

Optimising boilers to reduce household emissions: long list of intervention ideas

1. Summary of intervention ideas

Below is a summary of the intervention ideas Nesta and partners have generated to support households to reduce the flow temperature of their boilers. The intervention ideas are scored by estimated impact and by the ease of implementing the idea at scale.

Idea	Estimated impact	Ease of implementation
Engineers		
Incorporating boiler efficiency into best practice		
3.1 Engineers set lower flow temperatures and educate households during servicing and installation	High	Low
3.2 Educate engineers on flow temperatures and boiler efficiency through different channels	High	Low
Practical advice to take action		
4.1 Create a video or interactive training package for engineers, with guidance on assessing the optimum flow temperature for a home's context	High	Medium
Households		
Physical prompts to take action		
5.1 Industry-generated, government-supported materials to promote and aid households in adjusting flow temperatures, distributed by engineers and others	High	High
5.2 A prompt sticker or magnet placed on a prominent radiator or the boiler. This could be thermochromic, turning red when the flow temperature is too high	High	Medium
5.3 Recommended boiler flow temperatures on EPC certificates, based on the EPC score	Low	Medium

Digital prompts to take action		
6.1 Use energy data to push personalised report with energy saving advice through apps and emails on a regular basis	High	High
6.2 Work with banking or budgeting apps to show advice on reducing flow temperatures	Medium	High
6.3 Work with consumer advice to provide unified advice across websites	High	Medium
6.4 Use price comparison websites to suggest ways to run heating more efficiently	High	Low
Practical advice to take action		
7.1 Develop a web-tool that gives tailored instructions on how to change boiler settings based on basic home info, EPC score and boiler model	High	Medium
7.2 A step-by-step video walking households through changing their flow temperature	High	High
7.3 A sticker placed around the boiler dials showing its 'sweet spot'	Medium	High
7.4 An app linking confident and knowledgeable people to those who want help adjusting their boiler settings	Medium	Low

2. Background

The interventions in this document are the outcome of an ideation workshop with the project steering group on 22nd February 2022.

The ideation itself, as well as the process of turning workshop ideas into more tangible interventions, was informed by interviews with members of the steering group, interviews with households, an online experiment investigating the barriers to lowering boiler flow temperatures and two small field trials investigating household experiences of lowering flow temperatures.

Below we describe each idea in more detail.

3. Incorporating boiler optimisation into best practice for engineers

3.1 Engineers set lower flow temperatures and educate households during servicing and installation

Boiler engineers could be a key route to lowering boiler flow temperatures in homes. They could educate households on lower flow temperatures, and set the boiler at a lower temperature if the household agrees. Households could also be taught how to adjust the flow temperature themselves, as well as being educated on boiler controls more broadly.

This could rapidly reach a large number of people, in particular by working with boiler engineers who do boiler checks for large social housing providers.

It's important to note that our interviews with households and members of the steering group revealed that households believe engineers want to leave the house as soon as possible, whilst engineers believe households want them to leave quickly. If done correctly, this intervention could give engineers the confidence to share advice more often.

3.2 Educate engineers on flow temperatures and boiler efficiency through different channels

Interviews with members of the steering group suggest there may be a knowledge gap for boiler engineers around boiler efficiency or setting a flow temperature based on a property's context.

Installers could be educated on this issue through a number of routes, for example:

- Merchants
- Gas Safe register/training
- Required training programmes
- Installer newsletters, magazines, publications, websites, forums

With this knowledge engineers could better optimise boilers when servicing and installing them as part of their day-to-day job.

There's also the possibility that many engineers know about boiler efficiency measures, but choose not to act on them to avoid callbacks and overstaying their welcome in homes (they would have to explain the changes they've made to households). It would be important to overcome this barrier, via training or otherwise, for this to be most effective. Presenting engineers with data, case studies and proof that lower flow temperatures increase

efficiency without impacting comfort may partially help to address this issue.

4. Practical advice to aid engineers to take action

4.1 Create a video or interactive training package for engineers, with guidance on assessing the optimum flow temperature for a house

Related to the previous point, training would need to be developed for boiler engineers. This could explain the concept of low flow temperatures, and why they're beneficial for energy efficiency and boiler performance. It could also give installers some guidelines on assessing which flow temperature might be ideal for the property, based on EPC rating and other factors.

It would also be important to present data, case studies and proof to engineers as part of this training, as this has previously made sceptical engineers more willing to lower flow temperatures. This would also be more helpful for those who know more about boiler efficiency but are wary of receiving complaints from customers or requests for callbacks.

This training could include written resources; for example, a 'cheat sheet' that could be used on the job to help choose a flow temperature based on the house. This video should be 'hosted' by a trusted messenger to boiler engineers.

Careful thought would need to be given about how to best roll out the training, possibly as part of existing mandatory training for boiler engineers.

5. Physical prompts encouraging households to take action

5.1 Industry-generated, government-supported materials to promote and aid households in adjusting flow temperatures

Boiler manufacturers and the government could work together to create resources to advertise the benefits of lower flow temperatures, give instructions on how to set it, and guide households on adjusting their heating pattern to fit lower temperature heating. The government-backed approach may make it feel more trustworthy to households. It may also increase the chance of households viewing it, especially if it was seen as something more interesting than, or different to, a boiler manual.

These materials could also contain a link or QR code to a more interactive website. The materials could be distributed via boiler engineers during installation and servicing, but also as part of a 'welcome pack' for private-let homes, social housing, and for new homeowners.

