

# Home Energy Coaching

## This mobiliser in a nut shell:

This approach encourages households to make changes in their energy use by either repeated home visits or repeated remote contact from energy coaches. The evidence for the benefits of this approach is taken from two promising pilots one in Scotland and the other in Ceredigion, Wales. Both pilots saw coaches making contact with householders and suggesting they trial energy use improvements in their homes, and then followed these trials up to assess their success. In the Scottish pilot the majority of the people in the study (66%) said the coaching had benefitted them with 52% reporting reduced heating costs (EST, 2016). In the Welsh pilot, where participant household energy use was directly measured, average energy consumption was reduced by 16% (Ymlaen, 2016).

## More on the nuts and bolts:

In the two pilot examples heating trials or experiments were carried out on the household heating system, which allowed suggestions to be made and for the impact of those suggestions to be followed up by both householder and coach. In both examples awareness was raised on how to control complex heating systems; through the trial people were supported to gain greater mastery of those controls, resulting in energy savings.

## Positives:

- Effective approach for reducing energy consumption and reducing fuel bills; while increasing empowerment and awareness.
- Tailored approach: participants get to learn what works for them in their unique setting through an iterative process.
- A holistic assessment, followed by holistic solution can be co-created
- Coaching can be done with or without home visits.
- Household visits, if resources allow, can mobilise and ensure buy-in by delivering quick wins directly such as: installing draught proofing, LED lightbulbs, Smart thermostats and Water cylinder insulation jackets.

## Negatives:

- Home visits can be costly due to the time and travel required.
- Cold calling participants is a challenge as many people contacted do not respond

# Peer Mentoring

## This mobiliser in a nut shell:

This is a very widely used mobilisation strategy to improve energy efficiency, which taps into the effectiveness of "group support (and pressure) is best" as highlighted by DECC (2012). Its prominence as a strategy is highlighted by the UK Government's establishment of the Community Energy Peer Mentoring Fund in 2013 (Cabinet Office, 2015). Peer mentors or Champions have been used effectively in many different scenarios. There are many different examples of this approach, which can be found in the reference section of this report.

Researchers in the world of marketing have proven that face-to-face communication is one of the best ways to gain attention in a world crowded with messages. Peer-to-peer communication specifically gains even more attention; communicators who are similar to the target group and even from the same social network can more easily customise messages and make information more relevant to recipients so it makes more sense to them (MECHANisms, 2011).

In two case studies where impact data was collected, the positive impact of this strategy was significant and also showed peer mentoring to be an intervention that is cost effective to deliver. The Energy Academy in Manchester trained up 17 community advocates that had personal engagements with just under a thousand residents resulting in equivalent household carbon reductions of 4,300 tCO<sub>2</sub> for a budget of around £30,000. The Energy Experts programme in Finland provided training at a cost of no more than €100/volunteer (~£86) and achieved reductions of 5% in heating requirements, 10% in electricity use and 20% in water consumption in tenements where they were deployed compared to tenements without experts.

## More on the nuts and bolts:

All peer mentoring projects have a training element to develop the knowledge and skills of the mentors. A lot of these initiatives rely on mentors giving their time as volunteers but not all, for example CHEESE Energy Tracers, once trained, offered their services for a fee (CHEESE, 2018). Other benefits of being a mentor include, in the case of the Energy Envoys, fulfilment of Duke of Edinburgh Accreditation (NEF, 2021) and for the Energy Experts the possibility of more involvement and resources for their particular tenement (Energychange, 2009). Virtually all age groups have had mentoring initiatives aimed at them; the Power Agent initiative focused on mentors between the ages of 10 to 14 (Energychange, 2010), whereas the Older Persons Energy Network focused on people at the other end of the age spectrum (CSE, 2012a). In several examples, a backup support service helped make volunteers feel valued and supported so that they continued to maintain their work.

