Phasing out fossil fuel heating in homes off the gas grid consultation

Energy Saving Trust's response

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1. Do you agree with the principle of working with the natural boiler replacement cycle as the key trigger to deploy low carbon heat?

Yes - Energy Saving Trust strongly supports the UK Government's commitment to phase out the installation of fossil fuel heating in homes off the gas grid.

Energy Saving Trust agrees with the principle of working with the natural boiler replacement cycle as a key trigger to deploy low carbon heat. We do not however believe that the natural boiler replacement cycle should be the only or the main trigger to deploy low carbon heat. This is because boiler purchases at the point of "natural boiler replacement" are, more often than not, distress purchases – i.e. they have broken down and need to be replaced quickly and as such many people will not have sufficient time to research the different heating options that are available for their property, explore the different ways that they may be able to fund and finance the necessary work and have enough time to undertake any necessary preparatory work (including, where appropriate, major upgrades to the energy efficiency of their homes). In light of this we recommend that significant efforts are employed to encourage voluntary action in advance of any regulation – for further details please see our response to question 3 below.

We also have concerns that using the natural boiler replacement cycle as the key trigger to deploy low carbon heat in homes off the gas grid may not lead to sufficient numbers of fossil fuel heating systems being replaced with low carbon alternatives at the pace necessary to ensure not only that the UK Government's ambition to install 600,000 heat pumps a year by 2028 is delivered but also that the housing sector makes its necessary contribution to meeting the UK's climate change targets.

2. Would a 2026 end date for new fossil fuel heating installations in homes off the gas grid give industry and consumers sufficient time to prepare for the regulations?

Yes - Energy Saving Trust strongly supports a 2026 end date for the installation of fossil fuel heating in homes off the gas grid and thinks that this date would give industry and consumers sufficient time to prepare for the regulations.

A phase out date of 2026 would provide both industry and consumers with up to 4 years (2022-2026) to prepare.

Both industry and consumers will need appropriate support from the UK Government in order to help them to prepare. This should include significant awareness raising activity – it is impossible to prepare for something you don't know about – which must begin as soon as possible.

As well as using this period (ie the period between 2022 and 2026) to develop and deliver communications campaigns the UK Government should use it to significantly ramp up the support available to householders to improve the energy performance of their homes (ie the support available to encourage people to make energy efficiency improvements, install low and zero emissions heating systems, other domestic renewables and energy storage). In particular there is a need to ensure people in England have access to consistent, comprehensive and personally tailored impartial advice and support that can help them make decisions as they transition to low carbon heating. For further information about the full range of support that will be necessary in this space please see our response to questions 10, 12 and 16 below. The availability of support before any regulatory requirements kick in will help to ensure that business-as-usual rates of voluntary improvement are not only maintained but increased considerably. This is important because the more successful the voluntary approach the less need there will be for regulation to apply as extensively. It is also important because it will provide some of the necessary conditions for supply chain growth.

We have detailed in our response to question 14 below our thoughts on additional interventions that could help to boost supply chain growth and ensure the supply chains are prepared for the regulations. We would however like to emphasise here that, given the urgency of action in the context of the climate emergency, supply chain issues should not be allowed to be a limiting factor.

2. A 'heat pump first' approach to replacement heating systems from 2026

3. Do you agree with a heat pump first approach to replacement heating systems in fossil fuel heated homes off the gas grid that can reasonably practicably accommodate a heat pump?

Yes - In principle, Energy Saving Trust agrees with a heat pump first approach to replacement heating systems in fossil fuel heated homes off the gas grid that can reasonably practicably accommodate a heat pump. As the consultation document notes heat pumps "deliver high levels of energy efficiency, low carbon emissions and are consistent with net zero emissions as the electricity grid decarbonises" and are "commercially available, can be deployed at scale across most fossil fuel heated homes off the gas grid, and have lower running costs than many other low carbon heating systems".

However, our full support for this policy will be dependant on the final definition of "reasonably practicably accommodate". While the consultation does not define "reasonably practicably accommodate" in any detail, it does note that "The government is considering how to support households making major upgrades to their energy efficiency, but where these upgrades have not been made by the time of boiler replacement the high cost, disruption and long installation time would make it impractical to require this to enable a low temperature heat pump to be installed." Energy Saving Trust believes that major energy efficiency upgrades (in addition to minor upgrades as proposed in the consultation document) should be considered "reasonably practicable". However, we accept that for many households it would be very difficult to undertake this level of work at the point that their boiler had broken down. This should not however mean that major energy efficiency upgrades are not required. Rather, it should mean that new heating systems are installed first to deal with the immediate issue of having no heating and that major energy efficiency upgrades (which would be part of the requirement) could be installed shortly afterwards. It is important to note that this would require an acceptance that the heating systems would function sub-optimally for a very short period of time as they would be sized for a home that had had all reasonably practicable improvements made to it before those improvements had actually been made, in these circumstances temporary additional measures (eg the temporary use of oil filled radiators) could help to ensure homes were not underheated. Energy efficiency is the most effective long-term guarantee of a housing stock that uses less energy. Strong fabric first standards 'lock in' energy saving and not only make dwellings more comfortable to live in but make them more economical to heat (because less heat is needed) thereby helping to fuel poverty proof the stock. They also reduce system costs as there is less demand (than would otherwise be the case) on the grid. Without such a requirement there is a real risk of sub-optimal outcomes.

