>Use blower door test to show heat loss.</p> <p>Use thermal imaging camera game to show heat loss.</p> <p>Provide simple imagery stressing the benefits of upgrading.</p> <p>Use home-energy model to allow guests to experience heat loss in real time.</p> |
| Loss aversion                      | People dislike losses more than they enjoy similar-sized gains. People may take more action to avoid losses than to acquire similar-sized gains. | The energy savings associated with home energy upgrades are typically described as gains which can be realised by upgrading.                    | Emphasise the “loss” associated with not insulating the home, in terms of heat and cost, through a personalised home heat check-up card.   |
| Social norms                       | People are influenced by the actions, beliefs, and attitudes of others, especially those who are like them.                                      | Often people are not aware that their peers have upgraded their homes, especially with less-visible measures like insulation.                   | Host a home energy event to show that peers are interested in home-energy upgrades. Encourage others to talk about upgrades where possible.  |
| Trust                              | People make assessments based on how much they trust the individual they are dealing with.   | In surveys, people report not fully trusting providers of energy upgrades because they have an incentive to potentially “up-sell” the consumer. | <p>Use an independent BER assessor to deliver the home energy event and subsequent advice (SEAI surveys have shown that BER assessors are the most trusted group among homeowners for upgrade advice.)</p> <p>Stress the BER assessor’s independence during introductions.</p>   |

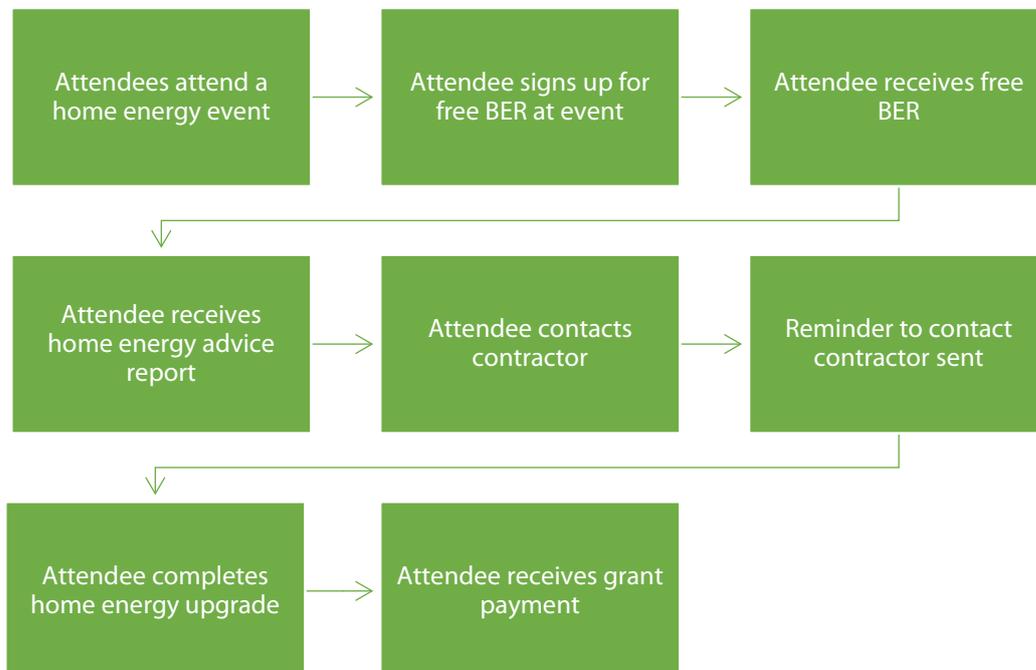
| Behavioural Barrier | Explanation  | Why is it relevant?   | Solution(s)   |
|---------------------|--|---|---|
| Decision fatigue    | The quality of decisions made by an individual may deteriorate after a long session of decision making. People may become demotivated to make further decisions after a long session of decision making. | Typically, home energy upgrades involve making a large number of decisions. Retrofits can often involve choosing multiple contractors to complete individual parts of the overall retrofit. | Provide the homeowner with a contact for a reputable contractor who can complete <b>all</b> of the works requested.   |
| Present bias        | People may make inconsistent choices when presented with the same choice over two different time horizons. More generally, people prefer smaller rewards now to larger rewards later.                    | People may not want to invest large amounts now in energy upgrades which produce savings in small increments over a relatively long period of time.   | Provide grant to reduce the total cost of the energy upgrade.<br><br>Emphasise the immediate non-monetary benefits of upgrading like improved comfort.  |
| Planning fallacy    | People consistently underestimate how long things will take and how many resources they will require in the future.  | People may underestimate the complexity of a home energy upgrade and become demotivated when they realise the complexity involved.  | Provide the homeowner with access to a simplified Home Energy Advice Report.<br><br>Provide the homeowner with a contact for a reputable contractor who can complete all of the works requested.<br><br>Include an indicative timeline in the home energy upgrade report to set expectations correctly. |
| Lack of prompt/cue  | People's behaviour is often directed by prompts or cues which remind them to enact a certain behaviour.  | There are many steps to complete a home energy upgrade which take place over a long time period and homeowners often report "forgetting" to call contractors to arrange works.              | Provide timely email reminders two weeks after the homeowner receives their home energy report.   |

The solutions listed in *Table 1* were then organised into two process flows, one for hosts and one for attendees, to logically structure the intervention. The process flow maps for both the home energy event hosts (*Figure 1.2*) and the attendees (*Figure 1.3*) are shown below.

**Figure 1.2: The process map for homeowners who hosted a home energy event**



**Figure 1.3: The process map for homeowners who attended a home energy event**



## Designing the structure of the home energy events

As noted above, the design of the home energy event was informed by similar initiatives previously conducted in the United States. These case studies provided invaluable insights into how home energy events should, and should not, be designed. However, it was important to ensure that the home energy events were tailored to an Irish context. M.CO facilitated a design thinking workshop with SEAI to achieve this aim.

**Figure 1.4: Workshopping what guests and hosts should know, do, and feel after the events**



The workshop was structured to identify the main things home energy event hosts and guests should know, feel, and do after the event. Using evidence from recently completed SEAI consumer surveys and literature reviews, the workshop participants identified the main feelings, actions, and pieces of knowledge that attendees should have after the event (see *Table 2*). Encouraging attendees to install a home energy upgrade was deemed to be the most important outcome of the event. All of the other feelings, actions, and pieces of knowledge were all conceptualised to increase the likelihood that attendees would install a home energy upgrade in their own home.

Once these had been identified, workshop participants created an element for the home energy event which would result in that feeling, action or piece of knowledge transfer. This process delivered a final list of event elements.

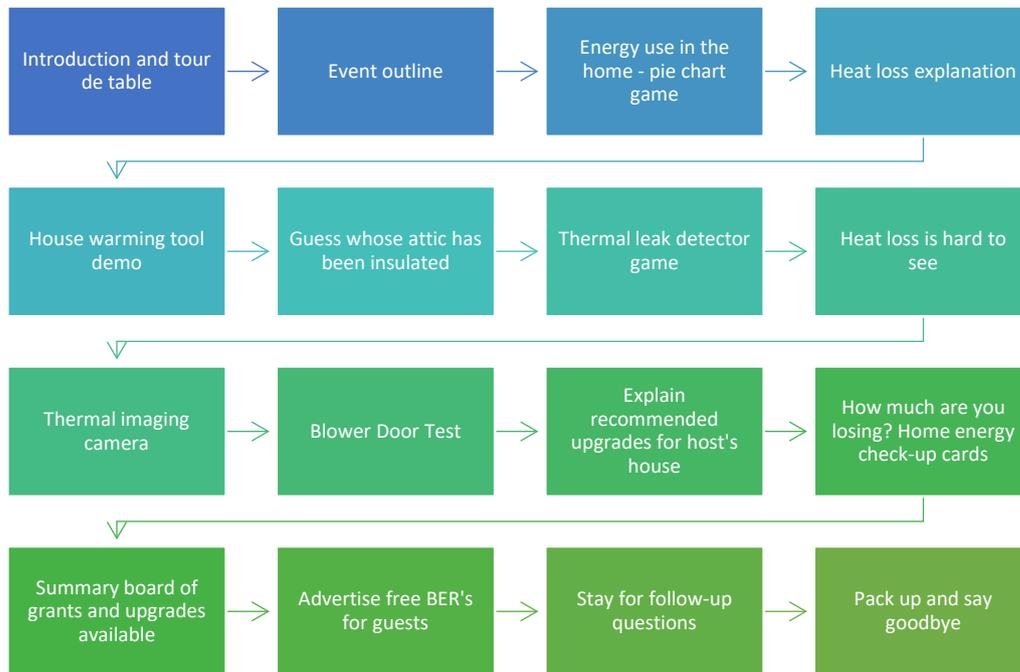
Table 2: The main feelings, actions, and pieces of knowledge the event was designed to create-

|             | Desired Feeling/Action/Knowledge                                      | Elements  |
|-------------|---|---|
| <i>Feel</i> | A warmer, more comfortable home is attainable                         | Heat loss model<br>Leaflet<br>Grant support board   |
|             | The event was enjoyable and fun                                       | Guess where energy is used in the home game<br>Guess which attic hasn't been insulated game<br>Thermal leak detector game<br>Training for BER assessor – "Keep it humorous and light-hearted"                             |
|             | Willing to participate and engage with SEAI further in the future     | Training for BER assessor – "Keep it humorous and light-hearted"<br>Grant summary board   |
| <i>Know</i> | Understand energy use in the home                                     | Guess where energy is used in the home game   |
|             | Understand heat loss and why it matters                               | Guess which attic hasn't been insulated game<br>Thermal leak detector game<br>Heat loss model<br>Heat loss is hard to see diagram<br>Thermal imaging camera<br>Blower door test<br>How much heat is your home losing tool |
|             | Understand best upgrade measures for the home and associated benefits | Leaflet<br>Free BER for guests' homes<br>One-page advisory report<br>Grant summary board<br>Why is it important to upgrade? board   |
|             | Next steps and SEAI grants available                                  | Leaflet<br>Grant summary board  |
| <i>Do</i>   | Follow up with BER assessor/contractor                                | Leaflet<br>Grant summary board  |
|             | Spread the word   | Free BER for guests   |
|             | <b>Install home energy upgrades in their homes</b>                    | Leaflet<br>Grant summary board<br>Free BER for guests   |

## Structure of the event

Based on the learnings gained from the Energy Impact Illinois home energy parties, events were designed to last one and a half hours and were held in either the kitchen or sitting room area of the host's home. The structure of events held in hosts' homes is described in Figure 1.5.

Figure 1.5: Structure of the home energy events



## Introduction and tour de table

Home energy events commenced with an introduction from the facilitators, who outlined their background, qualifications and expertise in providing independent energy advice. They also stressed that they were not there to sell attendees a particular product but to show them the value of upgrading their homes and provide them with independent advice on home-energy upgrades.

