

HHiC

HEATING & HOTWATER
INDUSTRY COUNCIL

Heating Up to Net Zero: Piecing Together the Sustainable Future

HHIC Strategy - 2025 & Beyond

March 2025

The Heating and Hotwater Industry Council (HHIC) has represented the heating and hot water industry through many changes over the years, but the decarbonisation of domestic heating is the biggest challenge the industry has ever faced.

Continued government focus on heating and hot water, especially in the new build market, has driven research and innovation, resulting in the launch of new products and support services to satisfy the burgeoning heat pump market. We are consistently welcoming new members and providing the necessary support for this growing sector.

However, it has become very clear that if we are to meet the ambitious targets laid down by the UK government to install 600,000 heat pumps a year, it is not just a question of selling more heat pumps.

The government must provide incentives for consumers to switch and address the 'spark gap' between electricity and gas. Regulatory bodies need to introduce new legislation and update the Building Regulations to ensure installations are high quality, effective and compliant – and provide consumer protection. National standards for installation and servicing are a key part of the jigsaw we need to piece together to make a sustainable future a reality.

The fundamental infrastructure of the heating industry needs to adapt. We need to re-train our existing installer base and attract new blood; our heating engineers must be qualified and competent to carry out the required calculations, then design and install low carbon and low temperature systems that work reliably and efficiently, that keep their customers warm and, crucially, are cost-effective to run. Not all engineers will want to install heat pumps but providing training for those engineers who want to service and repair those products will ensure there is the necessary capacity to ensure customer satisfaction.

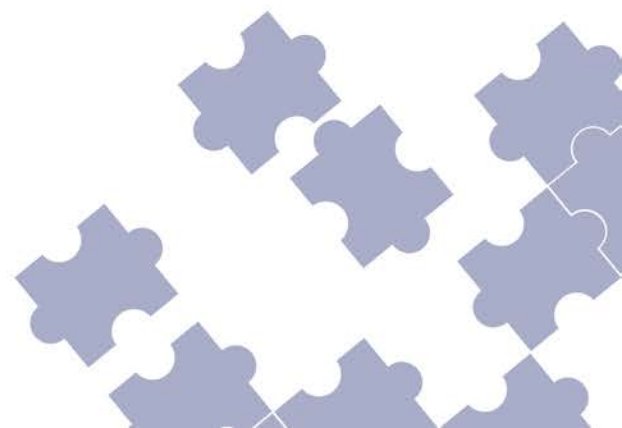
As the 'voice of the heating industry' we have listened to our members and compiled this compendium of recommendations that we are taking forward as our future strategy. As you will see, there is not a single 'silver bullet' that will take us to net zero. Each of the recommendations we are making should not be viewed in isolation, but together, as a holistic and collaborative approach.

Cooperation and collaboration between the different stakeholders will be of paramount importance to reach the full picture of decarbonisation.

Stewart Clements. Director, HHIC



Stewart Clements
Director, HHIC



EXECUTIVE SUMMARY

The UK is legally bound to achieve net zero emissions by 2050. The decarbonisation of domestic heating and hot water systems will play a pivotal role in helping to achieve this target.

Our members believe that a range of fuels and technologies will be required as the country transitions towards net zero by 2050.

We need to ensure that the solutions we have today for decarbonised fuels are rolled out as quickly as possible and that our existing homes can support future fuels and technologies, while continuing to provide householders with adequate and affordable heating and hot water today.

The development of technology has been one of the most remarkable features of recent decades. It has transformed the working world beyond recognition and is changing the way we live in our 'connected homes'. Who would have predicted that heating controls would be on shop shelves along side mobile phones?

Connectivity to the internet at faster speeds is becoming increasingly important, and we now expect it as a matter of course. The heating and hot water sector is no different and manufacturers have developed connected products such as boiler and heat pump controls along with connected hot water cylinders.

A hybrid system that incorporates an air or ground source heat pump, boiler and smart control is a readily available solution that can assist in the transition to net zero. This could work perfectly for homes heated by natural gas and for properties in off-grid locations where oil and LPG solutions are predominantly used. Use of this technology alongside bio-fuels is an additional solution for the consumer on the journey to decarbonisation. The latest versions of integrated heat pump storage cylinders also provide an alternative solution for consumers.

We must not forget the benefits of well-insulated and adequately ventilated homes to ensure future energy bills are as low as possible, especially as most energy is consumed is during the high demand winter periods.