We also recommend that significant efforts are employed to encourage voluntary action in advance of the need for a distress installation:

1. The UK Government immediately introduces a boiler scrappage scheme for fossil fuel boilers over a certain age in areas off the gas grid. This should include grant funding for both the replacement heating system and for major energy efficiency upgrades.
2. Major communications campaigns for both households and supply chains should be developed and delivered to raise awareness of forthcoming regulation.

   This will need to be backed up by:

3. The availability of consistent, comprehensive and personally tailored impartial advice and support that can help people make decisions as they transition to low carbon heating. For households in England this will mean advice and support that goes significantly beyond the UK Government's Simple Energy Advice (for further details please see our response to question 16 below).
4. Significant support packages for the supply chain (please see our response to question 14 below). In addition, consideration should be given to:
5. Additional ways of encouraging and incentivising people to plan for heating system change. This could include providing a small amount of grant funding through existing/planned support schemes (e.g. the Boiler Upgrade Scheme) to fund or part fund the heat pump system design. This could be accessed by householders with boilers over a certain age and would ensure that, when the time comes to replace their existing boiler, their new system is already planned and they can move straight to the installation stage.
6. The introduction of regulation at other trigger points – ideally these should be points at which people would naturally have more time to research the different heating and energy efficiency options that are available for their property, explore the different ways that they may be able to fund and finance the necessary work and that have enough time to undertake any necessary preparatory work (including, where appropriate, major upgrades to the energy efficiency of their homes). This could include, for example, the potential triggers proposed in the Heat and Buildings Strategy (ie when there are changes to building use, or occupancy or ownership and when building and renovation works are carried out. It could also include the point of boiler repair (or a specified time after repair) for boilers over a certain age. For further detail please see our response to question 12 below.

We also think that support and advice should be available for householders who decide that they do want to go ahead and undertake significant energy efficiency works at the point of boiler replacement in order to ensure that they are able to keep their homes warm whilst making a decision and whilst energy efficiency improvements are being made. Such support could include funding for the short-term provision of "emergency" measures e.g., electric oil filled radiators to ensure that homes can be kept warm over the course of the work.

Consideration must also be given to how disrepair in the housing stock will be tackled within the regulatory framework and how householders can be supported to repair and maintain their homes. This is important because in some cases appropriate repairs need to be undertaken before homes can accommodate even minor energy efficiency improvements (eg fixing a leaking roof before loft insulation can be installed).

Finally, it will be important that the final definition of "reasonably, practicably accommodate" is considered in light of the recently published research undertaken on behalf of BEIS which concluded that "all housing types are suitable for heat pumps" and that there is no "particular type of age of property that cannot have a successful heat pump installation", (see: https://es.catapult.org.uk/report/electrification-of-heat-installation-statistics/?reportDownload=https://esc-production-2021.s3.eu-west-2.amazonaws.com/2021/12/BEIS-Electrification-of-Heat-Installation-Statistics-Report-FINAL.pdf) as well as relevant discussion generated by this work.

4. Do you have any views on the design or content of guidance that will help households and installers determine whether it is reasonably practicable to install a heat pump?

Energy Saving Trust supports the UK Government's intention to develop guidance that will help households and installers determine whether it is reasonably practicable to install a heat pump.

Energy Saving Trust agrees that, as proposed in the consultation, any guidance should consider factors such as heat loss, potential to upgrade energy efficiency, availability of appropriate space, and any other legal constraints. On the issue of legal constraints, and specifically the controls associated with conservation areas and listed buildings, we believe that in light of current climate science and of the climate emergency, there is a need to urgently review the controls associated with conservation areas and listed buildings which may prevent the installation of some low carbon heat solutions.

In addition to the content suggested in the consultation, the guidance should also signpost people to any available source(s) of independent, impartial expert advice. As we argue in our responses to questions 1, 12 and 16, there is a need for households to have access to impartial advice, and the need for such a service in England to support households to understand their options and steps they need to take when looking to install a heat pump. In the absence of this service at present, signposting should include the UK Government's Simple Energy Advice service and Energy Saving Trust's website (see: https://energysavingtrust.org.uk/energy-at-home/).