The facilitator then encouraged everyone to introduce themselves, explain how they knew the host, state what they wanted to get from the evening, and finally, to name one thing they would like to improve about their own home.

## Event outline

The facilitator then outlined the format of the event explaining:

- the games would be used to teach them more about energy in the home and the importance of upgrading their homes;
- the tests that would be performed around the house to identify areas that might warrant upgrading;
- that the final part of the event would involve explaining the grant supports available to them if they wanted to upgrade their own homes; and
- that they could sign up for a free BER to learn which upgrades would be best for their homes.

## Guess where energy is used in the home – pie chart game

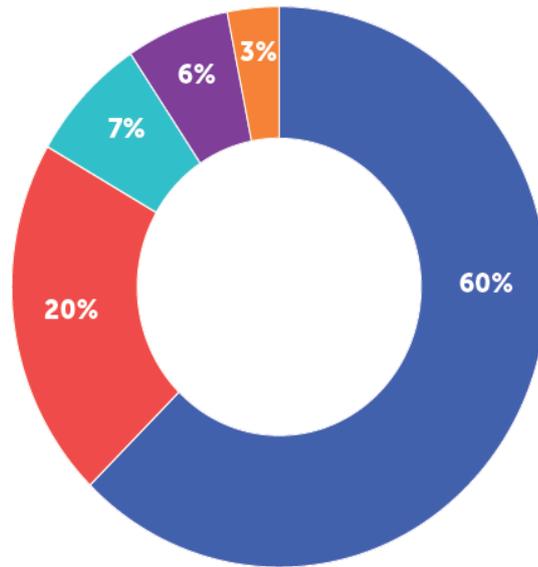
The ‘Guess where energy is used in the home’ pie chart game was designed to make learning about energy use in the home fun for the attendees.

The home energy event facilitator introduced the game to attendees by asking: “Which of these five things use the most energy in the home?” The options included lighting, electrical appliances, space heating, domestic hot water, and cooking.

The facilitator then initiated discussion among the attendees asking them to show where each of the five options should be placed on the pie chart. The facilitator asked the guests to explain their choices and allowed them to debate each choice with each other.

After a few minutes, the facilitator placed each option on the correct category, showing that space heating uses the most energy, followed by domestic hot water. They then explained that this is why insulating the home is the number one method for making homes more comfortable, reducing energy loss, and lowering bills.

## HOW IS ENERGY USED IN THE HOME?



LIGHTING



ELECTRICAL APPLIANCES



SPACE HEATING



DOMESTIC HOT WATER



COOKING



## Guess which attic has been insulated game

The 'Guess which attic has been insulated' game was designed to make heat loss more salient to the attendees.

The facilitator asked attendees to guess which house in each picture had its attic insulated. In each case, the correct answer is the house which still has snow on its roof.

The facilitator explained that attic insulation stops heat from escaping through the roof and so, the snow on well-insulated homes does not melt as heat does not escape.

The facilitator discussed why attendees should insulate their attics – to prevent all of the heat they have spent money on producing, escaping through the gaps and cracks in the roof space.

## GUESS WHICH ATTIC HAS BEEN INSULATED?

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## Heat loss is hard to see explanatory board

The 'Heat loss is hard to see' explanatory board was designed to show the effects of insulation, using thermal images.

The facilitator first asked the guests to draw their attention to the bottom-left image, explaining that, by simply looking at the vent it wasn't clear whether cold air was escaping from the attic and into the room through the vent.

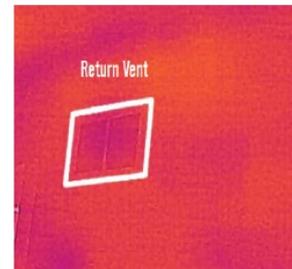
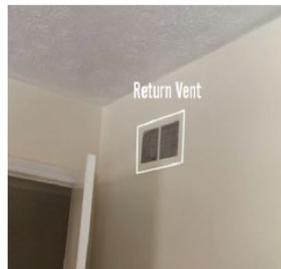
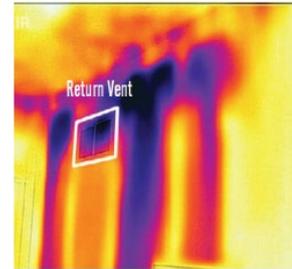
The facilitator then asked them to look at the image on the top right and explained that the reason there was so much blue in the image, is due to the wall around the vent being colder than other areas. This is because the roof above is poorly insulated, allowing cold air to draft down.

The facilitator asked attendees to look at the top left image, explaining that the attic was subsequently insulated.

Finally, the facilitator asked attendees to look at the bottom right-hand image, explaining that the image is now a consistent red because no cold air is drafting down from the attic through the vent, due to the fact that the attic has been insulated. The facilitator explained that insulation is important for maintaining a stable and comfortable temperature in the home; it prevents heat from escaping as well as preventing cold from infiltrating.

## HEAT LOSS IS HARD TO SEE...

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## Why is it Important to upgrade? Explanatory board

This board was designed to explain the multiple benefits of home energy upgrades: increased comfort, better health outcomes, protection of the environment and, the reduced energy bills.

The facilitator asked attendees if they had any problems in their homes. Was it too cold in winter? Was it expensive to heat? Was there mould in certain rooms?

The facilitator explained how upgrading the home, and especially insulating it, can lead to multiple benefits and help solve the problems identified by attendees. For example, mould can occur when an area of the house is not properly insulated and ventilated, due to moisture build-up. By insulating walls and installing adequate ventilation, homeowners can reduce mould, increase comfort, and improve their families' health by improving the air quality in the home.

## WHY IS IT IMPORTANT TO UPGRADE

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### Thermal leak detector game

The thermal leak detector game was designed to make understanding heat loss fun for attendees. The facilitator first explained what a thermal leak detector was to the guests. The thermal leak detector enables attendees to point the device at an area and measure the temperature of that area.

The facilitator explained that the thermal leak detector should be pointed at areas around doors, windows, and wall joints and the device should be allowed to set a reference temperature. The light from the device turns blue, if the area they pointed to after was lower in temperature and red if it was higher in temperature by 3 degrees Celsius.

Guests searched in pairs for areas with large temperature differences to get an idea of which area(s) might need to be insulated. They recorded the highest and lowest temperatures on a post-it note and the winner was the pair that found the largest temperature difference. Big temperature differences from room to room, and from point to point within rooms, can show that the home is poorly insulated. Poorly insulated areas in homes will show lower temperatures as the heat escapes causing less consistent temperatures from point to point. Well-insulated parts of the home will show more consistent higher temperatures. The facilitator then reiterated that warmer and more consistently comfortable homes are the main benefits of insulation.



### Thermal imaging camera

The thermal imaging camera would be included in the home energy event to allow attendees to visualise heat loss.

Firstly, the facilitator finds an area of the room with a large temperature difference and explains how to interpret the thermal image. Areas higher in temperature 'glow' red or orange while colder areas appear blue. The facilitator allows attendees to hold the thermal imaging camera and see the heat loss for themselves. The facilitator answers attendees' questions and explains that insulating the area would help reduce the heat loss, increasing the comfort of the home while lowering energy bills.

## Heat loss model

The heat loss model was designed to show how effective insulation is in reducing heat loss and to make heat loss salient for attendees. The heat loss model consists of a model of a home with space inside for a 150W infrared heat lamp and two pieces of glass, one which is insulated and one which is not.

The facilitator explained to the attendees how they could experience the effectiveness of insulation in reducing heat loss for themselves. This heat loss model enables them to witness how small gaps and cracks in an uninsulated home can add up to a basketball-sized hole in the wall.

After placing the uninsulated glass on the front hole of the heat loss model and turning on the heating lamp, allowing it to get hot and heat up the inside of the model home, attendees were asked to put their hands up to the glass to feel the heat radiating through the uninsulated glass. The facilitator explained that the heat they can feel escaping is exactly what is happening all the time in a house whose walls and attic have not been insulated.

The facilitator then removed the uninsulated glass and replaced it with insulated glass, allowing time for the model to heat up again. When heated up, the facilitator asked attendees to place their hands in front of the glass again to experience the fact that they will not feel heat radiating through the glass because it is insulated. The facilitator explained this is why it is important to insulate homes: to stop heat loss, make homes more comfortable, protect the environment and, reduce energy bills.



## Blower door test

The blower door test was included in the home energy event to demonstrate heat loss and how uninsulated homes can have a higher number of draughts and leaks. Previous case studies had described the blower door test as the most effective tool in showing people just how leaky their homes were.

A blower door test works by forming a seal over one of the building's external-facing doors. All interior doors are opened, and all exterior windows are closed. This allows air to move through the home freely. The fan then either blows air into the home or out of it to create a negative pressure differential between the inside of the home and the outside. The negative pressure differential causes air to move through any of the holes and cracks in the home. The tighter the building (for example, fewer holes), the less air is needed from the blower door fan to create a change in building pressure.

The facilitator set up the blower door test and explained to the attendees that the test will show how leaky the house is. The higher the number on the screen, the leakier the home is. The facilitator also explained that every 1,500 units on the screen represents the equivalent of a square-foot hole in the wall, allowing heat to escape. The facilitator encouraged attendees to place their hands near window sealings, attic trap doors, and other areas where sealing and insulation are likely to be important. Attendees felt the air escaping through the gaps. The facilitator explained why it is important to properly insulate homes: to stop warm air from escaping and cold air from creating draughts.



## Leaflet

A leaflet was designed to ensure that attendees understood the steps they could take to upgrade their homes and make them more comfortable. Simple language was used to describe how different upgrades could make homes more comfortable. The leaflet was centrally framed around the benefit of making the home more comfortable, as previous research had shown that this was the most important benefit that homeowners cared out.

Simple metaphors were used to illustrate the importance of insulation. For example, 'having uninsulated walls is like not wearing a jacket in winter; the cold goes right through you!' The leaflet explained that homeowners should 'wrap up' (insulate) first, before focusing on efficiency and lastly energy generation. The inside pages provided details on the amount of grant funding available for each upgrade measure. The back page proposed next steps, which included having a free BER conducted on their own homes, all the way to installing energy efficiency upgrades. Contact details for the appointed BER assessor were also included on the leaflet. It also showed that from start to finish, the whole upgrade process would take between 8 to 12 weeks to correctly set expectations.



## Grant summary board

The grant summary board was printed on an A2 board and highlighted the various upgrade options available to homeowners and the grants SEAI provides for each upgrade.

The facilitator introduced the board by talking through each of the upgrade measures and stating whether the energy event host's home required the upgrade. If it did, the facilitator explained why that upgrade was important for the house they were in.