We have seen in recent UK consultations and European legislation, such as the Energy Performance of Buildings Directive (EPBD), that the benefits of moving towards more efficient, lower temperature heating systems are recognised. To be effective, these policies require correctly designed heating systems, with suitably sized, high quality heat emitters that will provide the required heat output. As insulation levels increase in properties, heat emitter circuits can also provide effective cooling when required.

For consumers to invest in these new solutions, they must be supported with the necessary policies, provided with information on a broad range of products that will meet all needs, and have access to well trained and competent industry professionals.

We already know that regular servicing is vital to maintaining the efficiency and safety of any type of heating and hot water system. The government must ensure that the necessary legislation and incentives are in place to encourage homeowners and the rented sector to have their systems not just safety checked but regularly serviced.

OUR RECOMMENDATIONS

British Standards: National standards for installation of heat pump and hybrid systems and new technologies

As the number of installations of heat pump systems, hot water storage appliances and hybrids increases, we need to ensure that the necessary national standards managed by the British Standards Institute are in place. These will support the industry and policy makers, informing the Building Regulations and providing guidance for heating engineers and installers, architects, specifiers and training providers.

These are examples of new standards that we believe the government should be putting in place:

British Standard for Installation, Commissioning and Servicing of HP and Hybrid systems

The majority of mainstream technologies in all industries have national standards that are managed by the [British Standards Institute](#) (BSI). BSI advises that standards are blueprints for excellence, providing robust strategies for minimising risk, ensuring safety, and championing sustainability.

Heat pumps and hybrids, as part of heating systems, have been proven over several decades and are not emerging technologies. Like other heating products they are subject to ongoing improvement. However, heat pumps are now to become the main heating appliances for new build houses and will be, where possible, retrofitted in the circa 25 million homes which currently have a gas boiler.

To support legislation such as Building Regulations, there must be a national installation, commissioning and servicing standard that is the agreed industry guidance. This should be the blueprint for excellence to which architects, specifiers, building companies, heating and hot water engineers and manufacturers can refer.

A new British Standard for Installation, Commissioning and Servicing of Heat Pump and Hybrid Systems would complement the existing BSI Publicly Available Specification Standards (PAS), such as PAS2030 and PAS2035, that are sponsored by the Department for Energy Security and Net Zero (DESNZ). These PAS standards are seen as a key document in a framework of new and existing standards on how to conduct effective energy retrofits of existing buildings.

Government support for a dedicated British Standard on heat pump installation is key for consumer protection and for growing the number of trained professionals and quality installations.

Typical examples where standards can help is the specification of correctly sized pipe work for the heating system and system balancing. Today, many new homes, and heating systems in extensions and renovations of existing homes, use plastic microbore pipe. As heat pump systems require around three times the flow of water through the heating system compared to a gas boiler, smaller flow and return pipes can cause problems. There are solutions that can be added to the heating system and heat calculations may show that, in some cases, this smaller pipework may be suitable, but there is always the risk for the homeowner and the installer that the system may not be as efficient as it could be.

Our view is that a national standard and the Building Regulations should include requirements for correctly sized pipework (possibly avoiding microbore) and that homes should be future-proofed ready for low temperature heating systems.

System balancing is essential for efficient heating. Sometimes, radiators closest to the circulating pump can take a disproportionate amount of the primary hot water if flow is not balanced, leaving other radiators with little or none. This can also affect system efficiency and homeowner comfort as some rooms get too hot while others remain cold.

Heating systems are typically balanced using a lock shield valve on the radiator. However, some models of TRV include an integrated balancing insert. This allows the system to remain balanced even if a radiator is removed for decorating or replacement.

System balancing should be included in the National Installation, Commissioning and Servicing Standard held by BSI. Building Regulations can then refer to this requirement.

Guidance is already in place for domestic electrical installation requirements for products such as heat pumps and one of the latest additions is for electric car chargers. Not surprisingly, this is covered in the British Standard [BS 7671](#), also known as the IET Wiring Regulations which is available from the British Standards Institute (BSI). It is the go-to document for all household wiring information for professional electricians.

This standard is a good example where industry has a national standard and would be a key reference within a national installation standard for heat pumps and hybrids.

Connected Cylinder Standard

We believe there should be an optional Connected Cylinder Standard held by BSI.

This would provide consumers with a choice and ensure that the correct cylinder is installed in the appropriate setting and that it complies with the minimum standards, as set out under phase one of the legislation.

This would support the Building Regulations, the government's [Smart Secure Electricity Systems Programme](#) and help housebuilders and specifiers etc.