### Positives:

- A cost effective mobilisation strategy
- Community mentors tend to know their target audience better than anyone and so will also tend to automatically adjust their messaging to be better received by their social group
- Peer mentoring also affirms social norms (or subtle peer pressure!), which can be very effective in social learning and behaviour change.
- Peer mentors will more likely have direct links with target groups making them trusted sources of information.
- Community mentors can be easily reached in their community and are therefore more accessible for timely, informal advice than other services

### Negatives:

- It is difficult to make demands or standardise the activity of mentors when they are volunteers.
- Mentors may drop out if demands placed on them for their voluntary commitment are too high.

# Home Energy Monitoring

## **This mobiliser in a nut shell:**

The idea here is that householders make reductions to their energy use by being supplied with a device which indicates the amount of energy that they are using in real time and how this fluctuates over a day or a week etc.

There is some big data on the benefits of this, as it is the mobiliser strategy that the UK Government has seriously committed to with its intention to roll out smart meters to every house in the nation. A large study has shown that 86% of people, after having a smart meter installed, made energy reduction changes in the home (SEGB, 2017). Average energy consumption for electric and gas were reduced by 2.3% and 1.5% respectively, between households with smart meters and those without (DECC, 2015). UK electricity consumers have paid for these units, through their energy bills and they are offered with wireless In Home Displays (IHD) to convey the information.

There are other monitoring devices, which can be purchased privately and which the energy companies are not obliged to provide, that do not get data transmitted directly from the smart meter. These modular devices can be more flexible in what they record depending on what sensors are included in a package (OpenEnergyMonitor, web). These other types of monitor have been combined with home energy coaching as previously mentioned (Ymlaen, 2016). CSE have developed a manual for one particular type, the Chariot system, developed by Nottingham University (CSE, 2016).

Having data continually fed to the household opens up the possibility of gamification of this feedback (essentially making a computer game) to encourage attempts to influence the data. Gamification has proved an effective method in a trial in Switzerland where energy consumption was reduced by 5.81% on average using this strategy (Koroleva, 2019)

Another related strategy that has been used to mobilise householders to reduce consumption is to provide them similar data except as a report on their energy bills. In a large study in the US this method showed it was effective in reducing energy consumption by 2% on average (Alcott, 2014).

## **More on the nuts and bolts:**

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### **Positives:**

- Evidence shows that this is an effective way to reduce energy consumption and to improve widespread awareness of energy use.
- Smart meters provide data to the system to increase the energy efficiency of the grid network and can be used in an Internet of Things approach to switch items on and off in the home to balance energy demand.
- Smart Meters are required for Energy Local initiatives to enable community renewable assets to supply consumers as a way to enable greater renewable energy penetration of the grid.
- Smart Meters have lots of potential additional benefits including: helping people budget on low income; facilitating smart charging of home batteries and electric vehicles; making time of use tariffs possible and assisting with health and social care (SEGB, web)
- Energy monitoring can help highlight to support workers and householders whether a difficult to spot underlying energy problem is present in a home and can then trial ways to resolve it
- Monitoring allows more interaction with energy use that can further drive down energy consumption such as gamification and peer comparisons.

### **Negatives:**

- People who adhere to the precautionary principle approach may not want smart meters in their homes as they generate wifi and prefer not to have data about their energy consumption used.
- Most of the energy saving benefits of smart meters rely on householders interacting with them. The IHD can get put in a draw after a while and forgotten about.

# Home Energy Audits

## **This mobiliser in a nut shell:**

Home energy audits are seen here as one-off assessments of a home's energy performance as opposed to a continual or repeated process. As a strategy they aim to give understanding of this performance to the householder, allowing them to identify areas for improvement ahead of making changes to reduce energy consumption and increase comfort.

The standard energy audit in the UK is the Energy Performance Certificate (EPC) assessment. The EPC provides motivation to improve home energy efficiency by suggesting ways that the property could be improved with clear detail of how much each improvement will cost; the annual financial benefit; how this will change the position of the property on the rating scale. EPC roll out has been extensive with over 22.5 million lodged in the UK since 2008. Other energy audits include PAS 2035 for domestic buildings prior to retrofit and SAP assessments for new or converted buildings.