It is worthwhile noting that suitability tools (ie tools to determine the suitability of different low and zero emissions heating systems are appropriate for different types of homes) already exist and there is significant scope to build on work that has already been undertaken in this space. For example, Energy Saving Trust on behalf of the Scottish Government has developed the Home Renewables Selector tool (see: https://homerenewableselector.est.org.uk/) which helps people in Scotland to find out what low and zero emissions heating and other domestic renewables might be suitable for their home (as well as information about these technologies) and provides fuel bill (including payments from funding schemes such as the Renewable Heat Incentive and the Smart Export Guarantee) and carbon saving estimates based on the characteristics of their property. Users are able to download a report summarising their results and call Home Energy

Scotland – Scotland's national advice service to talk through their results with a specialist renewables advisor should they wish.

While we note the importance of guidance, ultimately it will be important that off gas buildings are assessed for their suitability for low carbon heat technologies by a suitably trained professional.

5. Do you have any additional evidence on the size and characteristics of the cohort of homes off the gas grid that have the greatest deployment potential for ground source heat pumps?

Energy Saving Trust's Home Analytics (see: https://energysavingtrust.org.uk/service/home-analytics/) is a unique domestic property dataset. It has been created by Energy Saving Trust over a number of years and incorporates data from EPC records, Ordinance Survey, Home Energy Efficiency Database (HEED) and more. The resulting dataset can predict energy efficiency and property characteristics for every single home in Great Britain. Home Analytics can identify properties that would be more or less suitable for heat pump deployment (both air source and ground source). To do this it takes into the account the distance from the gas grid, size and type of property, existing heat source, listed status and various other data points. We would be very happy to discuss Home Analytics with you in more detail– please do get in touch if you think this would be useful.

However, we also note that there are many other factors that need to be considered including:

- Identifying contiguous parcels of land to targeted buildings which have straightforward access for digging plant.
- Ownership status and current use of that land, and whether it is in the control of the property(ies) in question.
- Ability to connect multiple properties using either micro district heat schemes or shared loop systems – this is also linked to the ownership and current land use of land parcels contiguous to the properties in question.
- Physical barriers such as trees, streams, walls or other buildings which would limit access for digging plant or impede the burying of pipes between the ground (or water) source and the building(s) to be heated.
- Ability to bring in a 3 phase electrical connection to domestic properties with a peak heat load that exceeds 30kW (where this load could otherwise be met using up to 2x 15kW single phase heat pumps). • Whether properties could be heated by air source instead more cost effectively.
- The cost of bore holes vs slinky / plain pipe installations where contiguous land parcels are too small for extensive ground works or where bore holes could overcome other physical barriers.

3. Require high performing replacement heating systems where heat pumps cannot reasonably practicably be installed

6. Do you agree that the performance of replacement heating systems in homes off the gas grid that cannot reasonably practicably accommodate a heat pump should reflect the current high standards of performance that can be delivered through high temperature heat pumps and solid biomass systems?

Yes, we broadly agree that the performance of replacement heating systems in homes off the gas grid that cannot 'reasonably practicably' accommodate a heat pump should reflect the current high standards of performance that can be delivered through high temperature heat pumps and solid biomass systems. However, it is important to note that only a small proportion of homes (post energy efficiency retrofit) will not be able to reasonably practicably accommodate a low temperature heat pump.

It is also important to note here that low temperature heat pumps are not just capable of heating small or well insulated buildings – though it is certainly true that there are some buildings that are more difficult to heat with low temperature heat pumps than might be the case with a fossil fuelled boiler. In reality, most homes could be heated using a low temperature heat pump, as long as the central heating system is designed and sized correctly. Homes can present challenges when significant parts of the central heating system need improvement, which adds cost. In the most difficult cases, it might even be prudent to completely replace all the radiators and pipework – but these cases are extremely rare. In the most difficult homes, solutions can often be found which either use two heat pumps rather than one (cascade systems) or use "high temperature" variant heat pumps

7. Do you agree that future use of solid biomass to decarbonise heat in homes off the gas grid should be limited to rural, off-gas grid areas where air quality can be better controlled, and in 'hard to treat' properties that are not suitable for other low carbon heating technologies?