Phase Change Materials (PCM) thermal stores

PCM thermal energy stores employ a phase change material rather than water to store thermal energy for hot water and, in some cases, heating. Instant DHW is produced by transferring heat from the thermal store to the incoming cold water. This is different to a conventional hot water storage appliance, where DHW is stored at its useable temperature. This means that reheating can be separated from the actual demand for DHW.

Sales of these products seem to be increasing, however, currently, due to lack of specific technology standards, the construction, safety, efficiency and performance of PCM stores is quoted using standards that were developed for hot water storage products and require greater transparency.

If these products are to be used, then a PCM store standard should be introduced that covers general performance and efficiency in a way that allows comparison with other hot water thermal storage in a fair and equitable manner. If this technology is to be included in the Future Homes Standard, we believe such a standard is urgently required.

Fabric First: Financial support for insulating homes is still the best policy

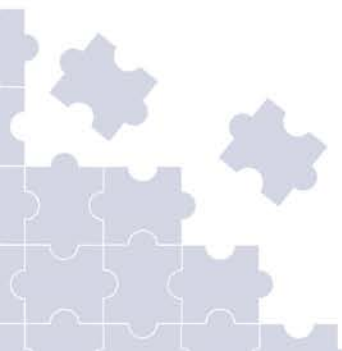
Although the government has relaxed the requirement for insulation when installing a heat pump through the Boiler Upgrade Scheme (BUS), we believe this to be a false economy. Consumers would be better advised that they could save money in the long term by fitting at least 200mm of loft insulation and having cavity wall insulation installed.

The latest English Housing Survey Report (2022 to 2023) demonstrates there's a long way to go to improve insulation measures that will reduce heat loss in existing homes. This has a large influence on energy usage, no matter what heating technology is used.

The report advises that 88% of homes in England are fitted with full double glazing compared to 79% of homes in 2012, and that 52% of dwellings now have cavity wall insulation, which is an increase of 45%. Surprisingly, only 38% of homes have 200mm or more of loft insulation which, the report advises, is an increase of only 34% compared to 2012.

While double glazing has increased significantly over the years, the other two measures are vital to consider when planning for any heating and hot water system upgrade. The Energy Saving Trust advises that 25% of heat is lost through the roof of an uninsulated loft space. Reducing a home's heat loss ensures retrofitted lower temperature appliances work more efficiently, reduces carbon emissions and saves on household running costs. Older properties that have been upgraded with double glazing, loft and wall insulation have a significantly lower heat demand. This makes them better suited to low temperature heating systems, with potentially fewer system component changes, such as radiators.

Older homes that were built with solid walls will require financial support to insulate external walls to reduce heat loss. Checktrade reports that it costs around £670 plus VAT to insulate a loft, with the additional labour cost of around £250. The HHIC white paper [Heating up to net zero](#) provides more information.



Stable long term incentive schemes for heat pump and hybrid systems: It is essential that consumers and professionals have certainty that investment is valid for years to come

Firstly, to enable the continuing take up of heat pump/hybrid systems, there needs to be long term security for businesses that invest time and money to become experts in their installation.

The Boiler Upgrade Scheme (BUS) is the headline government grant scheme to encourage consumers to install a heat pump. The BUS currently offers consumers a £7,500 grant. DESNZ recently announced that overall funding will be increased under the new government's Warm Homes Plan with £30 million of additional funding for this financial year (2024/25), to increase the total budget to £180 million.

In addition, the Secretary of State has given Ofgem permission to over-allocate vouchers up to a total of £25 million, to ensure there will not be a hiatus in support. The government has committed to a budget of £295 million for next year (2025/26). However, core funding falls well below the required amount if the DESNZ target of 600,000 installations per year by 2028 is to be achieved.

The BUS is due to end in March 2028, which is less than four years away and currently does not include any financial support for hybrids. To support the continued adoption and uptake of the BUS, government should allow any suitably qualified and competent installer to access the scheme.

Hot water storage is a large part of the heat pump system, both in terms of installation time and cost. Extending the BUS to include hybrids and replace and install hot water storage systems with a heat pump-ready cylinder or integrated heat pump storage cylinders would prepare homes for the future.

In most cases, significant changes to the home are required to fit a full heat pump system. If the homeowner does not want extensive changes made to their property, one solution is to install a hybrid heat pump system. This approach can still yield up to 80% carbon savings with less modification or disruption. Providing the existing boiler is relatively new, a heat pump should be sized at 55% of the property's maximum heat demand, but still provide 80% of the central heating supply over a full year. This would satisfy demand for the majority of the winter, with the boiler providing heat for domestic hot water and only being used for heating during the coldest periods.