Standard EPC assessments, while being relatively quick and cheap, do not ensure a participative experience for the home owner and therefore have limited mobilisation potential on their own. The Cold Home Energy Efficiency Survey Experts Project (CHEESE) conducts audits which are much more visual, interactive and participative for the homeowner. This level of audit very effectively indicates to householders where property inefficiencies can be rectified with both cheap and simple changes along with more expensive retrofits. CHEESE audits are often done in homes looking to make changes, so the impact of this work is considerable with average gas consumption in participating households reduced by 24.1% and electricity by 16.7%, or up to 24.8% with outlier adjustment (CHEESE, 2019).

## **More on the nuts and bolts:**

The standard EPC assessment takes only a few hours to complete by a trained assessor and results in a public document which is accessible online. It rates the home on an A to G scale, the same as standard electrical appliances, to guide people when purchasing and renting properties. Part of the mobilising effect is to tie this rating into the 'worth' of the property. A current EPC is required by law on any property being built, sold or rented, encouraging homeowners to invest in energy efficiency to improve the value of what is usually their main asset. Landlords currently need a minimum EPC rating of E on their accommodation before they can rent it which is a major mobiliser for change.

The survey protocol for a CHEESE audit is to create negative pressure in the property using an extractor fan and then do a heat tour of the building using a thermal imaging camera. This tour is done between a surveyor and the home occupier and the filmed energy images are recorded together with the audio conversation of the participants. The negative pressure in the home together with the thermal imaging camera's outputs, highlights the location of draughts and areas of poor insulation. The surveyor comments on these and makes suggestions to the home occupier, which are then captured in a recording that the home owner then keeps. In the experience of the CHEESE team draughts alone contribute to around 30% of most heat loss in the home and these can easily and cheaply be resolved (CHEESE, 2018). These simple improvements typically have a payback within one year but are also really effective in engaging people with their energy use and can be a catalyst to behaviour change.

### **Positives:**

- Effective as a mobilisation strategy to reduce peoples' energy consumption in the home.
- Audits clearly lay down what a home occupier needs to do to improve energy efficiency in the household.
- They can be of great educational benefit and lead to greater energy literacy.
- Immersive audits that use novel, visual methods, can generate inspiring experiences that could form memorable reference points aiding behaviour change.
- Energy ratings given at the time of a property sale can encourage investment in energy saving improvements to buildings.

### **Negatives:**

- As one-off snapshots of the energy performance of a building, the audit outputs can be filed away and easily forgotten.
- Certain audit processes are not participative with the home occupier and thus have lower educational and behaviour change potential.

# Community Based Approach

## **This mobiliser in a nut shell:**

The consideration here is the use of the 'community based' concept as a strategy (rather than the detailed elements of such an approach, such as coaching or home tours, which have been considered elsewhere in this report). This strategy encompasses the idea of change coming from the 'bottom-up' rather than from the 'top-down', and has indeed often been led by communities not waiting for 'top-down' influence - for example from local authorities - before taking action. This approach is important because behaviour change around energy use cannot occur in isolation, with only a strict focus on individuals' behaviours. Our energy use is shaped by family, peers and communities and so it is essential to design interventions which operate at a community level. It is for these reasons, and with evidence from past successful initiatives, that it is repeatedly recommended that energy behaviour change work is done with community-based or 'anchor' organisations that are in proximity to beneficiaries, which will listen to the needs and views of local people (DHWAG, 2019; Heiskanen, 2009; GA, 2019a; GA, 2019b).