Yes, Energy Saving Trust agrees that future use of solid biomass to decarbonise heat in homes off the gas grid should be limited to rural, off-gas grid areas where air quality can be better controlled, and in 'hard to treat' properties that are not suitable for other low carbon technologies. We would like to emphasise our support for the assertion on the consultation that "...overall deployment must be limited in order to maximise its overall carbon abatement potential given the limited supply of woody biomass from sustainable sources." This is consistent

with the advice from the CCC who note that their "assessment of the economy-wide best use of biomass indicates that use in buildings should be minimised as far as possible" (see: CCC: https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Buildings.pdf)

8. **Do you have any views on the development of heating fuels and systems which will be consistent with wider government objectives on net zero emissions, environmental sustainability and air quality, and offer a secure and affordable fuel supply to consumers, from 2026?**

The consultation notes that the "government is exploring whether alternative electric heating appliances may in future have the potential to reflect the high standards for high temperature heat pumps and solid biomass systems". We agree that this is a sensible area for further exploration. In this context we think that heating systems that support decarbonisation through increased flexibility of electricity use – for example, smart high retention storage heaters running on time-of-use tariffs – would merit further exploration. It is important to note however that heat pumps or heat pump powered district heating should be the default options and other electric heating should only be considered where these are inappropriate which will be in a small proportion of homes. Heat pumps can provide significantly more efficient space and water heating than other heating systems and as such, they impose a lower impact of the grid and thus require less grid level investment.

4. A potential end to the use of fossil fuel heating in all homes off the gas grid by the late-2030s

9. Do you agree with an end date for the use of remaining fossil fuel heating in homes off the gas grid by the late 2030s?

Energy Saving Trust believes that it would be appropriate to reinforce the regulatory framework described in the consultation document by signalling an end (backstop) date for the use of remaining heating systems in homes off the gas grid. A firm end date for the use of remaining fossil fuel heating in homes off the gas grid would provide the supply chain with much needed certainty and thus confidence to invest in the expansion envisaged by the UK Government's climate change targets and, as part of this, their heat pump ambitions. It is our view that this end-date should be in the mid-2030s.

A firm end date should consider industry investment cycles and take account of how much time must reasonably be allowed for a transition. Ideally it should also take account, as the consultation notes, of boiler lifespan to allow time for installed boilers to reach the end of their operational lifetime comfortably in advance of the backstop date. With appropriate advance notice of regulation and with appropriate support in place including (but not limited to) a scrappage scheme and action to bring down the running costs of heat pumps (for example by moving green levies from electricity bills to gas bills) we see no reason why the UK Government could not set a backstop date in the mid-2030s.

10. Do you have any views on measures the Government could introduce to ensure that fossil fuel heating will no longer be used in homes off the gas grid by the late 2030s?

As referred to in our response to question 1, we believe that there must be more than one trigger point that leads to the installation of low carbon heat in homes than the natural boiler replacement cycle. If not, there may not be a sufficient number of fossil fuel heating systems which are replaced with low carbon alternatives at the pace necessary to ensure that the housing sector makes its contribution to meeting the UK's net zero goal, or the government's heat pump deployment targets.

As outlined in our response to question 3, regulation signalling an end date for the use of any remaining fossil fuel heating systems in homes off the gas grid is an important step in giving householders the necessary warning they need to plan for this change in their heating system. Upcoming regulation will encourage households to start thinking about replacing their boiler with a low carbon heating system before 2035, otherwise this could mean that some boilers are not due to be replaced until 2050 given the average 15 years lifespan of a boiler. This signal should lead to a gradual shift, decarbonising heat over time.

We also recognise that it would be difficult for many households to undertake this level of work at the point that their boiler breaks down, so we also recommend that there should be a significant effort to encourage voluntary action in advance of the need for a distress installation. We have outlined these measures in our response to question 3 and we think these should form a package of measures which help ensure fossil fuel heating is no longer used in homes off the gas grid by the late 2030s. This would include making heat pumps a more financially attractive option by addressing the running costs of electricity which currently are a barrier to switching away from fossil fuels.

5. Enforcement

11. Do you have any views on how best to ensure compliance with the proposed regulations laid out through this consultation?

Energy Saving Trust believes that the Building Regulations are the appropriate regulatory mechanism for requiring non-fossil fuel heating system installation at the point of boiler replacement. This means the regulations would primarily be enforced via the relevant competent person schemes (see: https://www.gov.uk/building-regulations-competent-person-schemes) for oil and electric heating, and via the Gas Safe Register process for LPG systems, as registered installers would no longer be able to install these technologies in buildings covered by the regulations. Some additional resourcing for local authorities would also be required to enable them to police the regulations more generally and ensure non-compliant systems are not being installed by non-registered installers.

Mandatory replacement of heating systems that have not failed prior to the relevant deadline cannot be enforced through existing building regulation mechanisms. Local authorities are the obvious bodies to enforce such an additional requirement, perhaps as an extension to their existing building control role and/or their obligations under the Housing Health and Safety Rating System, but they would require additional resource to fulfil this new obligation. Enforcement would also benefit from the requirements being related to other existing processes and requirements such as licensing of rented properties, gas safety certificate requirements for rented properties and new requirements at the point of sale for owner occupied homes.