The government has missed an opportunity to include hybrid heat pump systems – consisting of an air source/ground source heat pump, boiler and an intelligent control system – in the BUS, even though they will be recognised as a suitable technology by MCS in MIS3005 and also acknowledged in the Clean Heat Market Mechanism as being 0.5 of a full credit towards any target quota a manufacturer has been set.

The [HHIC Hybrid Heat Pump](#) report highlights that the UK is falling behind Europe in the use and support of this readily available technology, and we believe hybrid heating systems should be included under the BUS. (Please note that the HHIC Hybrid Heating Report is currently under review and being updated)

We know that heat pump systems are well suited for use in new build properties, however there must be a focus on how to meet demand for lower carbon heat in harder to treat homes, older buildings and off grid properties.

There also needs to be a transitional option for those who have limited space or would prefer to use the heat pump for heating and a boiler for instant hot water. A major benefit of the hybrid option is the lower electricity demand and potential balancing of the electricity network.

A hybrid system could answer the problem of “distress” purchases. It can take an extended period of time to make all the required modifications for a full heat pump system to be installed - a long time for an end-user to be without heating and hot water.

A hybrid system and a new boiler could be installed relatively quickly, restoring the heating and hot water whilst reducing carbon.



Support for upgrading the current heating and hot water system for lower temperatures: Preparing heating and hot water systems for the future will help to stop the distress purchase of a replacement when the existing boiler suddenly fails

Consumers that have older or inefficient heating and hot water storage appliances and systems may need incentives to upgrade to a low carbon system. They should be encouraged to retain their existing hot water storage cylinder so the existing cylinder location is not re-purposed. When replacing an old cylinder, the system can then be future-proofed by installing a new cylinder that would be suitable for use with a heat pump.

Where homeowners are replacing radiators on wet systems, for example, during home renovations, they should be encouraged to install a radiator that is suitable for operating at a lower temperature.

The majority of homes will be suitable for lower temperature heating by improving insulation and, in some cases, improving radiator outputs, for example by changing a single radiator for a double.

It is the responsibility of all manufacturers, distributors, wholesalers and resellers to ensure hydronic radiators and towel rails conform to the European testing Standard BS EN 442. Delta T (ΔT) relates to the difference in temperature between the water circulating in the central heating system and ambient room temperature. BS EN 442 requires outputs at $\Delta T=30K$ and $\Delta T=50K$.

Our members recommend a room-by-room heat loss calculation by a suitably qualified installer, so they can establish if existing radiators are effectively oversized and able to run at lower temperatures, or they need to be exchanged for larger or multiple panel radiators.

Initiatives such as a scrappage scheme or zero VAT rating for replacing inefficient and older cylinders and radiators would encourage consumers to begin to improve their systems and prepare for lower carbon technologies in a cost-effective manner.

Note - The trade association MARC ensures that all members' products meet the requirements of BS EN 442 but are aware of a number of products from other sellers that are sold with the incorrect stated output. This has serious implications for the introduction of low temperature systems, especially with consumer perception of performance and comfort levels. This information has been passed to the Office for Product Safety and Standards (OPSS), who we hope will help to improve protection to the marketplace.

Hot water storage: Support for connected technology

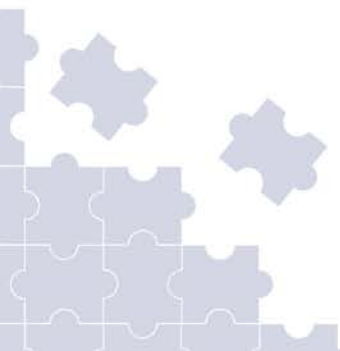
Hot water and thermal storage is a valuable feature as energy security continues to be a major focus for government. The Hot Water Association has identified the potential role of hot water cylinders in balancing demand on the electrical grid. The report from the Hot Water Association, entitled [Connected Homes](#), highlights the potential for hot water cylinders to be used as thermal energy stores for grid electricity, to build resilience in peak periods.

If the nine million existing cylinders in UK homes were connected through smart controls and used as batteries, this could unlock materially significant energy storage for use in the UK, and with the introduction of technologies which require new hot water cylinders, like heat pumps, this will further increase the potential stored energy capacity.

Connected cylinders and demand side response products need to be incentivised in regulations to play a significant role in grid balancing and carbon reduction. These cylinders heat up the same way as a conventional direct cylinder, but they do save carbon by avoiding peak periods when fossil fuels are being burned, and they will use renewable energy when there is plentiful supply from wind and solar, enabling consumers to benefit from consequential low energy prices.

