

Heat Pump Association

Improving Boiler Standards and Efficiency: Boiler efficiency, hydrogen-ready boilers, and the role of hybrid systems

[Improving boiler standards and efficiency - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

This consultation seeks views on a range of topics, including:

- proposals to improve boiler and heating system efficiency through improvements to minimum standards
- proposals to mandate that from 2026 all newly installed gas boilers are 'hydrogen-ready'
- the potential role of gas boiler-electric heat pump hybrids in heat decarbonisation in the 2020s and 2030s
- These proposals aim to reduce domestic gas consumption, thereby lowering consumer bills and carbon emissions, improving our energy security, and preparing for the transition to low-carbon heating.

Deadline for submission: 21st March 2023

Send to: domesticboilersconsultation@beis.gov.uk

Response submitted by: [Heat Pump Association](#)

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About the HPA

The HPA is the UK's leading authority on the use and benefits of heat pump technology and includes the country's leading manufacturers of heat pumps, components, and associated equipment. Proposals put forward by the HPA are developed closely with a membership base that represents around 96% of the heat pump market manufacturing share, including all the large multinational companies providing product to the UK market, ensuring that the proposals are workable and credible.

The Association works to support policymakers in the development of effective heat decarbonisation policy and other matters that affect the interests of end users, wider stakeholders, and the industry. In addition, the HPA co-ordinates technical and market research into areas of mutual interest identified by members, the aim of which is to improve market opportunities at home and abroad and helping markets to transform to low carbon solutions and technologies.

The HPA recognises that heat pumps will only fulfil their promise in the market if suppliers, installers, and users fully appreciate their function and capabilities. A major objective of the association, therefore, is to raise awareness of heat pumps by informing prospective specifiers of their long-term benefits, reassuring end users and providing up-to-the-minute advice on the various systems available. The HPA conveys this message by generating publicity using exhibitions, literature, promotions, and public relations in addition to helping costumers deploy the technology through managed sales and services structures.

9.	What additional installer training, if any, would be needed to support system and regular boiler inclusion in these requirements?
<p>All heating systems should be designed with insulation levels and heat loss properly assessed, with the drive towards lower flow rates and more efficient heating systems.</p> <p>Regardless of the boiler type being installed, the training should be an Ofqual approved level 3 course. For example, the LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings qualification has been designed with the CIPHE and the Heat Pump Association with the help of their members¹. It has been designed to meet current needs as well as the future need for heating systems to be designed with a low temperature aim from the outset to maximize efficiency of the system. The objective of this qualification is for learners to be up skilled to the concept of low temperature heating systems, it will allow them to demonstrate their knowledge and understand the need and requirements for installing low temperature heating and hot water systems in dwellings.</p> <p>In addition, manufacturer product training for heating electricians is essential to ensure a competent installation.</p>	
15.	Do you agree that the government should set a requirement for all cylinders to have a minimum efficiency rating of B? Yes/No. Please expand on your views.
<p>The cylinder rating does not make the cylinder compatible with a heat pump, the size of the coil will determine the compatibility. The flow rate and delta T also needs to be considered to ensure a compatible cylinder. The HPA does not support a blanket increase in cylinder rating requirement from C- B, but would support minimum standing loss as defined in Part L, and support heat pump ready cylinders being mandated to ensure systems are heat pump ready for the conversion to low carbon heating. There is a significant cost associated with the purchase and installation of hot water cylinders and it's vital that this purchase is futureproofed for when the gas boiler is replaced.</p>	
16.	What additional measures may be required to ensure that cylinders are future-proofed for use alongside heat pumps?
<p>The HPA would like to see cylinders mandated to be heat pump compatible. This will reduce the installation costs faced by consumers when they make the switch to a heat pump system. Heat pumps are often sold as a bundle, when required, with the cylinder sold as part of the unit costs. If the cylinder were to be sold separately, this could add between £850 and £3,500 to the installation cost. This represents over 10% of the installation cost and could be a large deterrent to consumers adopting low carbon heating in the future². Mandating heat pump ready cylinders would avoid this future concern, allowing for a seamless transition to low carbon heating.</p>	
17.	a) What additional information can be collected or recorded by installers to ensure full commissioning for boiler installations take place, for example should heat loss calculations be recorded? b) What available technologies can be used to speed up this process, including more time-consuming practices like hydraulic balancing?

¹ LCL Awards (2022) [LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings](#)

² Household Quotes (2023) [Air Source Heat Pump Prices: How to Save in 2023](#)

- a) Key information that should be collected includes:
- **Heat loss calculations** – Room-by-room heat loss calculations should be mandated and carried out for all retrofit boiler installations. This will help refine the quality of installs and prepare installers for the requirements for installing heat pumps. There are a number of surveying apps available which can provide a full room by room heat loss calculation within 1 hour, and so heat loss calculations will add little time and cost to installations and deliver significant benefits.
 - **Low carbon quotes** - Customers should be offered a quote which includes CO2 Savings, an estimate of running costs and bi-valents points for moving to a low temperature system. This can cover Boiler/Hybrid and heat pump options.
- a) **Mandating hydraulic balancing** - Hydraulic balancing should also be mandated on installations and servicing. Automatic balancing valves are widely available, and research shows that customers can save around 8.8% on their fuel bills³. Auto balancing valves will not add any more time to an installation as these replace standard radiator valves.
- **Other mandatory measures** - System filter Installation and flushing out of systems should also be mandated. The HPA has produced a comprehensive commissioning form which has been adopted by all of our manufacturing members⁴.
- b) As mentioned in our response to part a), surveying apps are available which can provide a full room by room heat loss calculation within 1 hour. Encouraging installers to engage with this technology will deliver higher quality installs with minimal hassle. Furthermore, auto balancing valves will not add any more time to an installation as these replace standard radiator valves.

18.