The board made it clear that homeowners would receive grant funding but that they would, most likely, be required to contribute to the cost of their upgrade.

For consistency, all of the material on the grant summary board was similar to the information provided in the leaflet.

# WHAT STEPS CAN I TAKE? BENEFITS AND GRANTS AVAILABLE

|          | WHAT?  | BENEFITS   | GRANT SUPPORT                                      |
|----------|--|--|--|
| WARM UP  | <b>ATTIC</b><br>                  | <b>ATTIC INSULATION</b> <ul style="list-style-type: none"> <li>• Cheap to install</li> <li>• Keeps your house warmer for longer</li> <li>• Can keep attic as living space</li> </ul>   | Grant €400    Your input                           |
|          | <b>WALLS</b><br>                 | <b>CAVITY WALL INSULATION</b> <ul style="list-style-type: none"> <li>• Easy to install and keeps your house warmer for longer</li> </ul>   | Grant €400    Your input                           |
|          | <b>FLOORS</b><br>               | <b>EXTERNAL WALL INSULATION</b> <ul style="list-style-type: none"> <li>• Upgrades the look of your home as well as keeping it warm</li> </ul>  | Grant €2,750-€6,000    Your input                  |
|          | <b>WINDOWS</b><br>              | <b>INTERNAL INSULATION</b> <ul style="list-style-type: none"> <li>• Use where cavity or external insulation isn't suitable</li> </ul>  | Grant €1,600-€2,400    Your input                  |
|          | <b>WINDOWS</b><br>              | <b>INSULATE UNDER YOUR FLOOR BOARDS</b> <ul style="list-style-type: none"> <li>• Keeps your house warmer for longer</li> </ul>   | Please talk to your contractor for price estimates |
| TUNE UP  | <b>WINDOWS</b><br>              | <b>SEAL OR UPGRADE YOUR WINDOWS</b> <ul style="list-style-type: none"> <li>• Keep in the warmth and keep your house warmer for longer</li> </ul>   | Please talk to your contractor for price estimates |
|          | <b>BOILER</b><br>               | <b>BOILER UPGRADE</b> <ul style="list-style-type: none"> <li>• The boiler is the heart of your home, make sure to have it serviced and if it is more than 15 years old then it may be time to upgrade it</li> </ul>  | Please talk to your contractor for price estimates |
|          | <b>HEAT CONTROLS</b><br>        | <b>NEW CONTROLS</b> <ul style="list-style-type: none"> <li>• Lower your bills by only heating the rooms you are using, when you are using them</li> <li>• Possible to control your heating remotely for when you get home</li> <li>• Reduce your bills when away on holiday</li> </ul> | Grant €700    Your input                           |
| GENERATE | <b>SOLAR THERMAL PANELS</b><br> | <b>SOLAR THERMAL PANELS</b> <ul style="list-style-type: none"> <li>• Heats your hot water with the power from the sun</li> <li>• Works even when cloudy</li> </ul>   | Grant €1,200    Your input                         |
|          | <b>SOLAR PV AND BATTERY</b><br> | <b>SOLAR PHOTOVOLTAIC (PV) PANELS</b> <ul style="list-style-type: none"> <li>• Creates electricity to use all around the house</li> <li>• Works even when cloudy</li> <li>• Can include battery storage</li> </ul>   | Grant Up to €3,800    Your input                   |
|          | <b>HEAT PUMP</b><br>            | <b>HEAT PUMP</b> <ul style="list-style-type: none"> <li>• A clean energy system which removes the need for fossil fuels to heat your home</li> <li>• Works best in a well insulated home with underfloor heating or low temperature radiators</li> </ul>                               | Grant €600-€3,500    Your input                    |

## How much heat am I losing in my own home? – Advent calendar tool

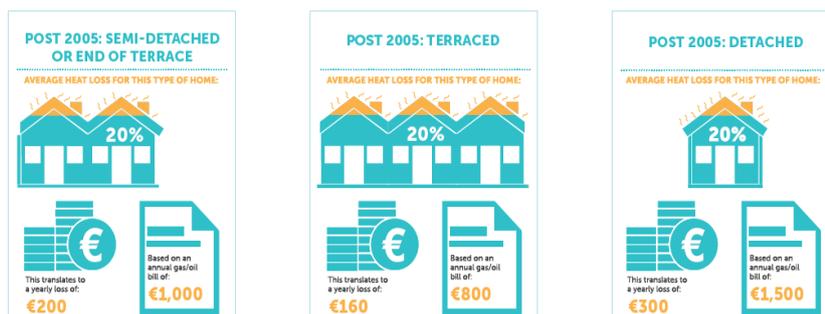
The advent calendar tool was adapted for the home energy event to allow people to quickly get personalised information about how much heat (and money) their homes were losing as a result of not being properly insulated.

The tool was an A2-sized board with perforated windows on it that functioned like an advent calendar. The facilitator asked attendees to pass the board around and identify the house type that best matched their own. Once they had identified the house that most closely matched their own, they opened the window to learn how much heat their house was likely losing and the amount they were losing on their energy bill because of that.

## HOW MUCH HEAT ARE YOU LOSING?



## HOW MUCH HEAT ARE YOU LOSING?



## Recruitment of participants

Two main methods were used to **recruit** participants for the pilot programme:

1. Field recruitment at the National Ploughing Championships 2018; and
2. A targeted email campaign to members of the SEAI sustainable energy community email list.

Participants were firstly recruited at the National Ploughing Championships 2018. This location was chosen as it was considered a convenient location to potentially recruit a large number of homeowners at one time, and also provided access to rural homeowners whose homes are usually in greater need of retrofit. Flyers were handed out to people as they walked through one of the main promenades and they were asked if they were interested in hosting a home energy party in return for a free BER<sup>3</sup>. The flyer contained an email address which interested homeowners could use to indicate their interest in taking part.

Only a small number of people from the National Ploughing Championships expressed an interest in hosting an event and, as a larger number of hosts were required to successfully run the pilot, a decision was made to email members of the sustainable energy community network who might be more motivated to host a home energy event in their homes.

While network members may be more likely to engage with SEAI programmes and pro-environmental behaviours in general, their inclusion represented an opportunity to test the possibility of using the network to encourage committed members' friends and neighbours to consider retrofitting.

The breakdown of recruitment source is shown in *Table 3*.

**Table 3: Home energy event host recruitment source breakdown**

| Recruitment Source                   | Number of Participants |
|--------------------------------------|------------------------|
| National Ploughing Championship 2018 | 2                      |
| SEC email                            | 8                      |

Please see *Appendix 2* for the flyer used for both field and email recruitment.

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<sup>3</sup> Homeowners who hosted an event were also given a €50 One4all Voucher to cover the cost of purchasing snacks and refreshments for the events.

## Evaluation process

A number of instruments were designed and administered to collect data to evaluate the success of the home energy event pilot programme.

Surveys were administered during each event to:

- The facilitator who conducted the audits and facilitated the home energy events;
- The hosts of the home energy event;
- The guests of the home energy event; and
- Guests that signed up for a free BER assessment of their own homes.

A neutral third-party organisation conducted structured interviews with home energy event hosts, guests, and the facilitator after all of the home energy events, and two-thirds of the referral BERs were completed. The facilitator partook in a non-structured de-briefing session at the end of the pilot programme. This was undertaken to identify areas where the management process surrounding the home energy event programme could be improved in future iterations.

A member of the SEAI Behavioural Economics Unit followed up with all hosts and guests that took part in the home energy event pilot to assess whether they had installed any energy efficiency upgrades following their event or BER. A structured follow-up process was used. This consisted of a follow-up email two to three days after the homeowner received their home energy advisory report, a reminder email after two to three weeks, and finally, a telephone call after two to three months. Each person was called a maximum of three times, after which they were assumed not to have installed an energy efficiency measure. Where hosts and guests claimed to have installed a home energy efficiency upgrade, this was cross-checked with administrative data and data from an installation company who took part in the pilot.

Finally, the number of energy efficiency upgrades installed by hosts and guests was compared to the number of energy efficiency upgrades installed by others who had signed up to host a home energy event but were not selected to host an event in the end. This selection process was not random and therefore, it is not possible to compare the two groups to make causal inferences. However, it may still be instructive to compare installation rates across the intervention group and the comparison group to get some initial insight into the effectiveness of the home energy event in generating the installation of energy efficiency upgrades.

## Survey results

### Hosts' satisfaction and feedback

The feedback from those who hosted a home energy event in their homes was overwhelmingly positive. The majority of hosts (eight out of ten) stated that they were extremely likely to recommend the home energy event pilot to a friend or colleague. Similarly, hosts said that they were extremely satisfied with the event in general, the facilitator's knowledge, the facilitator's friendliness, the tools used during the event, and the communication from SEAI.

Some hosts found it more difficult than others to confirm five to ten people that would attend their event. The reasons for this included: a lack of interest in the subject from potential guests; diary conflicts; the short notice given to invitees and; the time commitment required from invitees. However, all hosts managed to achieve an attendance of five or more guests at their home energy event.

Hosts invited guests through a number of channels including email, WhatsApp, over the phone, and in-person conversation. Hosts expressed a reluctance to invite strangers, inviting friends, family, neighbours, and other members of their sustainable energy community instead.

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*"It makes for a better atmosphere when people **know each other** and are more confident to take part"- Home Energy Host #3*

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### Hosts' motivation for hosting the event

Hosts in particular, and guests to a lesser extent, were already engaged in the energy efficiency area either through being in a sustainable energy community (three/five guests and five/eight hosts interviewed), through their own professional work, or through having general environmental values and interests. The facilitator noted that party guests from a sustainable energy community were particularly engaged.

Hosts wanted to motivate and inspire guests to act. Three of the hosts specifically said that they wanted to inform and inspire others to act (Note: All of these were sustainable energy community members).