5.2 A prompt sticker or magnet placed on a prominent radiator or the boiler. This could be thermochromic, turning red when the flow temperature is too high

A sticker or magnet left on a radiator or the boiler could remind people to check and adjust their flow temperature. A sticker or magnet placed on a prominent radiator could simply contain a written prompt to check the flow temperature, or it could change colour based on the radiator's temperature (for example, turning red if the radiator is above a certain temperature).

Placing this on a prominent radiator may be more suitable than a boiler as interviews have suggested that people rarely look at their boiler, unless there are issues with their heating. A radiator, rather than a boiler, is also more suitable for the thermochromic sticker or magnet approach as radiator temperature is more directly related to the return temperature.

This sticker or magnet could be left in the home by a landlord, an estate agent or a social housing provider. It could also be added during boiler servicing or installation.

The technical feasibility of a thermochromic sticker or magnet still needs to be assessed.

5.3 Recommend boiler flow temperatures on EPC certificates, based on the EPC score

Putting a recommended boiler flow temperature on EPC certificates could both increase awareness and encourage people to change their flow temperature, as well as giving them confidence in choosing a temperature that would work for their home. There is a question as to how many people actually look at their EPC certificate, or look beyond the letter rating and at the recommended actions, especially renters.

6. Digital prompts encouraging households to take action

6.1 Use energy data to push a personalised report with energy saving advice through apps and emails on a regular basis

A series of app notifications, emails or reports sent during the heating season could prompt people to check and change their flow temperature, especially if real data is used to frame the message. For example, the message could compare a household's energy use to the previous year, their neighbours or the regional average and suggest checking if they could optimise their boiler to save energy. This would also include a link to more

detailed practical instructions on reducing flow temperatures.

It's well evidenced that interventions providing households with regular feedback, including comparisons to social norms, are effective in creating behaviour change. Energy companies would be a potential scaling route for this intervention and there are energy apps (such as Loop) that might also be suitable.

One issue here is whether energy companies have the staff capacity to do the work behind such personalised reports, and to deal with the likely influx of questions about changing flow temperatures.

6.2 Work with banking or budgeting apps to show advice on reducing flow temperatures

This idea is similar to the idea above, but the advice would be shown through other apps that don't have access to energy use, thus omitting the personalised data or report component.

6.3 Work with consumer advice to provide unified advice across websites

Interviews have shown that people need to see the same advice on multiple websites before trusting it. We can do this by ensuring the message around flow temperatures is clear and consistent across advice websites. This would also help to raise awareness of low temperature heating as people may come across the advice when visiting their most trusted website for advice on a similar issue.

6.4 Use price comparison websites to suggest ways to run heating more efficiently

People visit price comparison sites with the purpose of saving money in mind; this makes it a great place to encourage people to turn down their boilers, as long as evidence does show significant and repeated financial benefits.

7. Practical advice to enable households to take action

7.1 Develop a web-tool that gives tailored instructions on how to change boiler settings based on basic home info, EPC score and boiler model

The range of different boilers in people's homes, and the fact that non-combi boilers may be unsuitable for certain temperatures, makes producing standard instructions difficult. A webtool to give tailored instructions on

changing the flow temperature would help to address this, and increase user confidence.

Whilst there may be an ideal flow temperature in terms of boiler efficiency, the wide range of home (and energy efficiency) contexts means that this ideal temperature may not always meet a household's needs. A tool that can take into account EPC score and other home information could help people set their boiler at a more efficient, but still practical temperature.

As an initial intervention, this tool could provide tailored instructions for the top five most common condensing combi boilers in the UK.

7.2 A step-by-step video walking households through changing their flow temperature

The tool above could also be simplified into a simple step-by-step video with more generalised instructions on lowering a boiler's flow temperature. It could also have 'skip to' sections, for example an introduction followed by timestamped 'chapters', each with instructions specific to the most common boiler models.

This intervention would require a lot less resource to create than many of the others, and without sacrificing utility (during interviews households mentioned finding YouTube tutorials helpful).

7.3 A sticker placed around the boiler dials showing its 'sweet spot'

Many boilers simply have a 1-6 dial, without a screen or actual temperature markings. This makes it hard for people to set their boiler's flow temperature, even if they know what they're aiming for. A sticker could be placed around the dials on a boiler, indicating where to turn it to for maximum efficiency. This could be marked with a green zone fading through yellow, orange and red the further away from the efficiency 'sweet spot' the dial is set. This could also act as a prompt for those who haven't considered lowering their flow temperature, but happen to be looking at their boiler.

A simpler (and more universal) version of this could be made for boilers with a screen.

Boiler manufacturers or a third party (if the temperatures corresponding to each number were listed in a manual) could create these stickers, and they could be distributed by boiler engineers during servicing and installation.

One consideration is the differences in house factors, for example insulation levels, house size and double glazing. This may mean the designated 'sweet

spot' may not work for everyone and could lead to confusion if people think their house should be warmer than it is as the boiler is set to the green marker.

7.4 An app linking confident and knowledgeable people to those who want help adjusting their boiler settings

Some people may feel safer, or more confident, in changing their boiler settings if doing it with someone who is more knowledgeable on the issue. Connecting these people via an app could help to do this. Users could open the app and see who's available to help via an in-app video call immediately, or they could 'book' a slot in a volunteer's calendar for a more convenient time.