How can regular heating system servicing be encouraged, what practices should be included and what are the potential benefits and costs consumers should expect?

Practices that should be included:

- **Hydraulic balancing** - On average, a yearly boiler service costs £100 and takes 30 minutes⁵. Servicing can be encouraged by maximising the potential benefits from regular boiler services. One way of doing this is through mandating cleaning system filters and water testing on every service and hydronic balancing. The additional work will only add 10-15 minutes to a regular service and so assuming a flat rate per hour, will add between £33 and £50 to the service cost. This is an over-estimate as costings are unlikely to work in this manner as the heating engineer will not require additional travel and other sunken costs. Despite this, the benefits of hydronic balancing are greater than the additional costs, saving consumers £129 per annum on average when considering prices under the energy price guarantee (see below graph). This results in a conservative estimate for net gain of hydraulic balancing of between £79 and £98. Outside of the purely economic gains, energy consumption reductions will reduce carbon emissions which many consumers will also value. Furthermore, the additional service time from hydronic balancing can be reduced by mandating automatic hydronic balancing valves. Automatic balancing valves are widely available, and research shows customers can save around 8.8% on their fuel bills⁶.

³ Drayton (2023) [Auto-balancing TRVs](#)

⁴ HPA (2021) [Technical Resources](#)

⁵ Checktrade (2022) [How much does a boiler service cost?](#)

⁶ Drayton (2023) [Auto-balancing TRVs](#)

ANNUAL HEATING BILL SAVING FROM HYDRAULIC BALANCING (12,000KWH HOUSEHOLD /W GAS BOILER)

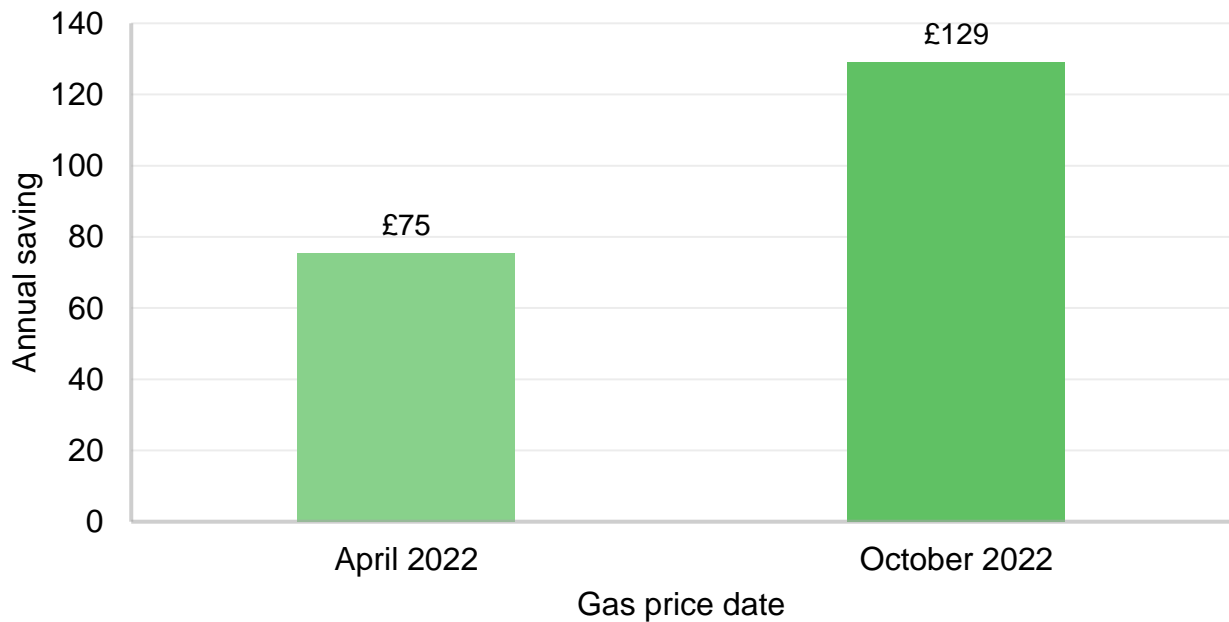


Figure 1 - Annual heating bill saving from hydraulic balancing⁷

Benefits of servicing to communicate to consumers:

- **Warranty protection** - Many manufacturers also provide warranty on the condition that consumers receive annual boiler services from gas safe engineers. If a boiler were to breakdown within the duration of the warranty, annual servicing of boilers could save consumers ~£2000 from not having to replace the system.
- **Preventing the need for major repairs** - Boiler servicing can also help to identify potential future faults and reduce the risk of needing significant repairs. Boiler repairs average out at around £300 and so assuming that engineers are able to prevent one repair per a boiler's lifetime, boiler services deliver an additional £25 in benefit per annum⁸.
- **Extending a systems lifetime** - Servicing can also extend the lifetime of a system. Assuming that servicing can extend a systems lifetime from 12 to 15 years, the annualised cost of a boiler is reduced by £33⁹.
- **Reducing fuel costs** - Improving efficiency of unit can lower running costs and heating emissions
- **Non-financial benefits** - Outside of the purely economic benefits, services can: reduce the risk of major harm to units by improving the safety of the unit by identifying potential faults; prevent damage to consumer through long-term exposure to cold temperatures (especially during the winter) when a boiler is broken; reduce carbon emissions and deliver value to consumer through them "doing their part".

By expanding the potential benefits of boiler servicing through mandating hydronic balancing and communicating the advantage of regular servicing, consumers are more likely to receive annual boiler services.

⁷ Gemserv analysis completed on behalf of the HPA. Inputs and assumptions available on request.

19.