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*"I'm very motivated to drive energy efficiency and work in the retrofit area"-Home Energy Host #4*

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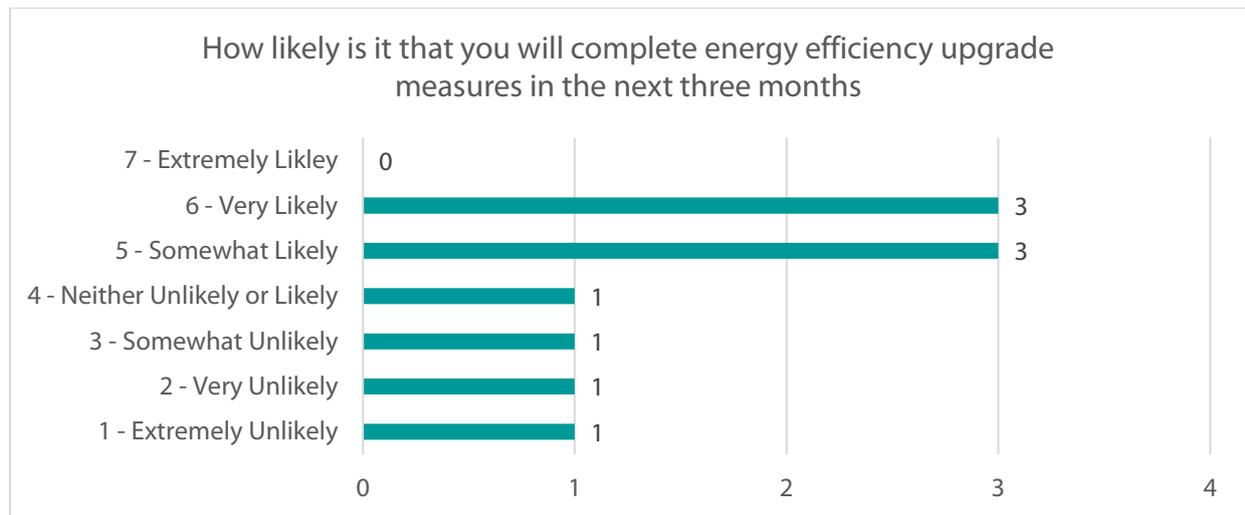
### Image from a home energy event hosted as part of the pilot programme



### Hosts' intention to retrofit

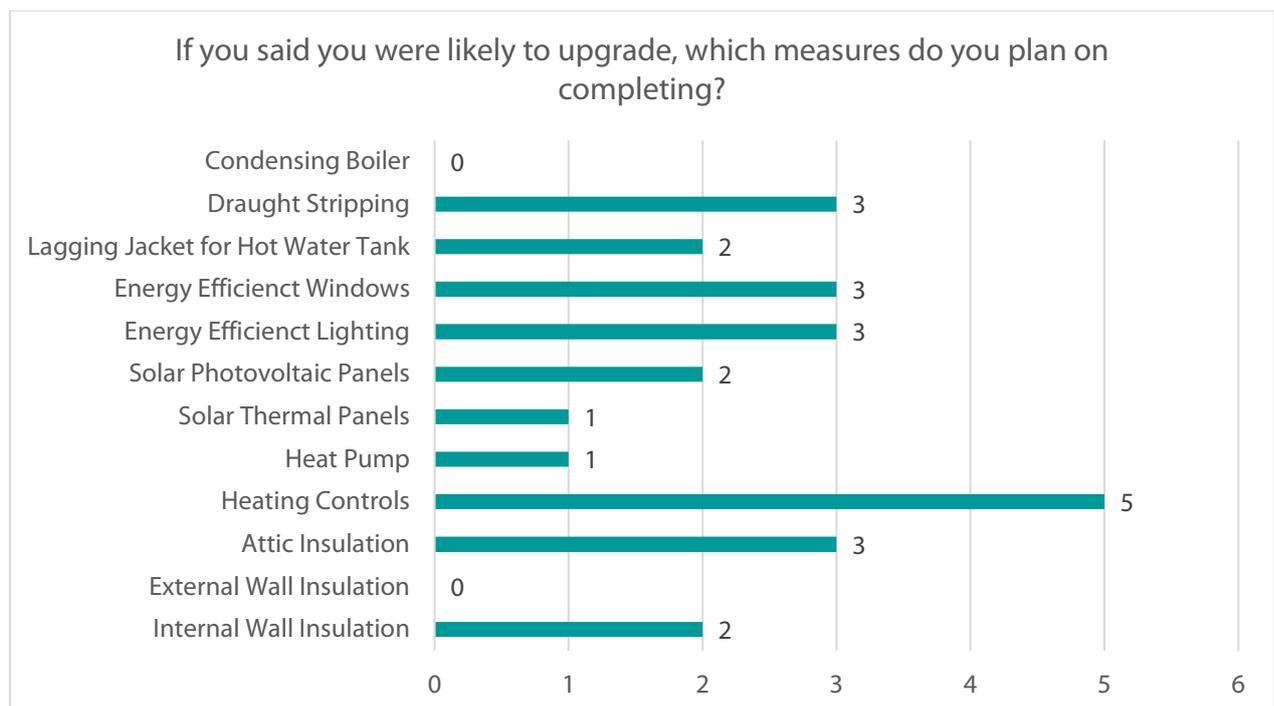
While it is clear from existing evidence that homeowners' intentions to retrofit often do not translate into action (known as the intention-action gap), measuring the size of the intention-action gap was an important part of this pilot. In responding to the survey question: 'How likely is it that you will complete energy efficiency upgrade measures in the next three months?', hosts' responses were quite varied, as *Figure 1.6* shows; however, the majority of hosts said they were likely to install energy efficiency upgrades in the next three months.

**Figure 1.6: The majority of hosts said they were likely to undertake energy efficiency upgrades in the next months**



Heating controls was the most popular energy efficiency upgrade that hosts intended to install. The average number of intended installs per host was 2.6. None of the hosts intended to install external wall insulation or a condensing boiler. This data reflects a relatively strong intention to retrofit, but it should be noted that hosts were already heavily engaged with energy issues and communities.

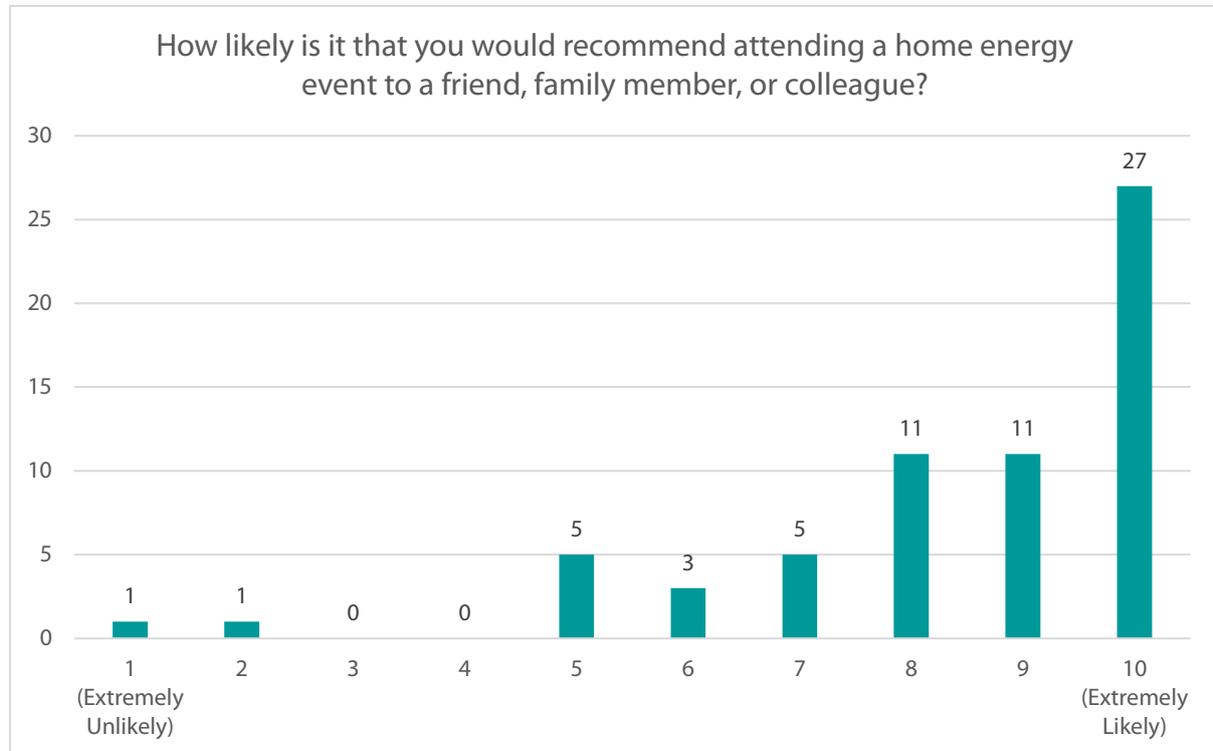
**Figure 1.7: Hosts were most likely to report intentions to install heating controls**



### Guests' satisfaction and feedback

Overall, guests were largely satisfied with the home energy event they attended. There was more variation in guests' ratings of the event than hosts' ratings. As can be seen in *Figure 1.8*, the majority of guests would recommend the home energy event pilot to a friend, but results varied.

**Figure 1.8: The majority of guests would recommend the pilot but results varied**



Guests indicated that they were very or extremely satisfied with the event in general with 96% of respondents choosing these responses. Guests were similarly happy with the level of knowledge demonstrated by the facilitator and were broadly happy with the knowledge they themselves acquired during the event. The main recommendations received from an open-text question were to make the event a little shorter and to focus more on discussing solutions as a group rather than using the cosy home tool.

Guests who availed of a free BER were also extremely satisfied with the event and the free BER they received. All but one of the guests stated that they would likely recommend the pilot programme to a friend or family member and the majority said they were 'extremely likely' to recommend it. All of the guests who availed of a free BER were either very satisfied or extremely satisfied with the BER assessor and their level of knowledge/expertise. Guests broadly agreed that the communications and timelines from SEAI were clear. However, five of the 37 guests who received a BER stated that their opinion on the communications and timelines was 'neutral' suggesting some room for improvement in future iterations.

### Guests' motivation for attending events

The most popular motivation cited by the 63 guests that provided a motivation for attending the event was: to 'learn more about how to reduce energy use in my own home' (41%), followed by guests stating that they were 'thinking that they were likely to upgrade soon and wanted independent advice to get the most impact from their upgrade' (18%). The interviews conducted with guests also reflected a strong desire for quality independent advice.

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*"I wanted to find out more about **energy use and potential savings** for the house" – Home Energy Event Guest #2*

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## Guests' willingness to pay for BERs

26 of the 100 people who expressed an interest in receiving a follow-up BER stated that they were interested in it because it was free.