Thermal storage can include a range of mediums such as hot water, PCMs or thermal bricks that can support smart connectivity to take advantage of off-peak tariffs. They can provide direct hot water and central heating, helping the consumer reduce carbon. Having national standards for the varied technologies and supporting innovation is key for a fair and competitive marketplace for industry and provides protection and choice for consumers.

Incentives should also be included for integrated heat pumps cylinders that use energy extracted from an external air source to heat water. These self-contained units use heat pump technology to produce and store hot water. They are increasingly being installed and have the potential to provide hot water efficiently for a large number of homes. Adding this alternative hot water storage system to a home can assist the consumer in their transition to lower carbon systems. You can fit one today, and they can be paired at a later date with a smaller air source heat pump that would operate the heating system. There are several options for consumers choosing this type of technology. Government should ensure that these products are included in legislation with the necessary financial support. A review of how this technology can be used alongside heat pump systems may support installations and consumer engagement.



Since the introduction of technology such as smart heating controls we have noted that many consumers like the benefit of being able to control their appliances via their smart devices.

Government needs to ensure that financial incentives and suitable energy tariffs are in place so that stored hot water is a retained feature in the home and that replacements are upgraded to the latest technology and are heat pump ready. Homes that don't have hot water storage should be encouraged with financial incentives to install it and have the necessary support in tariffs to ensure that pay back is effective.

It should be noted that we would not expect all hot water devices to be smart; some will be connected to a smart appliance and, of course, the technology and control method used should be down to consumer choice.



Regulations: Protect and benefit people, businesses, and the environment

We have identified a number of examples that require updates or inclusion in current Regulations and standards, this includes:

- Revision of G3 within Building Regulations to ensure support of low temperature systems.
- CE marking should be continued indefinitely, covering the inclusion of construction products.
- Central heating pipe sizing requires to be included in a national installation standard and regulated by Building Regulations so heating systems are future proofed.
- Balancing of the heating system is crucial to ensure system and energy efficiency and should be included in regulations and standards.

These are the actions we believe the government should take to ensure existing regulations are updated and new regulations are in place as we move forward with the plans for net zero homes.

Building Regulations G3

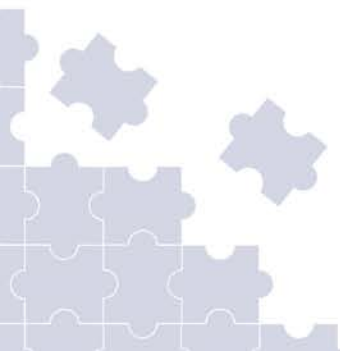
The heating sector is very supportive of the Building Regulations and, following a review of [Approved Document part G \(G3\)](#), its view is that this legislation for stored hot water is in need of a review and update. The changes in today's available materials, connectivity and new products, such as integrated heat pump cylinders, mean this needs to be updated and additional requirements for low temperature heat generators such as heat pumps needs to be included.

Microbore Pipes

Microbore pipes used in central heating systems can be unsuitable for lower temperature, higher flow rate heating systems due to their smaller diameters. A BSI national installation standard can be referenced by Building Regulations to ensure the correct approach for central heating pipe sizing.

CE/UKCA Marking

Although UK government has confirmed that CE marking can continue, there does need to be a decision on the long-term future of UKCA and CE. Having alignment with European regulations would provide cross border protection and appliances would remain consistent across the markets, keeping costs down for the end consumer.



Heating and Hot Water Controls: Connected to Smart Appliances

The introduction of European Ecodesign legislation in September 2015 highlighted the effect more capable heating and hot water controls have on energy savings in the home. In the UK the requirements were further expanded as part of the Boiler Plus legislation introduced in January 2018 where new combination boiler installations had requirements for more energy efficient heating controls.

As government moves forward with increased availability of time-of-use tariffs and Demand Side Response, heating and hot water manufacturers along with control manufacturers will see the introduction of appliances and controls that can respond to the legislation proposed by UK government. Hybrid heating systems, consisting of an air source heat pump, boiler and intelligent controls offer a solution to system load balancing.

Manufacturers are asking that legislation is clear and that it creates a fair and competitive marketplace for industry supporting consumer protection and choice. Although many manufacturers have begun the development cycle for connected products and controls, it is important that sufficient time is allowed for introduction of the complete portfolio of products supported by appropriate standards.