Should low temperature heating system training be mandatory for gas boiler installers to help ensure Building Regulations are met. Yes/No. Please expand on your views

Yes

Mandating low temperature heating system training should be mandatory because:

- **System design** - Training is vital for installing particular systems to ensure they are designed suitably for low temperature operation and help support the transition into low carbon heating installs, in addition, this ensures heating systems are designed and installed to maximise efficiencies.
- **Quotes** - Training will allow installers to be able to provide consumers with accurate quotes covering hybrid and standalone heat pump systems, including running cost and carbon savings.
- **Low carbon transition** - If installers are already trained in low temperature heating systems, the barriers to retraining to install heat pumps will be lower. The HPA acknowledged that for the rollout of low carbon heating systems to be done most effectively, a large base of quality installers is needed. To appropriately retrain a gas engineer to be able to install heat pumps at their peak efficiencies, a 5-day course is usually required. As engineers are often sole traders, they are not compensated for time spent off the tools in training where they may miss businesses. The first two days of the 5-day HPA heat pump course are spent on "low temperature heating and hot water systems". If engineers do not require these first two days¹⁰, they will save up to £464 by being able to work instead of training and up to £400 from reduced course costs¹¹. This additional £864 in net incentive will encourage more installers to retrain, increasing the size of the heat pump installer base and driving down installations costs in the long term.

The rollout of mandatory low temperature training can best be achieved by:

- **Ofqual approved training** - The training should be a Level 3 Ofqual approved course. For example, the LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings qualification has been designed with the [CIPHE](#) and the [Heat Pump Association](#) with the help of their members¹². It has been designed to meet current needs as well as the future need for heating systems to be designed with a low temperature aim from the outset to maximize efficiency of the system. The objective of this qualification is for learners to be up-skilled to the concept of low temperature heating systems, it will allow them to demonstrate their knowledge and understand the need and requirements for installing low temperature heating and hot water systems in dwellings.
- **Mandating alongside competency renewal** - Mandating low temperature heating system training within ACS renewables would ensure that within 5 years, the gas boiler industry would be retrained. The gas safe register is the only mechanism industry can use to mandate low flow temperature competence alongside a specific heating competence, however, the HPA would like to see low temperature training also mandated alongside the 5-year competency renewals of oil

⁸ Boiler repair cost taken from <https://www.checkatrade.com/blog/cost-guides/boiler-repair-costs/>. Assuming an average boiler lifetime of 12 years.

⁹ Assuming a boiler CAPEX cost of £2,000.

¹⁰ https://www.heatpumps.org.uk/wp-content/uploads/2020/06/Building-the-Installer-Base-for-Net-Zero-Heating_02.06.pdf

¹¹ Based on HPA member input on average annual gross earnings of gas engineers (£65,000). Engineers assumed to work 200 days a year. Total course cost of £1,000 based on HPA member input.

¹² LCL Awards (2022) [LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings](#)

and solid fuel installers, as it would help support the transition into low carbon heating installs and help ensure heating systems are designed and installed to maximise efficiencies.

20.

What appropriate technological solutions currently exist or could be developed for collecting and displaying real-time efficiency information? Please explain your answer.

Heat pump manufacturers can provide comprehensive monitoring solutions for customers and have been doing so for some time. The data provided covers running costs and some systems can alert customers of any potential issues with their system before complete breakdown. In addition, the Government should work with manufacturers to collate a reliable sample of information to provide valid policy decisions on efficiency of heating systems.

21.

Do you agree that the proposals for new boiler and hot water tank product standards should be applied to new boiler installations from 2025? Yes/No. Please expand on your views.

Yes

Hot water tank products standards should be applied to new boiler systems to ensure systems are heat pump ready once the consumer decides they are ready to move to a heat pump system. Internal HPA analysis estimates that 15% of the installation costs for air source heat pumps is from the installation of hot water cylinders / tanks. By mandating heat pump ready tanks, these installation costs are significantly reduced when the consumer comes to choose a future heating system, incentivising the adoption of low carbon heating systems.

Placing this cost on boiler installs instead of low carbon heating system installs would reduce the cost difference between a boiler install and an air source heat pump install by 18%. Considering the £5,000 grant under the Boiler Upgrade Scheme, the change in the structure of the purchasing decision would reduce the effective installation cost difference by 44%. This will encourage early adopters of heat pumps, bring the market to maturity sooner and deliver further short-term emissions reductions. Assuming that the relative demand for heat pumps and gas boilers is directly correlated to the inverse of the price differentials, then shifting the costs in this manner could deliver an additional 302,000 installs per year.