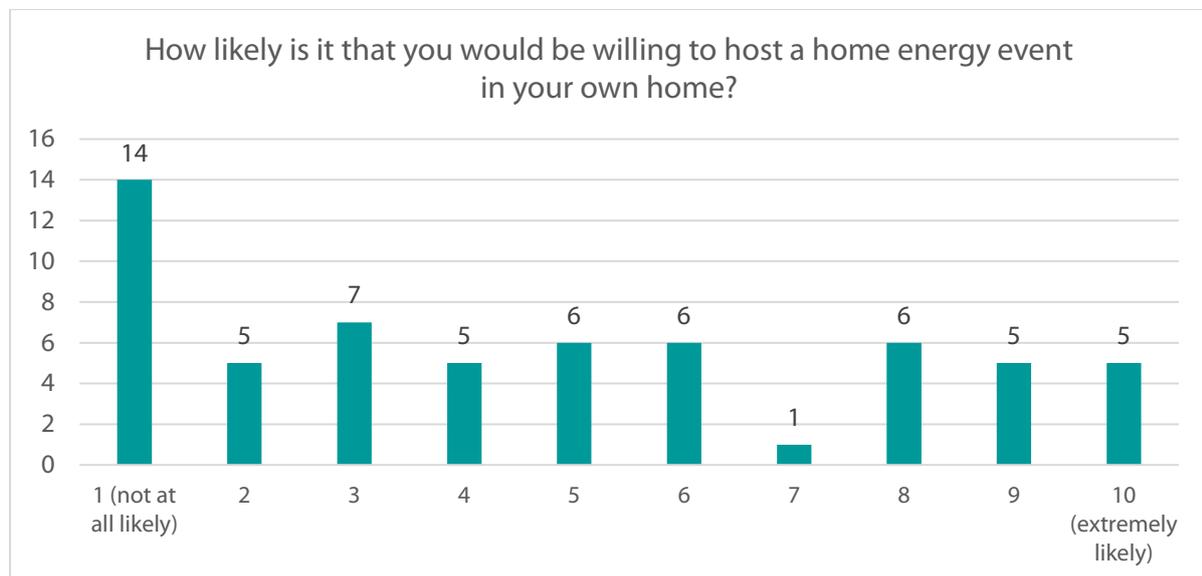
While providing a free BER may have motivated a number of guests to attend events, it is plausible that future iterations of the home energy event programme could simply provide a subsidised BER to act as an incentive for people to attend<sup>4</sup>. Previous studies (Allcott and Greenstone, (2017) have shown that providing a subsidised home energy audit can be more effective in stimulating upgrades than providing free audits as it may reduce the number of people who sign up for an audit who have no real intention to retrofit.

In order to measure how much people would be willing to pay for a BER, and therefore calculate the level of subsidisation likely required, we asked guests signing up for a BER to answer the following question: "If this BER wasn't provided to you for free, how much would you be willing, in Euro, to pay for a BER assessment of your own home after attending this home energy event?" 56 of the 100 people who signed up for a BER answered the question revealing that the average willingness to pay for a BER among those who attended a home energy event was €121.80<sup>5</sup>. Depending on the size of the house to be audited, it is likely that a small subsidy (~€50) would be sufficient to motivate people to sign up for a BER after attending a home energy event.

## Guests' willingness to hold a home energy event in their own homes

Figure 1.9 shows that the majority of guests would not be willing to host a home energy event in their own homes. However, 23 guests expressed a willingness to host an event in their own homes. This would likely be a large enough group to allow for the home energy event model to spread through networks, where people who attend an event can host an energy event in their own homes, in return for a free or subsidised assessment.

**Figure 1.9: While not everyone is willing to host a home energy event, a sizeable number of people are**



<sup>4</sup> It is worth noting that guests also stated that curiosity was another motivator for attending, and that this curiosity coupled with the social invitation from a neighbour/friend might be sufficient to motivate guests to attend.

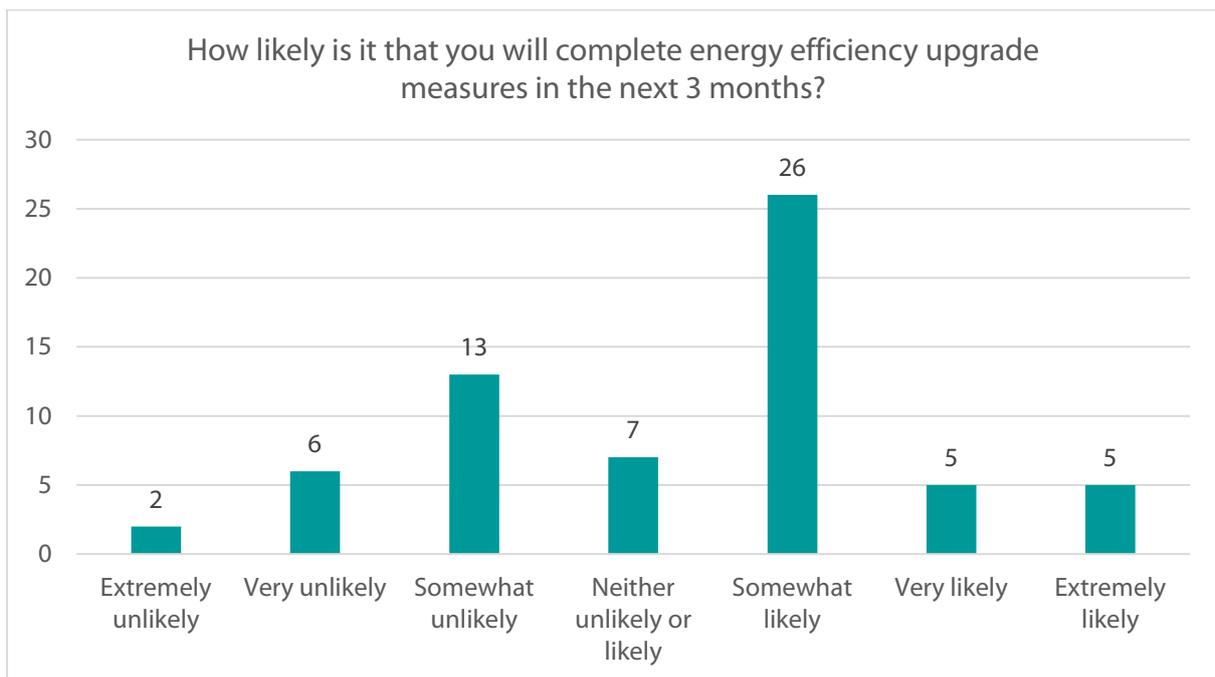
<sup>5</sup> It is interesting to note that guests who completed an additional survey after they received their free BER (n=32) stated, on average, that their willingness to pay was €190.78. This may indicate that guests placed a higher value on the BER once they had received the advice resulting from it.

### Guests' intention to retrofit

Guest's intention to retrofit their homes was measured as part of the survey that guests completed. While it is clear from existing evidence that homeowners' intentions to retrofit often do not translate into action (intention-action gap), it was important, as part of this pilot programme, to measure the size of the intention-action gap.

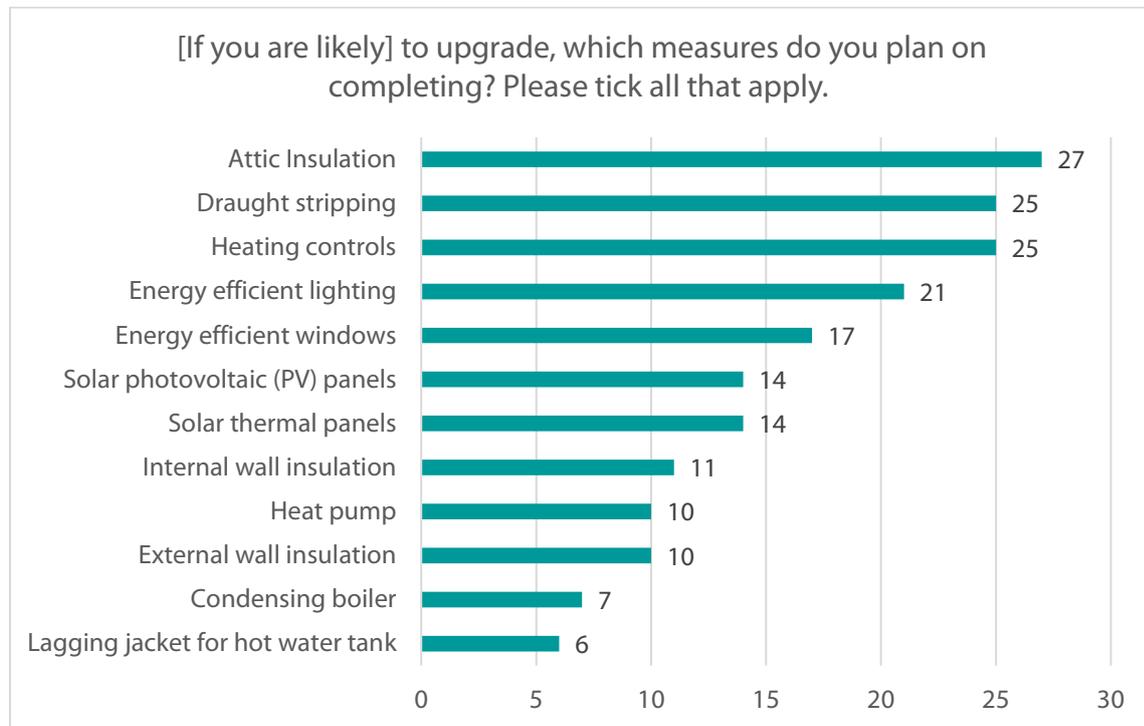
The majority of guests (36 out of 64) that attended a home energy event said they were likely to install upgrade measures in the next three months. Ten guests said they were very likely or extremely likely to install measures in the next three months.

**Figure 1.10: The majority of guests intended to install energy efficiency measures in the next three months**



Attic insulation was the most popular energy efficiency upgrade that hosts intended to install. This was closely followed by draught stripping, heating controls and, energy efficiency lighting. From observation of *Figure 1.11* alone, it appears that there might be a relationship between the cost of the measures, the perceived difficulty of installing the measure, and the likeliness that guests would select that measure. The top four most popular items are among the cheapest and easiest to install. The average number of intended installs per guest was 2.9.

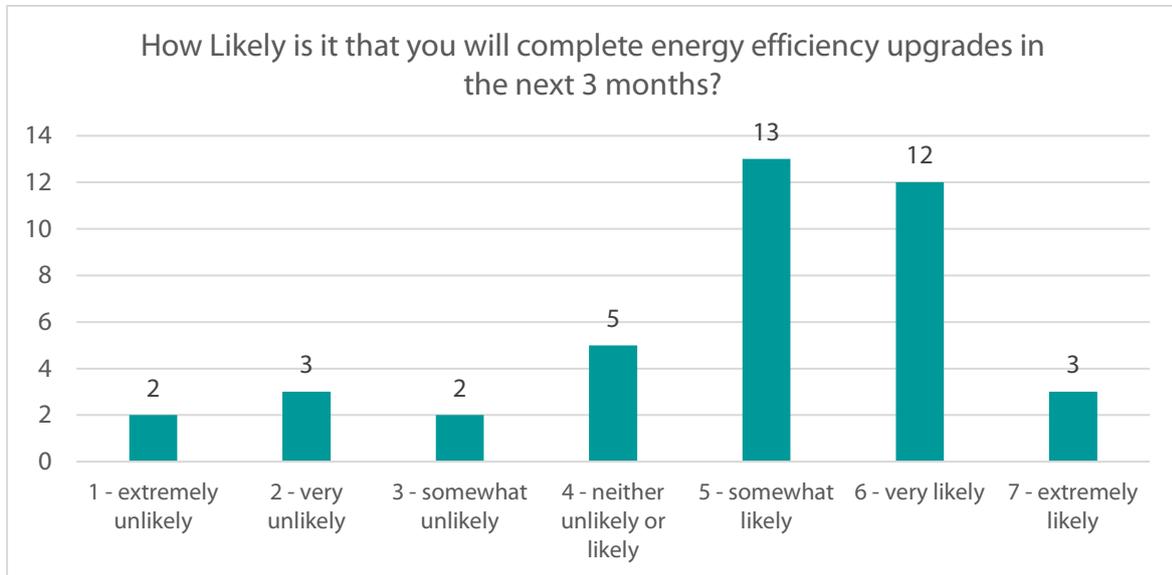
**Figure 1.11: Guests were most likely to report intentions to install attic insulation**



### Guests intention to retrofit after receiving a BER

40 of the 82 guests who received a free BER provided responses to a survey assessing their intentions to install energy efficiency upgrades. As shown in *Figure 1.12*, the majority of these respondents indicated that they were likely or very likely to install energy efficiency upgrades in the next three months.