6. Running costs

12. Do you have any views on what more could be done to address financial barriers to heat pump deployment?

It is important that a wide range of financial support schemes are available to suit all consumers and their needs. With the introduction of regulation, the availability of appropriate finance will be particularly important to help households to comply with the standards.

One of the most significant barriers to the uptake of low carbon heat in homes not currently using mains gas is upfront cost. These are some measures we believe would help remove, or at least address, this barrier for homes who are off the gas grid:

- Increasing funding available for low-income households

In order to help the fuel poor transition to renewable heating, we believe that the Government grants currently in place for households off the gas grid need to be increased. According to the Energy Efficiency Infrastructure Group (EEIG), the Home Upgrade Grant is currently underfunded by £1.4bn against the Conservative manifesto commitment. This shortfall will significantly impact the number of homes off the gas grid which will be able to make the conversion and will make it harder for the Government to reach its fuel poverty and climate change targets.

- Increasing financial support for the self-funded sector

For the self-funded market, we think there is a need to increase the amount of support currently on offer. As mentioned above, many financial packages that cover low carbon heating and energy efficiency measures are not accessible to homeowners deemed as 'able to pay'. Although Energy Saving Trust welcomed the UK government's recent announcement of the Boiler Upgrade Scheme as a key enabler of the heat pump market, we think that the funding allocated to the scheme needs to be reviewed. At present the funding available does not cover the whole cost of installing a single heat pump and will only cover the installation of 90,000 heat pumps over three years, which falls significantly short of a major contribution to the target to install 600,000 heat pumps a year by 2028. As homes off the gas grid will be amongst the first expected transition to low carbon heat (especially by moving away from more polluting fuels) they will play an important part in beginning the process to scale up the deployment of heat pumps and driving costs down and should have help to address these initially higher costs.

Although there is some funding available for low-income households through the Home Upgrade Grant and ECO, there is a lack of significant provision for any energy efficiency measures in the Boiler Upgrade Scheme. Before trying to decarbonise a home's heating system, we cannot overlook the critical role reducing heat demand via retrofit plays. As many off the gas grid homes are amongst the most poorly insulated in the country, complementary energy efficiency measures must be a part of any financial measures for these properties. This should be a priority as off gas grid homes are one of the most cost-effective home types to target as heat pumps would replace high-carbon heating being used in these homes.

In addition, energy efficiency improvements can deliver significant financial benefits by reducing energy bills, especially for homes in rural areas more likely to be poorly insulated. Homes off the gas grid would see considerably more financial savings if a fabric first approach is embedded in the heat pump offering, as well as a significant decrease in carbon emissions.

Between 2010 and 2019, the amount invested by homeowners improving their homes increased from £27 billion to £32 billion per year (CCC 2020). This suggests that a proportion of homeowners can invest and would be willing to do so if net zero upgrades were viewed as both desirable and profitable.

Currently, heat and buildings represent one of the biggest climate investment gaps, with the Net Zero Strategy identifying a £120bn investment need between 2020-2037. As new regulations come into place for homeowners, it is vital that assistance is made available to ensure the transition is affordable and achievable. The recently established National Infrastructure Bank provides an opportunity to plug this investment gap and support households, without a significant impact on government finances. The bank could help homeowners to meet upfront costs through mortgage-related finance, such as mortgage extensions (additional loans to finance retrofit) and green mortgages (a lower-cost mortgage or higher loan where the buyer commits to retrofit or to buy a more efficient home with lower energy bills).

With the bank aiming to de-risk private sector investment and help to deliver on the UK's net zero emissions target, its role is crucial to offering different approaches to financially support homeowners to make this investment. The CCC highlight that delaying action in this area would add to the overall costs, and so the National Infrastructure Bank could incentivise early action.

We should also look at other countries who have had success in rolling out adequate financial support for the upfront cost of low carbon heating and energy efficiency measures.

In Scotland, interest free loan funding is designed to help with up-front costs (a critical barrier to the installation of low carbon heating and energy efficiency measures) for households. The loans cover a range of energy efficiency improvements, including up to £17,500 for home renewables systems or connections to an approved district heating scheme powered by a renewable energy source.