Breakdown of heat pump installation costs

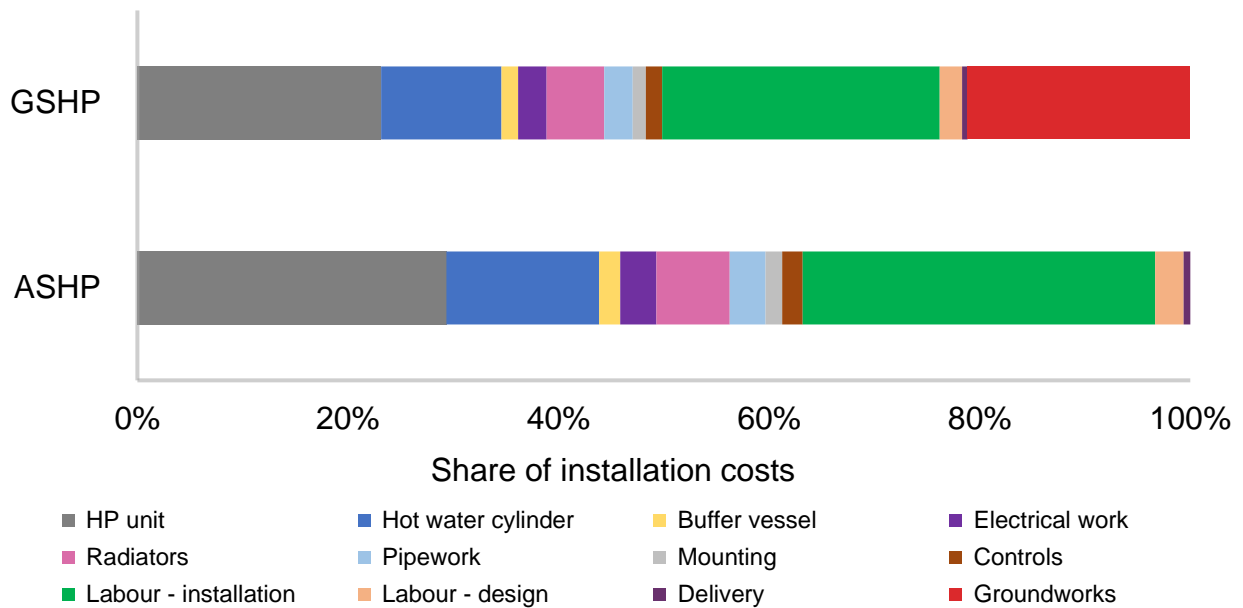


Figure 2 - Breakdown of heat pump installation costs

In addition, BEIS Electrification of Heat Participant Recruitment Report states that 44% of participants motivations / reasons for proceeding with installations was wanting an upgrade to their heating system.¹³ Changes that do not require product developments like hydraulic balancing are easy for industry to adapt to. However, for more critical changes, government must liaise with the manufacturers to ensure that realistic timeframes can be achieved.

24. Do you agree that the government should use Ecodesign legislation to implement the proposals? Yes/No. Please expand on your views.

No

If the aim of this is to address the changes through product legislation, then the HPA does not agree

Ecodesign legislation is related to product standards. The aim of this consultation is to make sure that the rest of the system is also in scope so this should not be combined with Ecodesign legislation. Updates to Part L are required to ensure systems can be installed correctly in addition to mandating low temperature heating training with the ACS scheme.

39. What is a reasonable minimum SSHEE value for hybrid heat pumps? Please provide evidence and reasoning to support your answer.

110% in line with European proposals with the following caveats.

The HPA believes that the SHEE value should meet the current European proposal of 110% as this will ensure that European manufacturers can continue to trade in both Europe and the UK.

¹³ [Electrification of Heat - Home Surveys and Install Report - Energy Systems Catapult](#)

The HPA would like to raise the following points around mandatory characteristics of hybrid systems:

- **Safety of compact hybrid systems** - The HPA has concerns about compact systems with respect to their efficiency and safety (SIME Compact). Additionally, increased training requirements are needed for engineers to work on such systems, and this will require an F Gas qualification with an added 7-day training course. Furthermore, the type of refrigerant within the currently available compact systems is due to be phased out due to new F -Gas regulations where industry will be moving to lower GWP refrigerants such as R290. The HPA has grave concerns with inexperienced engineers, albeit qualified, working on compact hybrid systems, as there is a greater potential for a dangerous incident.
- **Heat pump heat demand split** – Alongside minimum SSHEE values, clarification is required on what percentage of the total unit's size (kW) the heat pump load must cover at design temperatures. The HPA believes that it is difficult to determine the percentage of the heating load that is covered by the heat pump, so mandating based on capacity is preferable. The HPA recommends 50% of kW load @ design Temperatures needs to be covered by the heat pump, this should provide 80% of annual heating demand.
- **ErP** - This figure will be defined by ErP. The HPA believes Government should continue to follow ERP standards to ensure products can be sold in both the UK and Europe.

40. What is a reasonable minimum seasonal heating output, from the heat pump, for a hybrid system? Please provide evidence and reasoning to support your answer.

Mandating a minimal seasonal heating output is a hard-to-enforce and inflexible way of ensuring the prevalence of the low carbon component of a hybrid system. Consumers should be encouraged to use the low carbon component to an optimal degree through:

- Mandating **minimum SSHEE values** in line with our response to the previous question.
- Mandating a **minimum share of the total unit capacity** in kW that the heat pump contributes towards. The HPA believes that it is difficult to determine the percentage of the heating load that is covered by the heat pump, so mandating based on capacity is preferable. The HPA recommends 50% of kW load @ design Temperatures needs to be covered by the heat pump, this should provide 80% of annual heating demand.
- Through **promoting suitable price signals** by supporting time-of-use tariffs, type-of use tariffs (with respect to heating component), exemptions on electricity policy costs for heat pump users and enhancing location and time price signalling in the electricity market arrangements.
- **Encouraging innovation around smart controls** so that hybrids utilise the heat pump component when electricity prices are low.

Manufacturer's test regime is for heat pumps only. Consumers can make the decision to have hybrid systems installed. The minimum SCOP is defined under ERP.

However, before installing a hybrid, other criteria must be considered. A heating system has to be designed correctly and, in this case, a hybrid system may not be required. Hybrid systems may only be relevant for properties that are technically unsuitable for a standalone heat pump system due to circumstance such as inadequate electrical supply.

41. Do you think specific smart controls standards, that go beyond those for smart heat pumps, are needed for hybrid heating systems? Yes/No. Please expand on your views.

No

The HPA do not want to set a standard as this discourages innovation.

Current Building regs state the system must have adequate control. Additionally, we feel that wider uptake of adequate controls would be beneficial, therefore, this should not be restricted by a standard. Interoperability should not be limited to heating products, particularly in the smart home scenario, where a number of products within the home will need to be open protocols to allow for efficient smart tariffs to be utilised.

Furthermore, hybrid controls are available where current gas and electricity tariffs can be inputted that offer real time saving opportunities and enable a true hybrid that can run on the most cost effective and cheapest fuel throughout the year. The utilisation of these controls will assist in the development of hybrids into the world of time of use/demand side response and dedicated heat pump tariffs.

42.