**Figure 1.12: Recipients of a free BER were, on average, likely to state an intention to upgrade their homes**



When asked whether they agreed with the statement: 'I knew which upgrades I needed to install before the BER assessment', the majority of BER recipients also chose 'neutral' or 'disagreed' as a response. This highlights that the majority of people who received BERs likely needed the recommendations that were provided in the advisory report. However, there were some (11 of 40) who were already confident that they knew what they needed to install.

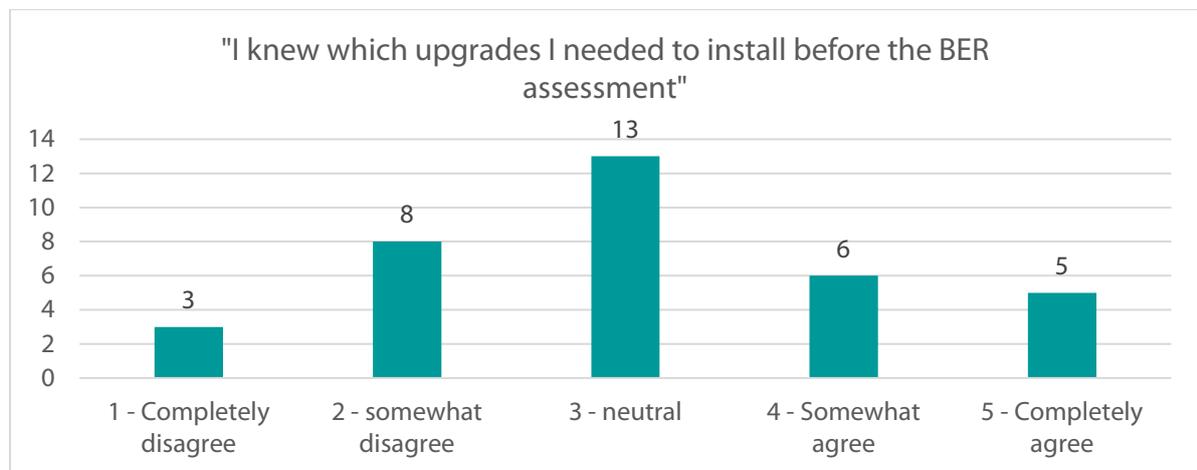
While it is possible that these recipients represent deadweight, it is also important to consider that some of these respondents could have been seeking to confirm their own assessment of their needs with independent advice.

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*"It made us think of ways we could improve energy efficiency in the house and insulation ideas etc. [We] noticed insulation needed on outside wall and ventilation needed inside" – BER Recipient #29*

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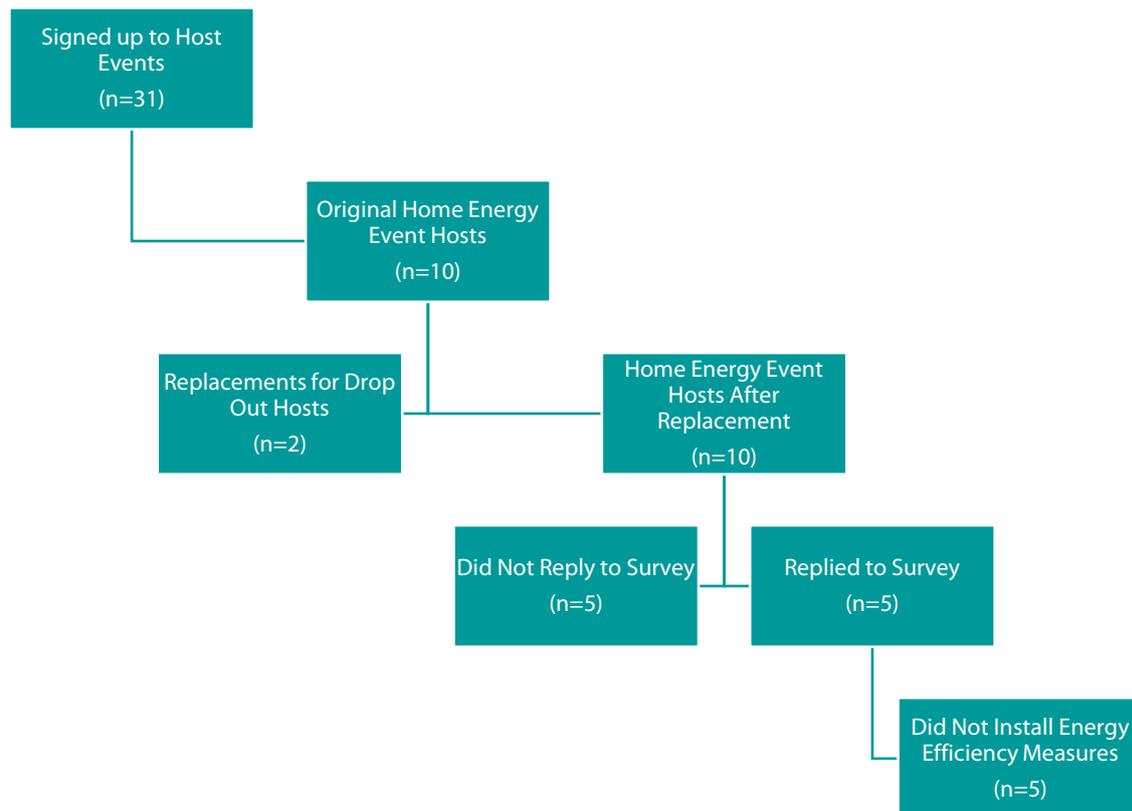
**Figure 1.13: Recipients of a free BER were, on average, likely to state they did not know what upgrades they needed to install before receiving a BER assessment**



## Upgrade installation results

While it was encouraging to see that the majority of hosts and guests intended to install energy efficiency upgrades, given the large intention-action gap associated with home retrofits, it was crucial to follow up with them to determine whether they had installed any of the measures that they had intended to install. As explained above, follow-up was conducted by email and phone, and where homeowners claimed to have installed energy efficiency measures, this was confirmed by cross referencing with administrative data.

## Hosts' installation rate



Ten home energy events were planned for this pilot programme. This would provide enough variation in terms of house type, location, and host characteristics to learn whether the programme could operate in different areas around Ireland.

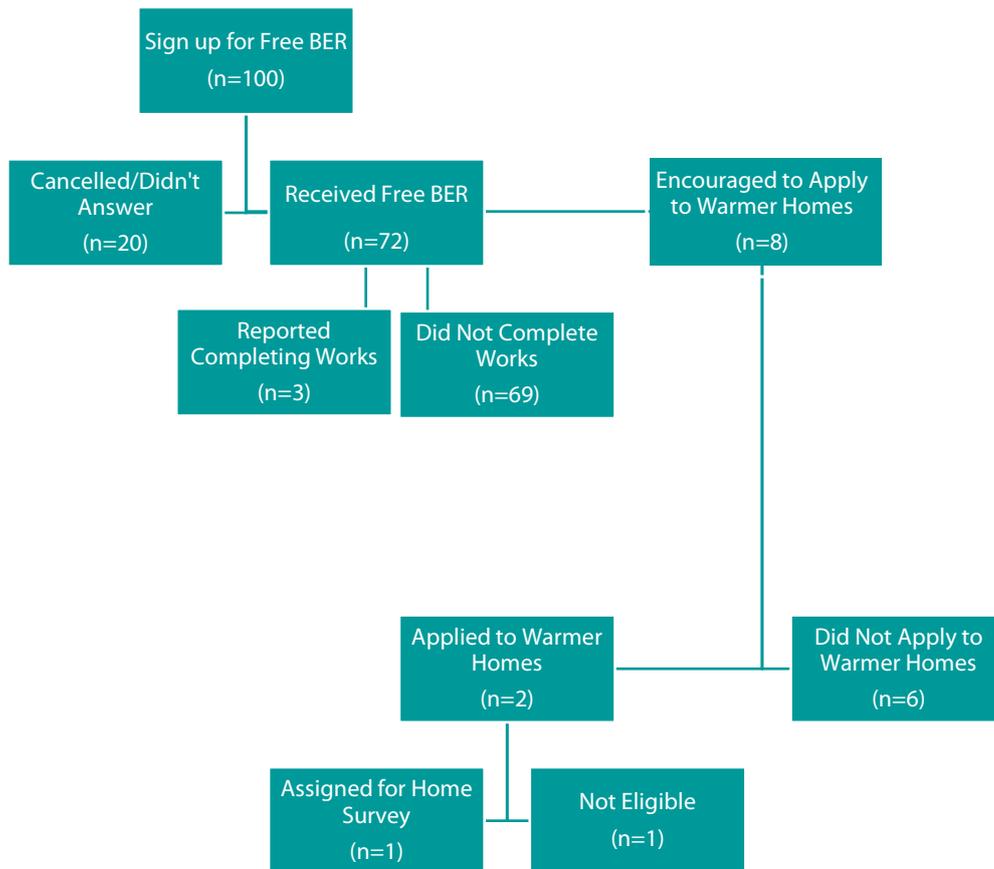
Following the recruitment of participants at the National Ploughing Championships and the review of expressions of interest from the email sent to the sustainable energy community network mailing list, 31 homeowners were identified as potential hosts.

From this list of potential homeowners, ten were selected to host home energy events in their homes. This selection process was not random. Homeowners were selected following a review of the address they had provided. Homes were screened to ensure that there was a mix of rural and urban housing, different house types (detached, semi-detached, and terraced), and old/new houses.

After selecting 10 homeowners to act as hosts, two decided not to take part. They were replaced with two other suitable homeowners from the comparison group.