The UK government has identified a whole range of barriers to progressing on-demand side energy efficiency which include: low awareness, lack of trust in the quality of installation, lack of trusted, salient, or tailored advice, low appreciation of the wider value of energy efficiency, and lack of incentives to act (BEIS, 2017). Community based organisations - especially energy groups with some level of expertise about the wider value of energy efficiency - are uniquely placed as trusted intermediaries who can continue to overcome these barriers. The UK Government department for Business, Energy & Industrial Strategy (BEIS) appears to be taking this on board as five out of six Local Retrofit Supply Chain pilot projects were awarded to initiatives led by community energy groups.

Despite there being so many great community based initiatives promoting energy efficiency in existence, it is difficult to outline a precise strategy for their initiation as they have often come about through many influencing factors and also address many issues, of which energy is often just one. WWF have established the Community Learning and Action for Sustainable Living (CLASL) model which looks at the process of initiation and establishment of strategies that support people to transition to more sustainable living, which has relevance here (WWF 2008).

## **More on the nuts and bolts:**

Here are two examples of successful initiatives that show the breadth of impact that the community based approach can have on household energy efficiency. In the first - Ashton Hayes Going Carbon Neutral - a whole village has been mobilised to tackle climate change (Edwards, 2007). Concerned individuals came together voluntarily and approached their community council, getting them on board and allowing the group to have legitimacy to speak for the village and its intentions to be the first carbon neutral village. The second is the Bristol Energy Network, again initiated by a group of concerned volunteers, which was established as an intermediary to help other community groups develop and bridge the thorny divide between the aims of their work (to be community-led) and the formal demands of a business-modelled and revenue-based policy regime (which encourages a top-down and 'modernising' approach) (Alcock, 2013).

### **Positives:**

- This approach is contextual in its nature, i.e. because it arises in the community it will usually address the specific local energy efficiency challenges in the community.
- Mobilises voluntary effort which make interventions very effective and cost efficient.
- Very powerful for behaviour change as it normalises energy efficient behaviour and creates the necessary conversations directly in the community.

### **Negatives:**

- Often hugely demanding on the lives of volunteers who establish community based interventions.
- As they're often volunteer led, these initiatives can wane over time and not have a standardised approach or predictable time line.

# Energy Communities of Practice

## This mobiliser in a nut shell:

People are brought together repeatedly in a group to look at their home energy use. The strategy can be similar to group-based behaviour change approaches such as Weight Watchers; a group of people come together to form a community, with a facilitator to focus discussions, coordinate meetings and help clarify points of confusion, and for participants to have a 'weigh in' (i.e. by declaring their weekly energy consumption). Three features of this approach - measurement and feedback; contextualised knowledge production; a supportive social context - are seen as critical to this strategy's success because they enable individuals to expose their taken-for-granted routines and habitual behaviours to reflexive scrutiny within a trusted community.

Research has been done on the 'Eco Team' approach which is a community of practice type approach used internationally to improve energy efficiency as well as promote other environmentally friendly behaviour (Hargreaves, 2008). Working within low income communities in Tower Hamlets, London, Eco Teams achieved a 7% average reduction in electricity consumption among participants. A similar initiative in France called 'Familles à énergie positive' has achieved a 17% reduction in energy use by participants (Entrust, 2016). Successful pilots have resulted in this being extended across France with 29,395 'teams' having participated in the project.

A flexible approach to communities of practice can focus on any aspect that a group wants to gather around and so can be support circles for peer mentors, DIY draught exclusion, planning home retrofit, or sharing operation trials of energy related technology such as energy monitors, thermal imaging cameras or heating systems.

## More on the nuts and bolts:

The essential element of the 'Familles à énergie positive' approach requires the development of an 'eco team' of between 5 and 10 people. Within the team, a captain is nominated and trained to fulfil the role of supervising, encouraging and supporting team members to meet the challenge of reducing energy consumption. It is not targeted at any particular socio-demographic group and thus is open to anyone (family, friends, colleagues, etc.). To supplement the team's meetings there is a dedicated website, which is the main tool to engage and motivate participants; it is used to track the energy consumption of the team and to measure progress. Here, all participants can find information about the challenge; list of teams and their rankings, tips on energy saving, FAQs, etc.