Do you think other measures are required to support low-carbon operation of hybrid heating systems? Please expand on your views.

If the consumer is incentivised to use the low carbon component through tailored price structures and enabled to operate their heating system flexibility and seamlessly through smart controls, then they are likely to operate the low-carbon element when it is optimal. Smart controls can best optimise the operation of the heating systems if:

- **Price signals are enhanced** by supporting time-of-use tariffs, type-of use tariffs (with respect to heating component), exemptions on electricity policy costs for heat pump users and enhancing location and time price signalling in the electricity market arrangements. If electricity is lower-cost when it is lower-carbon then consumers will naturally lower their emissions in order to cut costs.
- The **grid balancing and flexibility benefits of hybrids are encouraged** through specialist tariffs, incentives and exemptions, and within the functionality of the smart controls. Additional support around heat pump tariffs would help ensure the heat pump is doing most of the heating and hot water demand, and then over time as heat pump tariffs are developed, the heat pump would move to 100%. This offers a genuine transitional opportunity, both for the consumer getting used to heat pumps, and the building itself allowing time to maximise insulation levels and minimise heat loss, for those harder to treat properties.
- **Consumers are informed** on the potential benefits of engaging with flexible tariffs and how to achieve this through their smart controls.
- **Installers are mandated to set up smart controls to minimise running cost as a default**, whilst allowing consumers the option to alter the exact behaviour of their controls.

43.

What further measures can the government and industry take to support consumer choices and ensure hybrids are installed where most appropriate?

Industry backed engagement - Government should liaise with industry partners such as the HPA to ensure reliable and valid advice is given to the consumer for hybrid systems. A Government backed campaign confirming the role of Hybrids and training and education to advise the best system for the occupier. HPA will strongly support a government backed industry campaign to boost the awareness, reliability and to guide consumers to select the correct solutions.

Developing consumer choice friendly price signalling - The grid balancing, and flexibility effects of hybrids may also be more advantageous in areas with more volatile power supply, whereas areas with a

more stable supply of low-carbon electricity should be encouraged to install standalone heat pumps as opposed to hybrid systems. By better reflecting the carbon intensity of electricity, consumers will be incentivised to install standalone heat pumps in situations where they are best suited and hybrids otherwise. This can be done through promoting time-of-use tariffs, enhancing price signals in the electricity market, balancing policy costs on electricity and gas as well as supporting the development of smart control technology.

Developing installation standards - Mandatory installation requirements such as hydronic balancing and heat pump ready cylinders combined with lowering heat pump training barriers through mandating low temperature heating qualifications, will balance the choice structure faced by consumers and allow them to more easily make the switch to low carbon heating when suitable.

Government Support for Hybrid Solutions – Hybrids are a transitional technology in some scenarios Government should provide funding support in the same way as traditional heat pumps. This means inclusion of hybrids within the Boiler Upgrade Scheme; and additional reference and support across other government funding schemes such as LAD, HUGS and SHDF.

Fully support industry and Government backed engagement – are consumers ready for the full low carbon switch from gas to heat pumps? We're seeing over 1 million boiler installs every year, and each install is not just a lost heat pump conversion, it's also lost for the lifetime of the boiler – 10-12 years. We have to do more to support and encourage households with boilers that need changing now that heat pumps or hybrid heat pumps are a strong viable alternative, where installing now will provide immediate benefits, but crucially will also continue to be cheaper to run with the introduction of time of use/DSR/heat pump tariffs etc. It's the smart choice now, and for the future.

44.	Do you agree that installers of hybrid heating systems should develop all of the skills required to install standalone heat pumps, to be considered competent to install hybrid systems (excluding when installing a compact hybrid)? Yes/No. Please expand on your views.
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Yes

Installers should be trained to ensure that systems are designed to low temperatures and provide customers with quotes covering hybrid and standalone HP systems including estimated run cost savings.

The training should be a level 3 Ofqual approved course, for example The LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings qualification has been designed with the CIPHE and the [Heat Pump Association](#) with the help of their members to meet the current and future need for heating systems to be designed to low temperatures¹⁴. The objective of this qualification is for learners to be up skilled to the concept of low temperature heating systems. This will allow them to demonstrate their knowledge and understand the need and requirements for installing low temperature heating and hot water systems in dwellings.

Under the high electrification scenario of the consultation document, it is detailed that hybrids are expected to be replaced by standalone heat pumps by 2050. Therefore, installers will need to be reaching minimum competencies surrounding heat pump installations anyway and so should develop the full skill suite for standalone heat pumps if they are to install hybrid systems.

¹⁴ LCL Awards (2022) [LCL Awards Level 3 Award in Low Temperature Heating and Hot Water Systems in Dwellings](#)