Evaluation of the renewables loans from 2019-2020 show that they are highly influential and cost-effective in encouraging the installation of renewables systems; 87% of funded actions were at least partly attributed to the loan and 35% would not have happened at all without the loan. As well as the fuel bill savings and RHI payments generated by the loan there are further benefits; 31% of all loan recipients evaluated said the loan had freed money which was then spent on other renewable energy or energy efficiency technologies, increasing their total investment in sustainable energy. Importantly, those who have received advice from a Home Energy Scotland specialist renewables advisor have reported that the loan is as important a driver to action. The importance of an advice service is explained further in our response to question 16, but this shows how it can work hand in hand with financial schemes to ensure households are aware of their options to decarbonise their homes economically.

It is also worthwhile noting that the majority of these loan customers are customers of the Home Energy Scotland specialist advice programme which shows how an impartial advice service,

explained more in question 16, works hand in hand with financial schemes to ensure householders are aware of their options in house to decarbonise their homes economically.

In the US, the property assessed clean energy (PACE) model is widely used. PACE is a long-term loan (for example 30 years) attached to the property or land value rather than to a borrower, and repayments are made via other local taxes by subsequent owners. If similar style loans were offered in the UK, at a low enough interest rate and a flexible timeframe, then they could be repaid using energy bill savings and avoid any increase in costs for consumers. This approach could be particularly suited to sectors of the market where mortgage-based borrowing might be more difficult – for example, for homeowners with either low house prices and or high retrofit costs, which would be suitable for homes off the gas grid.

If the government rolls out ambitious home renovation programmes and attractive financial measures, allowing many consumers to improve the energy efficiency of their homes, this would also have system wide benefits for consumers. Reduced demand should mean there is less need for generation, network reinforcement and balancing costs, and this would mean electricity bills savings are passed on to consumers

- Addressing running costs for low carbon heat

At present it can cost more to heat a home via a heat pump that a gas boiler. This is despite heat pumps being typically 300-400% efficient. Because environmental and social levies are placed on electricity bills this makes the running costs of a heat pump greater than a gas boiler equivalent. If these levies are removed from electricity bills into taxation, then heat pumps should become competitive with gas boilers. In the Heat and Building Strategy the UK Government has announced it will look at migrating these costs from electricity bills by 2030 but there is a need to incentivise people much earlier in order to hit the Government's targets. The current high fuel prices and expected steep rise to the price cap in April mean that moving these levies from bills would further reduce costs for households.

- Introducing a scrappage scheme to incentivise households

In addition to grant funding and finance, we recommend that switching to low carbon heating options is incentivised via a scrappage scheme. The scheme should come ahead of regulation and would encourage households off the gas grid to voluntarily change their heating system ahead of the deadline. This also means that some households may have more capital to spend on energy efficiency measures to optimise their new low carbon heating system that they would not have had without the scheme.

The success of the previous boiler scrappage scheme sets a useful precedent for the implementation and design of this scheme. In 2010, the Department of Energy and Climate Change (DECC) offered households a £400 voucher, which Energy Saving Trust administered on the government's behalf, for the upgrade from an old boiler to a new boiler. The 'Green Boiler Initiative' was highly successful, with all vouchers being claimed by 125,000 households which helped to kick-start the industry following the 2008 recession.

A scrappage scheme for off -grid fossil fuel boilers would offer the largest gains in terms of emission reductions and would help the UK Government to deliver its ambition to phase out fossil fuels off the gas grid. As some of the oldest oil boilers can be relatively easily repaired,

without the encouragement of a scrappage scheme, there is less motivation to replace the unit and emissions will remain high be more polluting. In addition, a scrappage scheme for the highest polluting fuels initially offers the chance for lessons to be learned and applied to help the roll out of low-carbon heating on the gas grid. This is a low-regrets action that can save a very large amount of carbon.

- Creating an advice and support service to help accelerate the changes people make in their homes

The UK Government needs to encourage consumers to shift away from fossil fuel-based heating systems through advice and awareness raising campaigns to promote and normalise the concept of low carbon heating.

These are key initiatives that will accelerate changes in people's homes. Where people are directly responsible for decisions about the heating systems in their homes (eg owner occupiers) it is important that:

- Clean heating technologies are seen by consumers to be an appropriate and realistic option
- People are aware of the appropriate options at the time when they are making decisions about heating systems.
- People trust the information they are being given about less familiar technologies, including technical and economic performance, reliability and impact on lifestyle. It is also important that consumers have a route to recourse when things go wrong.

There are four key ways that awareness of and interest in clean heating technologies can best be developed:

- A proactive awareness raising campaign, including national and local advertising, working with existing groups and networks, and working with the private sector including low carbon heating manufacturers and installers as well as fuel suppliers to help people to be aware of their options.
- Creation of an impartial advice service (see more detail in response to question 16), particularly in England, to ensure that households have a trusted source for exploring their options for clean heating technologies and understanding how this can benefit their energy bills and living conditions. This should be seen as a key part of the government's net zero infrastructure because of the positive impact this would have in accelerating adoption of low carbon heat and lowering costs. Providing tailored advice and support will help people identify the right low carbon heating solutions for their circumstance and any additional retrofit that will help lower costs providing the confidence and support that people need to make changes in their homes.
- Oblige heating installers to discuss all technically appropriate heating options when quoting to replace an existing system.
- Oblige high carbon fuel suppliers to promote low carbon heating solutions.