Each of these homeowners received a follow-up email and follow-up call. Five homeowners did not reply and so it is assumed that they have not installed any energy efficiency upgrades. Of the five who did reply, none claimed to have installed any energy efficiency upgrades. Overall, it would appear that none of the ten hosts installed energy efficiency upgrades.

## Guests' installation rate



72 of the 100 home energy event guests that completed an expression of interest form for a BER received a free BER assessment. Of the 28 guests that did not receive a free BER assessment, eight were encouraged to apply to the warmer homes scheme. 20 of the 28 guests that did not receive a free BER assessment did not receive it because they either cancelled their appointment or were excluded due to non-response when contacted to schedule their BER assessment.

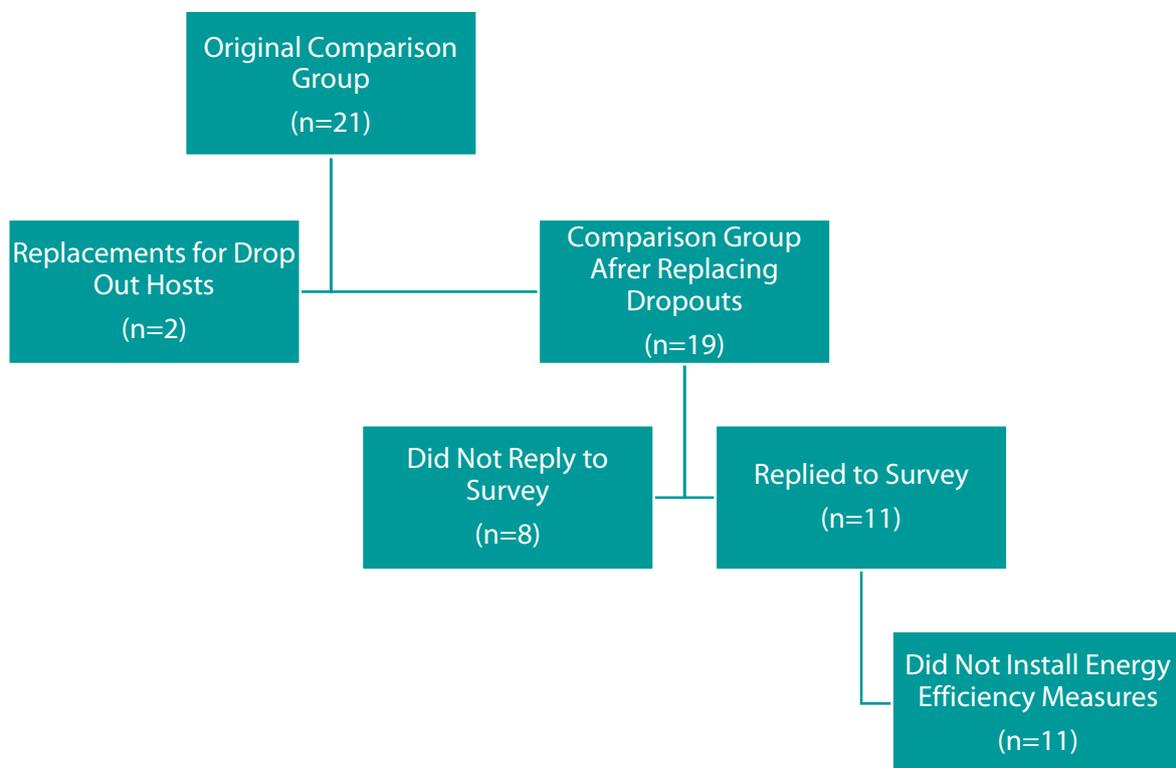
Of the eight guests encouraged to apply to the warmer homes scheme, two applied. One was not eligible due to works having previously been conducted on the house through the scheme. One was allocated to receive a home survey. At the time of writing, it cannot be determined whether this guest will complete energy efficiency upgrades under the warmer homes scheme.

Of the 72 guests that received a free BER, three completed energy efficiency upgrade works. One guest reported installing energy efficient lighting in their home. Another guest reported installing energy efficient windows. Unfortunately, there are no grants provided for energy efficient lighting or energy efficient windows and so we could not verify the installation of these measures by checking the database. The third guest reported installing external wall insulation and a heat pump, which would be considered extensive retrofit works. However, it is important to note that these energy efficiency measures could not be verified against SEAL's grant application databases. It is possible that the works were carried out without grant aid, but we cannot independently verify the completion of non-grant-aided work.

While the majority of guests did not install energy efficiency upgrades, a large portion (36%) still reported an intention to upgrade in the future when contacted at follow-up. The majority (21 of 28) of these guests reported an intention to install wall insulation (external or cavity), attic insulation, or solar panels. Five guests also stated an intention to install a heat pump in the coming months. When guests were asked why they had not yet installed the energy efficiency upgrades they had intended to install, the main reasons given were a lack of time and a lack of financial resources.

At the time of writing, two SEAI community grant applications were being formalised by attendees to the home energy events in Leitrim and Limerick. At the time of writing it is not possible to say with certainty that the guests who attended these events will complete home energy efficiency upgrade, through a SEAI community grant project. However, their intention highlights that future iterations of the home energy event programme may be useful catalysts for generating community grant applications. In this way, they could act as awareness raising events, where community members commit to upgrading their homes as part of a SEAI community grant project.

### Comparison group installation rate



A comparison group consisting of homeowners who signed up to host an event, but were not chosen to do so, was used to roughly compare the number of installations of energy efficiency measures between those who attended a home energy event and those that did not.

The original comparison group had 21 participants, however, two of these hosted events, after two homeowners dropped out. This left 19 homeowners in the comparison group. Two other homeowners from the comparison group subsequently attended a home energy event hosted by one of the selected homeowners. As a result, the total number of homeowners who had expressed an interest but ultimately did not take part in the home energy event pilot was 17.

Follow-up calls and emails were made to the 19 homeowners in the comparison group, including the two homeowners that subsequently attended a different home energy event. The follow-up was conducted six months after the homeowners had originally signed up to determine whether they had installed any energy efficiency upgrades.

Of the 19 homeowners contacted, eight did not reply. Taking a conservative approach to understanding the potential impact of this programme, it is assumed that these eight homeowners did not install any energy efficiency upgrades. Of the 11 homeowners that did provide a response, only one claimed to have installed an energy efficiency upgrade.

The homeowner reported installing low-energy light bulbs, a relatively low-cost measure. It is important to note that this homeowner was one of the two who had subsequently attended a home energy event hosted by another homeowner.

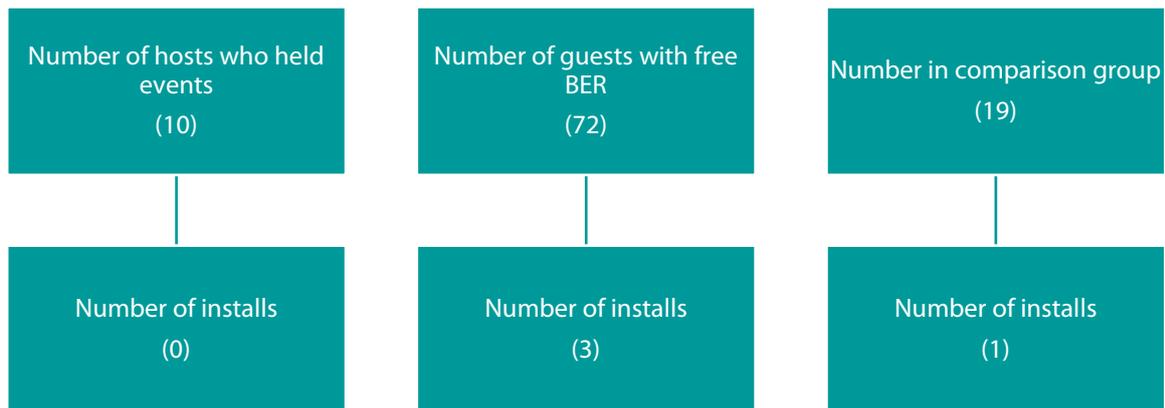
In other words, none of the 19 homeowners who originally signed up to take part in the programme, but were not chosen, installed a single energy efficiency measure. When asked why they had not yet installed the energy efficiency upgrades that they had intended installing, they said that they were too busy and did not have the time.

The comparison group is small, non-random, and non-representative. However, it provides a very rough comparison group with which to compare the installation rate of the homeowners who hosted or attended a home energy event.

### Summary of installation rates

Figure 1.14 shows the number of homeowners in each group and the number of homeowners who successfully installed at least one energy efficiency measure. As can be seen from the diagram, installation rates across all groups are low. The highest number of installs was among guests who attended a home energy event. However, it is important to note that none of the energy efficiency measures installed could be verified against SEAI's grant application databases. It is possible that the works were carried out without grant aid, but we cannot independently verify the completion of non-grant aided work.

**Figure 1.14: Summary of installation rates of energy efficiency measures by group**



## Policy Insights

### Learnings and feedback on home energy event content

Overall, guests and hosts praised the format of the events and spoke positively about the tools and games. Guests and hosts felt that the interactive format and the gamification of the information sharing was helpful in increasing people's engagement. The feedback highlighted that some tools and games were more popular than others. *Table 4* summarises the feedback for each tool and makes recommendations which tools should be included, modified, or excluded in future iterations of the home energy event programme.