45.	Do you think there is sufficient guidance available on ensuring that hybrid installations comply with appropriate regulations e.g., Gas Safety Regulations and Building Regulations? Yes/No. Please expand on your views.
<p>Manufacturers provide comprehensive guidance within their installation literature to ensure the installations meet the required regulations. Once the Mandatory Technical Competencies are in place, this will ensure Hybrid gas heat pumps systems are installed by suitably competent persons, without any ambiguity. However, not all installers are aware that heat pumps are a CPS measure. This should be highlighted and assessed as part of the Gas Safe renewal assessments.</p> <p>The HPA has concerns about compact systems with respect to their efficiency and safety (SIME Compact). Additionally, increased training requirements are needed for engineers to work on such systems, and this will require an F Gas qualification with an added 7-day training course. Furthermore, the type of refrigerant within the currently available compact systems is due to be phased out due to new F –Gas regulations where industry will be moving to lower GWP refrigerants such as R290. The HPA have significant concerns surrounding inexperienced engineers, albeit qualified, working on compact hybrid systems, as there is a greater potential for a dangerous incident.</p>	
46.	Do you have suggestions on how the relevant standards regimes (e.g., Building Regulations, competent person schemes) should be expanded or altered to adequately cover hybrids systems? Please expand on your views.
<p>The current competent persons schemes cover all aspects of a hybrid system over a number of descriptors. However, there is no current Heat Pump and Low temperature heating systems descriptor. This is a key requirement of the HPA in their development of a Heat Pump and Low temperature competent person's scheme. This also provides clarity to the customer and installers that their system meets low temperature heating system requirements. The HPA is currently working on developing a heat Pump and low temperature CPS scheme with a certification body.</p>	
47.	Do you agree with our assessment of the significance of the flexibility benefits provided by the deployment of hybrids, in the time frame until 2028? Yes/No. Please expand on your views
<p>The HPA agrees that hybrids have the potential to deliver flexibility benefits by balancing supply and demand. This effectiveness of this is dependent on:</p> <ul style="list-style-type: none"> • Effective smart controls – smart controls will need to be able to respond effectively to the grid requirements and operate, on mass, to shift demand accordingly. • Effective pricing – Enhancing price signalling by enhancing current electricity market schemes will incentivise consumers to utilise energy in a way that supports flexibility in the grid. Time-of-use tariffs can also encourage the use of energy when demand is low. • Installation standards – Ensuring that the heat pump component is installed effectively will minimise energy demand and encourage more sustained usage of the low carbon element of the hybrid. <p>However, there are other forms of demand side flexibility that can also be used, such as battery storage. Additionally, the rollout of hybrids should not detract from the need for low-cost renewable power, on mass, through the deployment of renewable power. Energy security will require a combination of mass rollout of domestic energy production, lowering energy consumptions through insulation and high efficiency heating systems (such as heat pumps) and grid flexibility. Pursuing the latter of these three should not mean the former two requirements. In areas where there is stable electricity supply, standalone heat pumps should be prioritised over hybrids, as in the long-term they will lower emissions and consumer bills by more.</p>	

48. Do you agree with our current understanding of risks and benefits of widespread deployment of hybrids from 2028? Yes/No. Please provide evidence and reasoning to support your answer.

The HPA believes that some reasoned risks and benefits have been highlighted here. Hybrids could operate as a “stepping stone” measure, allowing consumers to reduce the need for short-term home upgrades and instead making the necessary upgrades over the lifetime of the hybrid.

However, hybrids should only be installed where it is evident that a standalone heat pump is not more suitable. Over the course of an entire heating season, the carbon reducing impact of a heat pump will be greater than that of a hybrid. Additionally, consumers may find that running costs are lower using a standalone heat pump with the recommended home upgrades than a hybrid. HPA analysis (figure 3) of the current running costs under the energy price guarantee, utilising assumptions from this consultation, show that heat pumps can deliver significant cost savings, especially when installed to high efficiencies. Additionally, utilising forecasts of electricity prices¹⁵, heat pumps are expected to increase in cost competitiveness over the next year (figure 4).

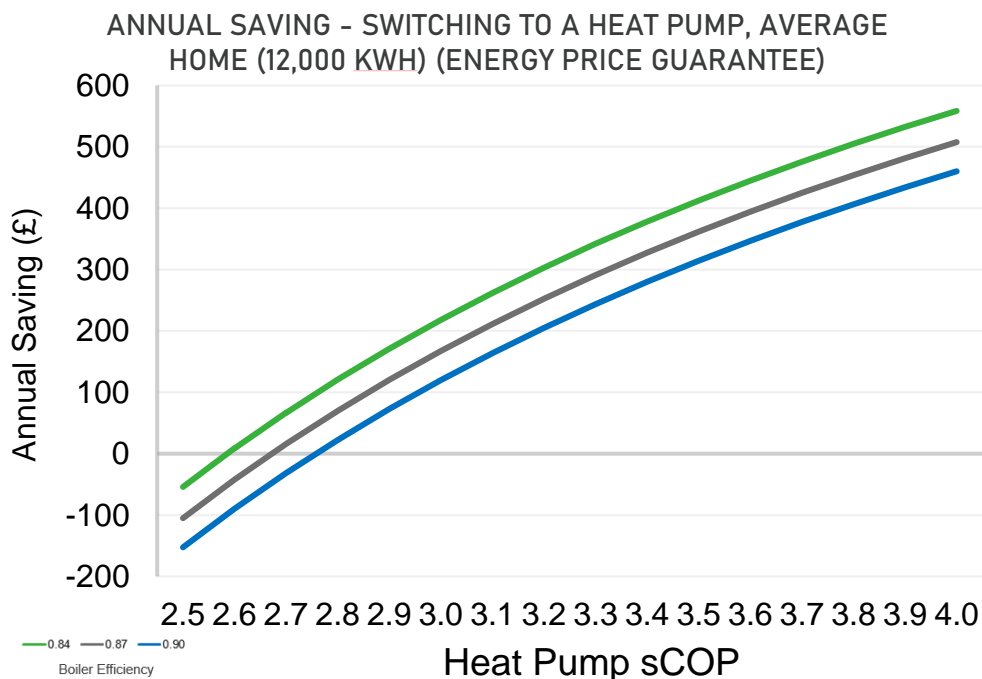


Figure 3 - annual saving - switching to a heat pump, average home (12,000 kWh) (energy Price Guarantee)

¹⁵ Cornwall Insights (2022) [Winter 2023-24 price cap forecasts fall further below 2022-23 EPG, but long-term prospects remain uncertain.](#)