Because costs are a significant barrier, the combination of attractive financial measures and a new advisory service accessible to all households will help to increase engagement and

acceptance of clean heating technologies as modern but normal, and therefore a low-risk option and worth considering.

13. Do you have any views on how we should encourage smart-enabled heating in homes off the gas grid?

We recognise the benefit of smart enabled heating in homes and would support efforts to incentivise consumers to adopt this. But we do not believe it would be a sensible approach to exclude heat pumps if they do not have smart controls, as smart controls can be added any time to help householders save money, so the installation of a heat pump should not be constrained by this condition.

'Smart heating' (eg when it's cheaper at off-peak times, or at times of high renewable generation) with heat pumps will reduce consumers' heating costs by up to 25% compared to gas. Because using electricity smartly reduces the need for investment in local electricity grids from a system perspective, there are also savings that could help reduce grid charges on energy bills. Demand side response measures including smart heating can be more efficient than upgrading the grid and could help to alleviate network constraints in rural areas. This potential could be increased further with the use of domestic, community or grid level storage.

As mentioned in our response to question 16, an advice and support service would play a key role here in what can be a complex and confusing consumer market, helping householders understand their options and the significant benefits smart technology should have on their energy bills

7. Non-financial Barriers

14. Do you have any views on what more could be done to galvanise supply chains for low carbon heating?

The most significant barrier for supply chains is the absence of a clear and certain market signal on the future shape of the low carbon heating market. We draw on some of the recommendations made in the heat pump sector deal report for the Scottish Government (see: https://www.gov.scot/binaries/content/documents/govscot/publications/independent-report/2021/06/heat-pump-sector-deal-expert-advisory-group-interim-report/documents/heat-pump-sector-deal-expert-advisory-group-interim-report/heat-pump-sector-deal-expert-advisory-group-interim-report/govscot%3Adocument/heat-pump-sector-deal-expert-advisory-group-interim-report.pdf) that are also applicable to the rest of the UK to support the stimulation of supply chains in this space.

Firstly, given the current underdevelopment of the market and the strategic need to meet the demand expected for low carbon heating deployment, funding through grants and other schemes must be more ambitious for England and the timescale for any schemes put in place should commit to at least five years. Such assurances regarding the pace and scale of domestic heat pump deployment in the UK will provide an attractive environment for manufacturers to invest and develop an early market advantage in understanding consumer issues and in innovative solutions to technical and deployment challenges.

It is also key that industry and government work together to ensure the growth in the skilled workforce required to support heat pump deployment – such as incentivising additional uptake of the relevant apprenticeship pathways, creating training programmes for those coming into the industry from other sectors with some transferable skills, along with financial support whilst they reskill to avoid the disincentive of a reduced income during conversion.

Supporting the workforce is particularly important in rural areas in England where there are potential issues related to access to installers. Current demand for heat pumps is highest in rural areas off the gas grid and will continue to be with the introduction of proposed regulation and there is evidence that lack of capacity is already a problem in some of these areas. This highlights the urgency of addressing the issue and starting to work with SME installers to grow the local heat pump markets, rather than drawing on larger regional or national installers, which will also strengthen local economies.

Additionally, a holistic approach to decarbonising homes should be promoted by tying together the need for both heat pump installation and fabric efficiency measures which will help galvanise supply chains. Energy efficiency is already employment intensive and can start being rolled out while the heat pump market evolves and catches up. This will deliver benefits to local economies throughout the UK and stimulate export opportunities.

There is a considerable opportunity in engaging with the supply chain to help stimulate the market, as well as supporting other policy goals, such as jobs and levelling up.

8. Equality Act 2010

15. Do you have any additional evidence on how groups protected under the Public Sector Equality Duty may be affected by our proposals to phase out high carbon fossil fuel heating in homes off the gas grid?

We do not have any specific evidence on how groups protected under the Public Sector Equality Duty may be affected by the proposals to phase out high carbon fossil fuel heating in homes off the gas grid. It will however be important to ensure that the actual implementation of any of these proposals is as inclusive as possible and this is unlikely to happen without specific interventions to ensure that particular groups have access to the same support and resources as others.