Training for system design, installation and maintenance: To ensure we have the necessary skilled professionals and quality installations

Domestic heating, including the low carbon technologies of the future, needs to be viewed as a rewarding and fulfilling career which is attractive to young people. The recent Boiler Standards and Efficiency consultation advised that government should require that installers of gas boilers, and eventually all heating appliance installers, undertake low temperature heating and hot water system design training. Training for installation and servicing of heat pumps and hybrids also requires the support of a national standard mentioned above. Government needs to support industry to ensure that relevant training is easy to access and works around the demands placed on the many small and sole-trader businesses in our industry.

We need to make decarbonisation an achievable goal for individual domestic properties. Effectively supporting heating businesses of all sizes on the road to embracing renewable technologies is key to engaging homeowners. The government's [Heat Training Grant](#) of £500 is a welcome contribution to the cost of time off to train engineers, but further action will be required.

Access to design software for all heating and hot water engineers should be a priority for government to assist in simplifying the process and will help to ensure calculations are completed as accurately and consistently as possible.

Not all heating engineers are able to provide an installation service for heat pumps, but this should not stop us from using their skills and experience. As we move forward with the increased uptake of heat pump technology, consumers would benefit from heating engineers that are trained for servicing and repairing heat pumps. In its paper, [Skills, Training and Future of Heat](#) HHIC has set out the actions that can be taken to prepare the heating and hot water industry for the future.

Competent Person Scheme: As part of a complete package to support installers

A British Standard for the installation of heat pump and hybrid systems and appropriately trained professionals provides a foundation to ensure that heat pumps and hybrid systems are installed to an appropriate level.

A complete package to support installers would encourage schemes such as the BUS to recognise a competent person scheme for heat pumps and hybrids encouraging increased uptake. As we increase the number of heat pump installations it becomes more critical that a register of competent installers is introduced similar to the Gas Safe Register that we have today.

This would provide a level of consumer protection and a simple route of communication to the engineer base. Those only providing service and repairs should also be included. Consideration should be given in the register to the various sets of skills required. This would include system design, understanding the fabric of the property and heat loss, regardless of the heat source.

The Benchmark online platform for certifying the installation, alongside a CPS for heat pumps and hybrids, would be a big step forward for consumer protection and compliance with Building Regulations

Mandatory Servicing, Benchmark and Building Certificates: Save energy, provide advice and improve housing records

Completion of the Benchmark checklists by on-site engineers has been a requirement for heating and hot water manufacturers for many years and an online version has recently been introduced. The current requirements for gas and hot water products are based on national standards and Building Regulations. With the right focus and support moving forward there needs to be an awareness and adoption regarding the quality of heat pump installations which can be based on a National Standard held by BSI.

In the Boiler Efficiency Consultation, the government has recognised that energy savings can be achieved and maintained by servicing heating systems annually. An annual service is to be included as a requirement of the Building Regulations. Currently Landlords are required by law have an appliance safety check completed by a Gas Safe Engineer. Expanding this requirement to include a service of the heating and hot water system would provide energy savings and reductions in emissions.

Within the EU, as part of the EPBD, there are plans to introduce a requirement for member states to adopt a mandatory heating and hot water system efficiency check. UK Government should be aware and work towards the same objective.

When they have an annual service, homeowners are more likely to be aware of the health of their appliance and system. Expert advice from their engineer during this necessary process means that potential repairs or system upgrades can be identified and better planned for. Their engineer can help them understand all of their options, including low carbon solutions, and the potential costs and energy savings.

It is well known that cleaning the system and adding an inhibitor when a new heat generator is added to an already installed hydronic system ensures optimum efficiency. Water treatment and other central heating system maintenance measures help systems perform reliably and efficiently. They are specified in Building Regulations, British Standards (BS 7593 2019: A1 2024) and manufacturers' installation instructions. If any specific variations in water treatment methods are required, they will be detailed in the manufacturer's instructions. The HHIC has developed a new guide to cleaning and water treatment for domestic systems which will be available shortly.

Hydronic heating systems with a maximum flow temperature of 55°C operate below the pasteurisation temperature for bacteria. Consequently, bacterial growth can lead to slime formation and microbial induced corrosion within the heating system. This can be prevented with the application of a long-term biocide.

Energy Performance Certificates (EPCs)

EPCs should provide a trusted, accurate and reliable measure of energy performance that will help to improve the performance of the existing housing stock. Consumers and third parties should have access to the data so they can make informed decisions about reducing their energy consumption.

EPCs are currently a cost calculation methodology. It would be beneficial for an EPC to clearly state the difference between efficiency and running costs. In addition, the installation of a heat pump or hybrid heat pump should be positively recognised in the EPC rating.