**Table 4: Some tools proved to be more effective than others**

| Tool                                | Feedback   | Recommendation   |
|-------------------------------------|--|--|
| Pie chart game                      | Extremely popular and effective. The pie chart game helped to break the ice and open a discussion about energy use in the home. The information was communicated strongly and simply.                | Continue to use as designed.   |
| Guess which attic is insulated game | A good illustration of the benefits of attic insulation.   | Continue to use as designed.   |
| Thermal leak detector game          | Very engaging, especially with children. One guest said: "It showed heat loss in action." One guest thought that the game was too time consuming.  | Redesign the time it takes to deliver the thermal leak detector game. Focus on identifying 'cold spots' in the room. It could be redesigned so that, for example, the first three people who find a cold spot in the room win. |
| Thermal imaging camera              | Useful, but difficult to use in certain weather conditions/homes. Effectiveness depends on preparation of facilitators.  | Facilitators should use their judgement as to whether the thermal imaging camera will be effective in the house/weather conditions they are in.  |
| Heat loss model                     | Mixed reactions, ranging from people feeling dissatisfied to extremely satisfied with the tool. The model did not work during one home energy event.   | Improve the model's robustness and ensure that the heat lamp is generating enough heat to demonstrate the insulation effect properly.  |
| Blower test                         | Inconvenient and confusing. Guests found it hard to understand the message it was trying to communicate and there was a lot of hassle involved in setting up the test.                               | Remove from future iterations.   |
| Leaflet                             | Very clear and a useful takeaway. Guests preferred to read the leaflet than use the grant summary board or the heat loss advent calendar. The leaflet also allowed people to ask informed questions. | Continue to use as designed.   |
| Grant summary board                 | Repeated information from the leaflet. People were reluctant to come up to the board and review it in detail.  | Remove from future iterations.   |
| Heat-loss advent calendar           | Interesting but sometimes acted as a distraction. The board on which the tool was printed and the 'advent doors' were not robust enough for transporting.  | Remove from future iterations.   |

## Recommendations and next steps

Structured interviews were conducted with home energy event hosts, guests, and the facilitator as part of the evaluation of the pilot. This was done to learn more about the elements that worked well and those that could be improved. A number of possible improvements were suggested by guests, hosts, and facilitator:

- **Prequalify home energy event hosts** – while the home energy event hosts who participated in the pilot were well motivated, the facilitator recommended that, in order to maximise impacts, home energy event hosts should be pre-qualified. Potential hosts should be pre-qualified based on their status within their community, the type of guests they intend to invite (focusing on people not already part of a sustainable energy community for example), and the representativeness of the hosts' homes to other homes in the area. To maximise peer effects, hosts should ideally have recently completed, or be currently undertaking, home energy efficiency upgrades.
- **Qualify guests for receipt of follow-up assessment** – the assessor who took part in the home energy event pilot reported that the conversion rate of the programme could be improved if guests were asked a number of qualifying questions before recommending that they receive a follow-up assessment. This might include, for example asking guests to raise their hands if they are considering upgrading their homes in the next three months.
- **Increase the level of support given to homeowners** – home energy event hosts stated that they would like an independent energy consultant to give them a step-by-step overview of the entire process of choosing upgrades, installing them, and applying for grants.
- **Allow guests to hold their own energy event to create multipliers** – while this was always earmarked for inclusion in future rollouts of the pilot programme, it was positive to see that it was requested in the programme feedback.
- **Increase the level and speed of follow up with homeowners** – The results from this pilot programme suggest that even homeowners, with strong intentions to upgrade the energy efficiency of their homes, fail to follow through on these intentions. While it is likely that a number of factors influence this intention-action gap, frequent and deep engagement is, nevertheless, needed to help homeowners complete an upgrade. Operational issues did cause a number of delays in the issuing of home energy advice reports to homeowners during this pilot programme; this negatively impacted the number of homeowners who successfully upgraded their homes. Future iterations of the home energy event programme should strongly focus on delivering high levels of customer service. The amount of time that passes between hosting a home energy event and each of the guests of that party receiving their actionable advice should be minimised.
- **Consider integration with relevant SEAI programmes.** For example, home energy events could be run in local communities to build awareness of, and desire for, retrofitting. This would allow members of the organising committee to carry out outreach activities in their local areas and build networks which could be further leveraged. This could involve training local sustainable energy community committee members to act as facilitators for home energy events. As guests and attendees complete BERs as part of the home energy event process, the data from these BERs could also feed into the community's Energy Master Plan or their SEAI community grant upgrade plan. If future trials show that home energy events successful drive retrofit completions, it may be effective to offer obligated parties energy credits through the Energy Efficiency Obligation Scheme, in return for running home energy events.
- **Consider providing free energy saving devices while in the home** – the energy saving impact of the home energy event programme could be increased if assessors installed low-cost energy saving devices for free in both hosts' and guests' homes following the home assessment. These low-cost energy saving devices could include LEDs, lagging jackets, draught stripping, low-flow shower heads, and low-flow tap aerators.
- **Provide the home energy advice report while in the home** - The BER assessor who completed the energy audits also highlighted that it might be more effective to give the homeowner the home energy advice report while in the home. This would provide an opportunity for the assessor to talk the homeowner through each of the recommendations. For more complicated assessments, such as whether a heat pump would be appropriate for the home, broader advice can be given and confirmed with a follow-up phone call.
- **Cap the number of attendees for home energy events at 12 to 15 people** – One host managed to recruit 20 people to attend their event. While this was impressive, it ultimately made it difficult for people to interact at the event and reduced engagement.

- **Focus on creating events with a comfortable and friendly atmosphere** - Future iterations of the programme should not take the importance of the facilitator's communication skills for granted. Training should be provided to help facilitators deliver advice in a friendly, funny, and non-technical manner. The training provided should also teach them how to give personalised advice to homeowners, focused on helping them choose energy efficiency upgrades that best meet their needs.
- **Restructure the order of the home energy event process** – the process could be restructured to increase the likelihood of homeowners installing a home energy upgrade, and to facilitate the provision of timely advice. It may be more beneficial for the local community member to host a home energy event, and then conduct assessments for each of their guests. A wrap-up event could then be held where the original host and all of the guests that received an assessment are convened by the assessor with local contractors or SEAI community grant coordinators in attendance. This wrap-up event would focus on answering any questions that people might have after reading their advice reports. It could facilitate linking locally trusted contractors and coordinators with people who wish to complete upgrade works. This would reduce the possibility of forgetfulness by homeowners to follow-up and be useful in establishing a relationship between contractors and homeowners, facilitated by the trusted independent assessor. It would also provide an opportunity for homeowners, who have already decided to progress with work themselves, to motivate others attending the wrap-up event to also upgrade.
- **Include videos which highlight the benefits of an energy-efficient home** – Video content could be used as part of the home energy event; it could also be included in advice reports to help guests visualise the end result of a home energy upgrade<sup>6</sup>.
- **Include a deadline for decision making** – Many people who took part in the pilot program said that they had meant to get around to applying for energy upgrades, but simply didn't have time. This may be true or may represent procrastination. A deadline for the decision to upgrade should be set to encourage people to actively make a decision.

### Next steps

The home energy event programme has the potential to motivate members of local communities to investigate installing energy efficiency upgrades in their homes. Consideration should be given as to how the programme could be re-deployed, as part of a suite of interventions, to encourage homeowners to upgrade their homes. Consideration should also be given as to whether it would be beneficial to include the programme as part of new or existing SEAI efforts to encourage retrofitting.

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<sup>6</sup> An example of the video content that could be used to motivate homeowners:  
<https://www.youtube.com/watch?v=EZLKBDqXCkQ>

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## Appendix 1 – Recruitment flyer for home energy events

**WOULD YOU LIKE A FREE BER FOR YOUR HOME?**



# HOME ENERGY EVENT PILOT

SEAI are offering free BER assessments to homeowners who are willing to hold a home energy event in their home for 5 - 10 friends/neighbours!

See what's involved by watching a short video at:  
<https://tinyurl.com/seaienergyevent>



**EMAIL [KARL.PURCELL@SEAI.IE](mailto:KARL.PURCELL@SEAI.IE) TO LEARN MORE & TAKE PART**

## Appendix 2 – Structured interview guide for hosts

### Motivations

- What was your level of interest in energy issues beforehand?
- Are you already a member of an sustainable energy community?

### Recruitment

- How did you hear about the programme?
- What was your main motivation for getting involved?
- How many did you invite?
- Who you invited? Did you know everyone?
- How you invited guests (WhatsApp, email, door to door, phone)?
- How time consuming was the preparation?
- Thoughts about inviting strangers/friends of friends?
- What were the main challenges in recruiting attendees?

### BER

- Were you happy with the BER assessment of your home?
- Was the BER report simply understood and explained?

### The party

- House type? Age? BER etc...
- How did you feel about hosting the party? Did you enjoy it?
- What worked?
- What didn't work?
- Did the contractor explain things easily and was it easily understood?
- Were the visual aids and posters useful? Which ones in particular?
- Any talk after the event between you and guests or others? What was the feedback?

### Learnings

- What was the main thing you learnt?
- Do you have an idea of where energy is being lost?
- Where did you think energy was being lost before the event, and after the event?
- Do you have an idea of the most appropriate upgrade measures for your house?
- What do you think will be the benefits of upgrading your home?
- Is there any information you were really hoping to get that you didn't get?
- Have you been telling others about the experience? What have you said?

### Future plans

- What you plan to do next, and is it clear/do you understand the next steps?
- Have you progressed on next steps yet?
- Willingness to work with SEAI in the future?
- Would you welcome people back to see results if you do works?
- SEAI are looking for ways to scale this approach to encouraging retrofits. Do you have any recommendations for helping these home energy events become more popular across Ireland?

### Any other feedback?

## Appendix 3 - Structured interview guide for guests

### Motivations

- Why you attended?
- Level of community engagement? Are you a member of an sustainable energy community?

### The party

- Did you know the host? Did you know the other guests?
- How were you invited (WhatsApp, email, door to door, phone)?
- Did you attend alone or with a friend/spouse/family member?
- Did you enjoy it?
- What was the atmosphere at the event like?
- What worked?
- What didn't work?
- Is there anything you would add to the event to improve it?
- Did the contractor explain things easily and was it easily understood?
- Were the visual aids and posters useful? (visualising heat loss, thermal leak detector, understanding energy use pie chart game, heat-loss advent calendar, understanding the energy saving measures available and costs, takeaway leaflet)
- Do you think the party would be more effective held in a home that needs to be upgraded to learn which areas of your own home might need to be upgraded or would it be better to host the events in homes that have already been upgraded to see the benefits of upgrading?
- Did you find the contractor, and his assistant, friendly?

### Learnings

- What was the main thing you learnt?
- Do you have an idea of where energy may be lost in your home?
- Do you have an idea of the most appropriate upgrade measures for your home?
- What do you think would be the benefits of upgrading your home?
- Have you been telling others about the experience? What have you said?
- Would you be willing to host a home energy event in your own home for your friends/family/neighbours? Why/why not?

### Future plans

- Their own home types? Age? BER etc...
- What you plan to do next? and is it clear/do they understand the next steps?
- Have you progressed on next steps?
- Was there anything that could have been done to make it easier to decide which works to complete and to complete the upgrade project?
- Willingness to work with SEAI in the future?
- In the future SEAI will need to consider different ways of scaling home energy events, have you any suggestions for how we could help events like this spread through communities?
- One thing SEAI are thinking about is incentivising BER assessors to host home energy events by framing it as an opportunity to build their business in local communities. In return for the opportunity to host an event for members of the community, the BER assessor would offer a special discount on the cost of a BER for anyone attending the party. What do you think of this model? Would you be happy to attend? Would you be happy to host on of these events?

### Any other feedback?



Riailtas na hÉireann  
Government of Ireland

**Sustainable Energy Authority of Ireland**

Three Park Place  
Hatch Street Upper  
Dublin 2  
Ireland  
D02 FX65

e [info@seai.ie](mailto:info@seai.ie)  
w [www.seai.ie](http://www.seai.ie)  
t +353 1 808 2100

 |  |  @seai\_ie