Evidence published in the FAIR report (see: https://www.sciencedirect.com/science/article/pii/S2214629621004424#b0355) highlights that people living in rural areas can have lower average incomes than urban areas which leaves such areas highly vulnerable to energy poverty. There would therefore be a positive impact for those in such areas if we take a fabric first approach as this would lower their bills as well as decarbonise their homes at the same time.

16. Do you have any views on what more could be done to ensure households, and communities, affected by our proposals experience a smooth transition to clean heat?

There is a low general awareness among the population of the need to switch away from conventional heating. Energy Systems Catapult (see: https://es.catapult.org.uk/report/net-zero-a-consumer-perspective/?reportDownload=https://esc-production-2021.s3.eu-west-2.amazonaws.com/2021/08/Understanding-Net-Zero-A-Consumer-Perspective.pdf) found that less than half of the 2,000 people they surveyed were aware that their gas boiler was contributing to climate change, with higher awareness of transport, air travel and household waste, despite these all having a lower impact. There is a clear need for an awareness raising campaign and advice service.

To ensure all households and communities understand the need to transition to clean heat, a proactive awareness raising campaign must be carried out to help make households off the gas grid aware of their options and why it is important for them to decarbonise their homes. To ensure a smooth transition to clean heat, the role of an independent advice and support service from a trusted source will be important in helping consumers have confidence in the choices they need to make around low carbon heat as well as additional energy efficiency measures which will help lower costs. In particular, there is a need to ensure households in England have access to consistent, comprehensive and personally tailored impartial advice and support that can help them make decisions as they transition to low carbon heating. In recognition of this

need, there is existing advice and support for people in Scotland, and to some extent in Wales and Northern Ireland.

An impartial advice service would:

- Proactively engage people with the benefits of decarbonising their homes and moving to low carbon heat
- Provide user-friendly, practical advice available through multiple channels which is responsive to people's needs
- Provide tailored and specific advice to address the unique issues that people face as a result of their personal circumstances and property characteristics and help them understand the options that are available
- Help people to recognise how taking action will benefit them personally • Provide reassurance and support throughout the process and advise and help people making changes to their homes
- Help people to understand what support is available at all stages of the process and how to access this, for instance grants and funding schemes.
- Provide advice on what happens if anything goes wrong and how they can get redress.

Our experience delivering the Home Energy Scotland service demonstrates the effectiveness of impartial advice and support in getting people to take action in their homes. Home Energy Scotland provides advice that is free, impartial, bespoke and personally tailored to people's circumstances and property characteristics. It is available to householders (owner occupiers, tenants) and smaller private landlords. Advice is delivered online, by phone and in person at home and events (although less of this in person advice has been delivered during the pandemic).

Each year the network helps more than 90,000 customers in Scotland and even with these very large volumes, customer satisfaction is at 97% and the network consistently exceeds its customer service targets. The lifetime carbon saved by customers using the network in 2019-20 alone is estimated to be more than 382,000 tonnes CO2. Total lifetime energy bill savings from the network since its inception in 2008 are estimated to be well over a billion pounds.

Our regular evaluation of the service shows 83% of customers recalled the advice provided over the phone or by email, and 44% installed an energy efficiency or renewable energy measure after receiving advice from a Home Energy Scotland adviser. In addition, 38% were planning to install a measure in the subsequent 12 months. 69% of the total savings achieved by customers can be directly attributed to the advice provided by Home Energy Scotland resulting in an average lifetime saving of 4.3 tonnes CO2 per customer advised verbally.

The creation of an advice and support service must therefore be seen as a key part of the government's net zero infrastructure because of the positive impact this would have in accelerating adoption of low carbon heat and lowering costs. Tailored advice and support will help people identify the right low carbon heating solutions for their circumstance and any additional retrofit that will help lower costs, especially for households off the gas grid who need confidence and support to start making changes in their homes.

17. Do you have any further comments to make on our proposals to phase out high carbon fossil fuel heating in homes off the gas grid?

As outlined above, the importance of support and an advice service will be crucial to the successful phase out of fossil fuel heating in homes off the gas grid. As these homes will be among the first to make the transition, it is important it is done well and sets the tone. As set out in our answer to question 16 we believe an impartial advice and support service would be a vital part of the net zero infrastructure and accelerate the deployment of low carbon heat. We welcome BEIS's recognition of the value of this type of service in the Heat and Buildings Strategy and would welcome further conversations about how this could be deployed quickly in England to benefit households and help the Government meet its net zero targets.

It is also important to consider what low carbon heating options will be most suitable for flats which are off the gas grid. Different factors may point to heating systems other than heat pumps, such as if the flat is under a leasehold or freehold tenure or if being connected to a heat network would be a better solution. This is again where an advice and support service would prove invaluable to provide flat owners with tailored information to help them be aware of their options.