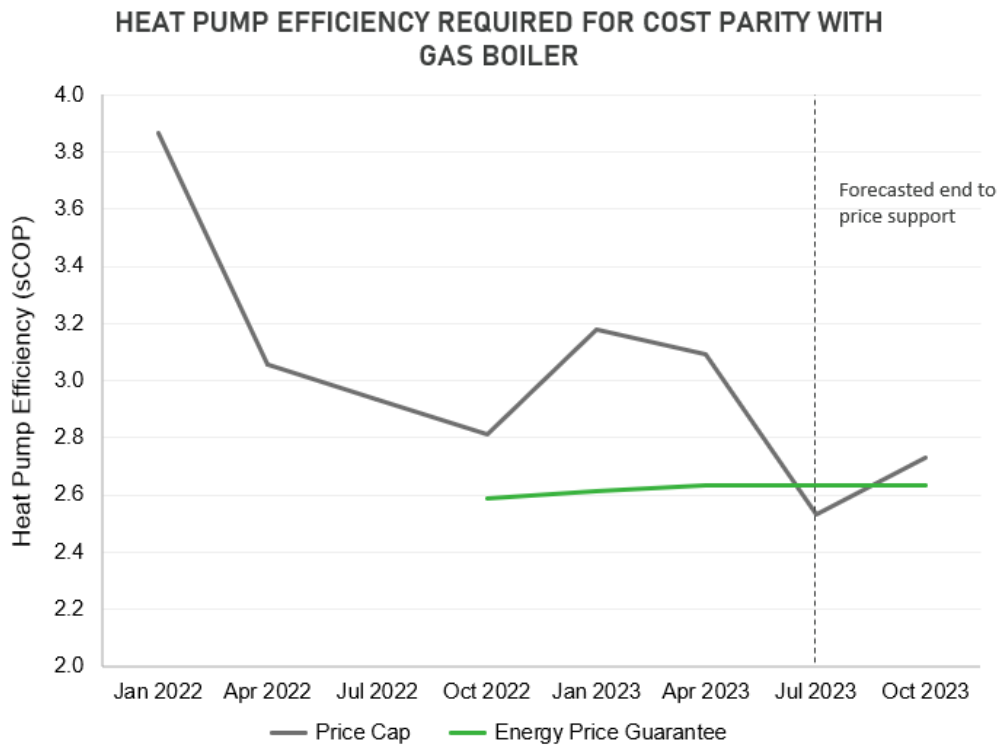


Figure 4 - Heat Pump Efficiency Required for cost parity with Gas Boiler

Hybrids will operate at lower efficiency than standalone heat pumps and therefore, they are less in line with government targets to reduce energy consumption by 15% than standalone heat pumps. HPA analysis of the energy reduction potential of heat pumps shows that if deployment projections are in line with government targets of 600,000 heat pump installs a year by 2028, then heat pumps can contribute towards two thirds of the domestic energy reduction requirements (figure 5). Therefore, a key risk of a high hybrid scenario, is detracting from energy reduction needs.

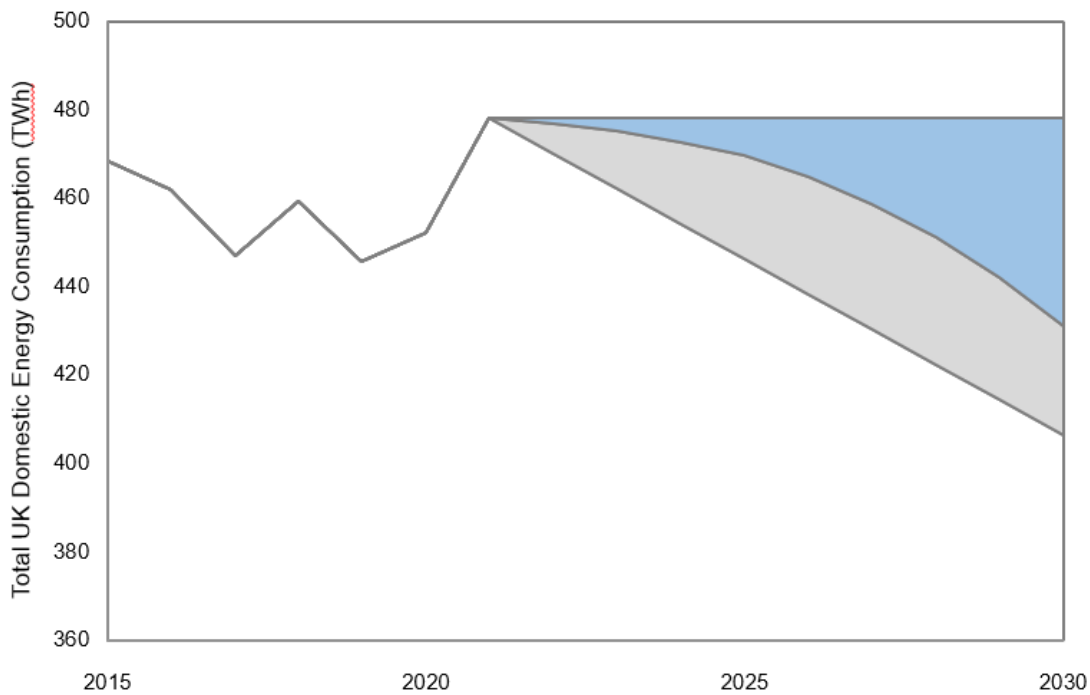


Figure 5 - Energy reduction from installing heat pumps, compared to 2021 levels¹⁶

Overall, the HPA support the installation of a standalone heat pump over a hybrid if property condition/levels of insulation/space requirements/electricity capacity in the home are all up to the required standard as a full heat pump offers greater efficiency and carbon savings.

However, there are many homes that might not perfectly meet the requirements, and equally consumers who are not quite ready to make the commitment and these homes are the target for hybrids, as if the alternative is another gas boiler, or replacement electric heating then these installs are a backward step, offering no additional carbon savings or efficiencies and effectively trapping this home for another 10-12 years before the system is due to be replaced.