### Positives:

- Effective at energy saving even in low income households.
- Impact of the strategy is often directly measurable by the process itself
- Builds social capital and group commitment to tackle big issues
- The change generated to persistent routines and behaviours is persistent

### Negatives:

- As an innovative approach, this strategy requires more research and expansion to understand exactly how to maintain the teams' focus
- Mechanisms for perpetuating this kind of activity are not evident in the UK currently.

# Home Energy Tours

## This mobiliser in a nut shell:

In this strategy people open up their front doors to their private homes to allow others in to see and learn what they have achieved in improving their energy consumption. These events are always popular (CSE, 2015) and basically work in terms of encouraging energy efficiency behaviours. Whether it is because of the 'through the key hole' experience, or the appreciation of access to independent, real life experience with products and systems, it's hard to say... the reasons are many (GreenOpenHomes, Hamilton, 2009).

There are numerous examples of this strategy in practice in the UK alone (see references). This strategy has been widely tested and in a 2007/2008 study, there was evidence that over 26,600 people went around homes in this way (Hamilton, 2009). Although the impact of this is difficult to measure, in feedback from visits around 99% of people said they were pleased that they came, and that they found the 'touch and feel' nature of the visits where a good way to learn about solutions. A survey after another series of visits found that over 50% of visitors had taken steps to improve energy efficiency and install renewable energy (Superhomes, 2009).

## More on the nuts and bolts:

There are a variety of ways that home energy tours are arranged but most homeowners agree to show people round their homes on a voluntary basis. This is usually for a distinct time period when visitors are organised into tour groups to minimise the impact on the volunteer homeowners. Some homeowners agree to go on a permanent web-based register as in the case of Superhomes (2009). In the 2020-21 time of pandemic more tours have been done on a virtual basis which allows the possibility for the tour to be recorded and be a permanent video reference resource.

### Positives:

- Information is presented in a story narrative which connects on a personal level.
- Promotes information dissemination effectively through social networks.
- Shows what other people do in the same circumstances that most people find themselves in - hence a powerful activity for reinforcing or shifting social norms.
- Novel activity that appeals to a broad audience.

### Negatives:

- They are very difficult to standardise with the consequence that messaging can be variable.
- Householders are unlikely to have documented the precise details of the changes they've made and benefits derived, so information can become anecdotal.
- Can be draining for show households especially if they are posed extensive follow up questions.

# Online Tools and Resources

## This mobiliser in a nut shell:

The online resources that can be used to mobilise energy efficiency behaviours are increasing rapidly with the result that detailed impact research on these tools is struggling to keep up. Many of these tools have been touched upon in the other strategies in this report, for example household energy monitoring, gamification of energy data and virtual household energy tours. Shifting patterns of energy use requires people to acquire new knowledge, awareness and understanding making the internet an incredible resource in achieving this. Despite having this huge potential repository of information at our fingertips, ordinary people often feel insufficiently informed, making the mobilisation challenge not insufficiency of information but rather how that information is made meaningful and relatable for the average person (Shin 2021).

Many people need to be directed towards the most useful, reliable and effective information that will aid them in making informed decisions about changing their energy consumption. This is one of the aspects where social media campaigns can have a role in pointing people to and then reminding them of accessible information sources. It is useful for intermediary organisations to digest the wealth of online information and find the best links to the resources which are locally appropriate. The relative ease with which local web based content can be created now also has benefits to local intermediary organisations. The flexibility of online resources means that they can incorporate the most effective components of information campaigns including: tailoring messages to target groups, repeating messages over time using slightly different channels, use of fun, simple and easy to realise messaging, and quick adaption to timely, topical, local concerns (MECHANisms, 2011).