Many organisations have suggested a building passport would be a major improvement for identifying in more detail the current status of the UK housing stock. So we don't reinvent the wheel, extending the current EPC to an energy performance and building certificate (EPBC) as a wider home passport could provide the necessary link to Building Regulations.

EPCs currently need to be reformed so improvements can be logged if upgrades are made to the heating and hot water technology within the property, having an impact on the EPC rating of the property – a great scheme if used appropriately

To incentivise the installation of low carbon heating and hot water technologies, these installations should be linked to an improved EPC score which could then result in a reduction in council tax as a longer-term financial saving.

Benchmark

The Benchmark online platform is a tool that records all the installation details of an appliance and has the added benefit of providing a service record. It can support and provide records for the Mandatory Technical Competencies that are currently being revised. Whether it's a heat pump, boiler or hybrid system, and regardless of whether it is low or high temperature, the annual service checks include safety, water quality, checking the inhibitor, and system efficiency.

Assessment of heating systems for low-carbon readiness is best suited to qualified installers. Benchmark Online should serve as the platform for recording completed installations as well as being able to ensure ongoing warranty through confirmed annual servicing. It can also be used as a record of assessment of future energy saving heating system upgrades. Benchmark Online has the potential to be akin to the car MOT and should become an important factor in any future EPC reform. We do not propose to use this platform to replace the EPC but rather develop it into a supporting and consumer-facing proposition.

We believe that utilising the Benchmark platform and improving EPCs adding a requirement to record heating and hot water system ratings, would make homes more efficient and safer. The move to a more in-depth EPC (e.g. an Energy Performance and Buildings Certificate) is a logical step and can include additional building service requirements, including electrical safety.

Labelling of inefficient heating appliances: Introduction of a retro label

There are still many very old and inefficient heating and hot water systems in homes throughout the UK, for example, those with a non-condensing boiler. A retro label should be introduced, that advises the inefficiency of the appliance. When a suitably qualified installer attends, for a service visit, for example, they would attach this label to the appliance to show it has a low rating. This could also advise how the efficiency of the system could be improved. Labelling of older appliances can also be included in BS 40104 Retrofit assessment for domestic dwellings – Code of Practice which is due to be published later this year. This information will be a valuable addition to an EPC, so we would recommend expanding the EPC to include this and other information in the form of an Energy Performance and Buildings Certificate (EPBC).

Within the EU, the Heating Appliances Retrofit Planning (HARP) project was founded on the principle that the consumer can only act on what they know. The HARP strategy relied on the energy label as the preferential tool to communicate with consumers and outline the opportunities of a planned replacement of their inefficient heating appliances. A dedicated online tool enabled consumers to find out where on the energy label scale their current appliance is classified and find a suitable replacement solution based on the most efficient alternatives available on the market.

Electricity Prices: Reduce the spark gap between gas and electricity without increasing the total energy cost to the consumer

There is no doubt that the decarbonisation of power generation must continue, to ensure that the move to electrical products doesn't result in increased emissions. Reducing the 'spark gap' between electricity and gas unit prices, by switching some policy costs into general taxation would offer an incentive to consumers to make an informed decision when replacing their heating appliance.

The recent introduction of promotional "heat pump tariffs" will help short term to encourage heat pump adoption, but for the medium to long term nature of these discounts to be sustainable a longer-term policy is required. Total cost of ownership must be something industry can calculate with some certainty, without the risk that promotional tariffs are withdrawn. With no long-term policy consumers are potentially trapped with a technology that has high bills. A long-term process of addressing the spark gap is required to ensure these early adopters on special tariffs are not let down and all consumers can invest in low carbon technologies with certainty of cost.

Currently, there is disparity between prices across fuel types. The current UK "spark gap" – the different in unit price per kWh of electric versus gas - is 3.9 for standard tariffs (based on the Ofgem Price Cap).

However, the spark gap only plays a minor role in the Total Cost of Ownership (TCO) of both appliances. The TCO is a more important determinant of demand than just the running costs and the spark gap is only an element of the running cost calculation. Jan Rosenow and Richard Lowes, from RAP, recently published a paper on the TCO question, which can be [read here](#).

Using Ofgem, Typical Domestic Consumption Value of gas demand, excluding cooking; the current Ofgem Price Cap unit values; boiler efficiency of 90%, heat pump 280%; heat pump setback of 10%; Ofgem standing charge for gas (electric standing charge is ignored as it is a sunk cost for the house) we get the following conclusions:-

Gas boiler running cost £822.75, heat pump £980.73 – difference £157.98 (19%)
To achieve parity, via spark gap changes, the electricity unit price needs to fall by 4 pence (16%). Or the gas unit price needs to increase by 1.42 pence (22.4%). Or a combination of both.