These homes need to be targeted by Government to provide additional support to ensure homes can be 100% heat pump or as close as possible, with free insulation and electricity supply upgrades etc, and the gas boiler providing the lowest possible amount of heat generated to the property.

49.	What levels of energy efficiency and carbon-intensity may be achievable for compact hybrids or other hybrid technologies with further innovation and investment? Please provide evidence and reasoning to support your answer and please specify to which types of hybrid system your answer refers.
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Although the HPA sees that hybrids represent a significant carbon reduction opportunity compared to gas boilers, we would like to stress that these reductions are not as great as those seen with a standalone heat pump.

Consumers can be encouraged to maximise the operation of the low carbon component of hybrid systems if:

- **Price signals are enhanced** by supporting time-of-use tariffs, type-of use tariffs (with respect to heating component), exemptions on electricity policy costs for heat pump users and enhancing location and time price signalling in the electricity market arrangements. If electricity is lower-cost when it is lower-carbon, then consumers will naturally lower their emissions in order to cut costs.
- The **grid balancing and flexibility benefits of hybrids are encouraged** through specialist tariffs, incentives and exemptions, and within the functionality of the smart controls.
- **Consumers are informed** on the potential benefits of engaging with flexible tariffs and how to achieve this through their smart controls.
- **Installers are mandated to set up smart controls to minimise running cost as a default**, whilst allowing consumers the option to alter the exact behaviour of their controls.
- **Hybrid can offer the opportunity** to input current gas and electricity tariffs into the smart controls, ensuring that at all times, the hybrid system is using the most cost effective and efficient fuel available.

50.	What further technological developments can be expected from compact hybrid systems, or hybrids of other types, to support the widespread roll out of hybrids across the UK building stock? Please provide evidence and reasoning to support your answer and please specify to which types of hybrid system your answer refers.
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Mandating low flow temperatures will ensure that less development work will be required for hybrid systems as the majority of installations will be fully utilising a heat pump.

51.	What scale of cost reductions is possible for compact hybrids, or hybrids of other types, and what are the conditions required to deliver such cost reductions? Please provide evidence and
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	reasoning to support your answer and please specify to which types of hybrid system your answer refers.
<p>Government needs to define the Benchmark of Hybrid Systems, if Low temperature systems are mandated, then hybrid systems maybe not be required in a majority of homes.</p> <p>Running cost reductions can be maximised by:</p> <ul style="list-style-type: none"> - Promoting the development of smart controls - Encouraging consumers to engage with flexible fuel usage - Promoting the usage of time-of-use and type-of-use tariffs - Enhancing price signals in the electricity markets to allow for consumers to reap the benefits of low-cost power when it benefits the grid. <p>However, the HPA would like to make it clear that, cost reductions, especially in the long term, can be greater by encouraging consumers to switch to standalone heat pumps. Figures 3 and 4 demonstrate a general trend of heat pumps increasing in cost competitiveness and with long-term reductions in electricity prices, and increase in heat pump installation standards, the cost savings will be able to increase. This cost saving effect can be maximised through standalone heat pumps as opposed to hybrid systems, although the HPA sees that in some circumstances, a hybrid system may be more suitable.</p>	
52.	Do you have views on whether, and to what extent, the policy proposals here might disproportionately impact upon certain types of consumers, with a particular focus on those in groups with protected characteristics? Please provide evidence and reasoning to support your answer.
<p>Government needs to mandate a comprehensive handover pack, Heat Pump manufacturers provide an excellent range of installer technical resources and customer information via a variety of methods, the HPA would relish the opportunity to work with Government further to develop a comprehensive customer handover process. Furthermore, the HPA is the key stakeholder in the UKs heat pump industry. we have members from all parts of the heat pump sector, including manufacturers, installers, training providers, and consultants.</p> <p>Given the Government’s 2030 target for the eradication of fuel poverty (where practicable), serious consideration needs to be made of the fuel cost implications of heating system changes. Improvements in efficiency will benefit fuel bills, however the inclusion of hydrogen-ready boilers puts households into dependency on future hydrogen prices, which are uncertain. More certainty is provided by using electricity as a fuel, since investments in renewables will create lower cost electricity supplies. Therefore, more emphasis should be put on heat pumps over hydrogen-ready boilers, since running costs for heat pumps are already comparable to gas boilers under today’s prices. Our analysis for current prices* gives an annual fuel bill of £2,190 for a typical home (12,000kWh energy use**) with an ASHP (at 2.8 SPF***) compared to £2,110 for a gas boiler (at 0.87 SPF***).</p> <p>* Based on Energy Price Guarantee prices, https://www.gov.uk/government/publications/energy-bills-support/energy-bills-support-factsheet-8-september-2022</p> <p>** Based on Ofgem typical gas consumption Average gas and electricity use explained Ofgem</p> <p>*** SPF values based on CCC assumptions, https://www.theccc.org.uk/publication/analysis-on-abating-direct-emissions-from-hard-to-decarbonise-homes-element-energy-ucl/</p>	
53.	Do you have any further views to make on our proposals that are not already captured in your responses to the previous consultation questions?
<p>Although the HPA has a strong manufacturing membership, the manufacturing members are committed to work with Government to achieve the 600,000 installations per years by 2028. Our manufacturing members provide comprehensive support to industry via a number of routes,</p>	

including training and technical support. The HPA urge Government to continue the great working relationship we must achieve the common goal of decarbonising the UKs heating and hot water systems.

The HPA is committed to provide a whole heat pump industry voice in the sector and the HPA has an established Technical Working Group and recently formed installer and training working groups.

The HPA would like to see a firm date of the of fossil fuel boiler installations phase out for retrofit installations. This will provide industry with confidence that the Governments is focussed on the Net Zero pathway

In addition, the HPA would have preferred the consultation cover more on Improving the heating system efficiency to ensure systems are heat pump ready. Nonetheless the HPA has provided a comprehensive response to cover these points off.