## More on the nuts and bolts:

Some of the things that need to be thought of when using social media to promote household energy have been considered by the US Department of Energy (US DoE, 2015). Using social media to promote information and awareness differs from a one-way presentation of information using traditional media forms and standard websites, because it is a two-way conversation where 'recipients' can respond. This has the benefit of being more interactive and engaging, but also means that follow up work needs to be factored in once the message has been put out there.

Another online tool that has recently jumped to prominence is video conferencing for information exchanges. The webinars it makes possible can increase and broaden participant attendance and whilst also broadening the range of people that could get involved in events, especially in rural areas.

### Positives:

- Online resources and tools allow wide engagement and interaction if properly used.
- People can find meaningful information that is relevant to them
- Online information means that reference material is readily available on demand.
- Virtual communities are a way of affecting social norms through public dialogue.

### Negatives:

- Participation by people who are offline or who have limited digital literacy is extremely difficult.
- Using social media has an energy footprint that is somewhat at odds with energy efficiency work.

# Energy Advice Services

## This mobiliser in a nut shell:

The high water mark for provision of energy advice services was from the late 1990s up until 2012 when there was a network of 52 Energy Efficiency Advice Centres (EEACs) across the UK. These centres had an important role of digesting all the energy efficiency resources appropriate for their covered areas to make it contextualised and locally appropriate. This information was then made available via telephone helplines with the option of face to face support at one of the centres or in the community. EEACs were also active in outreach through having a presence at events such as agricultural shows and dedicated meetings. The work of these EEACs was cost effective at reducing carbon emissions (£1 per tonne of CO<sub>2</sub>) and associated saving benefits to consumers (+£115/tCO<sub>2</sub>) (Warren, 2020). Unfortunately for this important provision funding cuts in 2012 all but dismantled the service which has been replaced with lesser types of provision in differing ways across the devolved nations.

For effective mobilisation Warren (2020) states that it is beneficial for energy services to consider three aspects of advice:

**Content:** contextualising and framing the content of advice is important for effective behaviour change. Community based advice services with their enhanced audience knowledge will be able to tailor and target message content further to the individual so information has the greatest effect. Advice content will achieve increased behavioural change if it includes multiple frames (e.g 'you'll save money' and 'you'll be more comfortable')

**Source:** it is often the case that the trustworthiness and expertise of the advice source is more important in influencing outcomes of energy efficiency interventions than the content. Non governmental organisations with no private vested interest in the advice tend to be the most trusted sources of information for the UK public (Cabinet Office, 2011). Furthermore, advisors with a level of expertise that enables them to use their specialist knowledge to contextualise and tailor their advice to individual problems are appreciated. Peers with expertise from personal experience are also a highly regarded source.

**Process:** this should be considered as having three distinct and integral stages: 1) raising awareness, 2) giving of advice and 3) confirmation & reinforcement of advice to ensure that it is acted upon (Boardman, 2000)

## More on the nuts and bolts:

It is useful to have a distinction between reactive and proactive energy advice services. Having a reactive advice service on demand is effective for those people actively seeking energy change but not for those who are un-mobilised that could be in greater need. To be best placed to overcome this, a reactive energy advice service should be combined with the proactive mobilisation strategies mentioned in this report.

Many previous energy advice services have been characterised by following the 'information deficit approach', which can assume a linearity between cause and effect: that solving the barrier posed by a lack of information will correct individual energy decision-making in isolation, without considering other barriers. Providing the right, contextual information is extremely important in energy efficiency mobilisation but communicators need to be very aware that they don't slip into a 'deficit mindset' which makes them focused on the information being imparted while being blinkered and disconnected to the wider social situation of their exchanges (Warren, 2020).

### Positives:

- Energy advice services are well placed to help people already motivated to seek assistance, who are the most likely to go on to take energy efficiency measures.
- Has been shown to be a cost effective method for increasing energy efficiency.

### Negatives:

- Can be a reactive process which does not reach all sectors of society
- The process and communicators can fall into a 'deficit mindset' and fail to address the range of behaviour change challenges associated with energy efficiency provision.