To achieve a notional running cost advantage of a heat pump over a gas boiler of £200 a year, the electricity unit price needs to fall by 9.1 pence (36%). Or the gas unit price needs to increase by 3.2 pence (50%). Or a combination of both.



Changing efficiency assumptions can have a marginal impact on running costs, but it would require government to mandate these in all homes installing heat pumps. Minimum SCOP of 350% would mean a heat pump was £38.17 cheaper to run than a boiler; 400% would be £136.37 cheaper and 450% would be £212.69 cheaper.

The current debate around the spark gap centres on policy costs and levies. The argument is that they are more heavily weighted on electricity than gas and should be rebalanced or switched to taxation. According to NESTA, based on the Ofgem Price Cap, policy costs add £141 to the average electricity bill and £46 to the average gas bill.

Given the difference in running costs shown in the modelling, reducing the 'spark gap' between electricity and gas unit prices, by switching some policy costs into general taxation would offer an incentive to consumers to make an informed decision when replacing their heating appliance.



Secondary Heating: Supporting consumer choice

This technology has been widely used over many years in UK homes where the main heat sources are wood burning stoves, gas fuelled fires, gas stoves and/or electrical heaters.

European legislation LOT20 has driven the improvements for energy efficiency which has reduced energy bills for consumers along with reduction in emissions that contribute to carbon reduction targets. Energy labelling has provided a high level of consumer information and has removed inefficient technologies from the market. The UK Government should continue alignment with this European legislation.

Consumer Hub - online & local: Reliable information allows informed decision

It is important that information is easily and freely available to consumers from a trusted, recognised and agnostic source. The information would help them understand their options for heating and hot water upgrades and raise awareness of the available financing and incentives options.

Accurate information would help them to make an informed decision and would be particularly useful to discuss when raised by installers during an annual service. This information needs to be held in a central consumer hub with reliable, accurate up-to-date information. Local walk-in information centres could also be useful, located, for example, in council offices.

Most consumers rely on the expertise of the installer and with more complex heat pump and hybrid systems, government and industry need to ensure that the consumer has access to the best technical advice and solutions.

Waste Energy: Support for technology innovation

We encourage government to support new and innovative technology that can improve efficiency, reduce heat loss and recover 'waste' heat. A primary example of this is wastewater heat recovery systems (WWHRS). One of the largest single heat losses from pipework is through the shower wastewater as it leaves the building, which is very similar to transmission losses through the wall. A WWHRS can help to reduce these losses by around 50%, in a cost-effective manner.

WWHRS is a simple measure, suitable for many dwelling types. We believe it should either be recognised directly or encouraged indirectly by setting a minimum domestic hot water efficiency or metric target that is similar to FEES for new build dwellings.

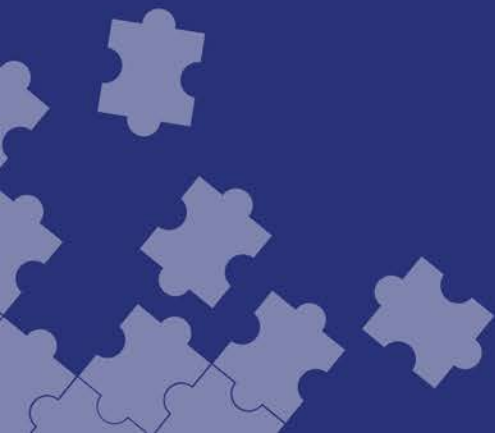
CONCLUSION

It is clear that if net zero is to be achieved for domestic heating and hot water, there are many parts to the jigsaw that need to be considered. Each piece must not be looked at in isolation, but as part of the complete picture in a whole energy and systems approach.

This paper sets out a policy direction and recommendations which will need to be enacted for net zero to become a reality. From the need to re-skill the installer base to government incentives to drive consumer uptake of new and emerging heating technologies, and from new and updated regulatory measures to adopting national standards: we believe these are important and positive steps in the right direction.

Equally, it is important that all the different stakeholders involved – industry organisations, government, manufacturers, regulatory bodies, installers, and local authorities – work together to ensure the UK achieves its goal in building a truly fair and sustainable future.

We, as industry, look forward to engaging closely with policy makers and to play our role in driving the positive change outlined in this paper to make the UK a global leader in the decarbonisation of homes and championing clean energy.





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