

Historic England's response to the DESNZ consultation: Exploring the role of alternative clean heating solutions

Question 1 – Do you agree that electric boilers should play a limited role in decarbonising heat, given their comparatively low efficiency and limited ability to load shift, leading to high running costs for consumers?

Yes – Historic England agrees that electric boilers should play a limited role in decarbonising heat. This technology may be appropriate in a hybrid heating arrangement, or for buildings that cannot accommodate heat pumps due to space, planning, or fabric constraints. Electric boilers may also be appropriate for traditionally constructed buildings (i.e., pre-1919) that prove unsuitable for heat pumps due to the risk of adversely affecting the building's significance or character, though it should be noted that for the most part, heat pump technology is compatible with traditional construction (as was noted in the recent Warm Homes Plan) – this technology has even been installed in Grade I listed buildings. It is also important to distinguish between instantaneous tankless electric units and storage units, with the former being preferable in certain circumstances.

However, electric boilers are not a recommended option in most cases due to high running costs caused by their relatively low Coefficient of Performance (COP) compared to the typical heat pump, which has a higher COP. This results in significantly more energy consumption for the same heat output and much higher operational carbon emissions. Their in-situ performance is therefore inferior to heat pumps, and widespread deployment of electric boilers would increase peak electricity demand, as they have limited ability to load shift without the addition of thermal energy storage or smart controls. While pairing electric boilers with solar PV, electrical batteries, or thermal energy storage can reduce grid impacts and operating costs, this increases capital costs, space requirements, and system complexity and is often constrained in traditional buildings by planning and fabric considerations.

Overall, electric boilers may have a niche role in buildings with very low heat demand or severe retrofit constraints where other low-carbon solutions are not feasible, but they are not a cost-effective or scalable solution for heat decarbonisation, particularly due to high bills and tariff sensitivity, which can lead to poor affordability outcomes for consumers. For further information, please refer to CIBSE guidance (CIBSE, 2016; 2021).

References

CIBSE (2016). *Guide B1 Heating*. <https://www.cibse.org/knowledge-research/knowledge-portal/guide-b1-heating-2016/?id=a0q20000008JuAsAAK>.

CIBSE (2021). *TM67 Electrification of buildings for Net Zero*. <https://www.cibse.org/knowledge-research/knowledge-portal/tm67-electrification-of-buildings-for-net-zero-pdf-only/>.

Question 2 – Do you agree that (a) thermal energy storage systems and (b) electrical energy generation and storage (solar PV and batteries) can enable electric boilers to become a more efficient and cost-effective option to decarbonise heat?

Yes – Historic England agrees that a) thermal energy storage and/or the integration of b) solar PV and batteries can potentially improve the cost effectiveness of electric boilers after a length of time by enabling off-peak operation and reducing peak electricity demand by enabling peak shifting principles. However, even when combined with these measures, electric boilers remain a form of direct electric heating and do not outperform heat pumps in terms of overall efficiency or energy use. While storage and on-site generation can help mitigate grid impacts and improve affordability, they come with capital costs, space requirements, and system complexity, and do not overcome the fundamental efficiency limitations of electric boilers. Electric boilers should therefore be viewed as a niche or secondary option, rather than an alternative to heat pumps – to maximise savings and overall efficiency, it would be preferable to combine energy generation and storage with heat pump technology (a suitable combination for traditionally constructed buildings, i.e., pre-1919).

Moreover, it is important to consider that the installation of clean heating solutions and electrical energy generation and storage technologies will be greatly incentivised by further reductions in the cost of electricity, particularly with regard to reducing the spark gap (the price difference between electricity and gas). While some progress was made through the reductions to electricity costs announced during the 2025 Budget, there is more to be done to provide consumers, installers, and designers with confidence in the economic viability of these technologies. One solution proposed by Nesta involves removing levies on electricity bills (to be replaced with general taxation), thus making electricity less expensive, redressing

the imbalance between gas and electricity prices, and making renewable technologies cheaper to operate (Nesta, 2023).

This is particularly important for traditional buildings – our 2024 report on adapting historic homes identified high costs as a key barrier for adapting traditional buildings (DLUHC, DCMS, DESNZ, HE, 2024). Therefore, if clean heating solutions and electrical energy generation and storage technologies offer cheaper bills due to the lower cost of electricity, then installation will become more financially viable for traditional building owners, and take-up will increase.

References

Department for Levelling Up, Housing & Communities, Department for Culture, Media & Sport, Department for Energy Security & Net Zero, Historic England (2024). *Adapting historic homes for energy efficiency: a review of the barriers*.

<https://www.gov.uk/government/publications/adapting-historic-homes-for-energy-efficiency-a-review-of-the-barriers/adapting-historic-homes-for-energy-efficiency-a-review-of-the-barriers#affordability-and-financial-incentives>.

Nesta; Orso, L, Gabriel, M. (2023). *The electricity-to-gas price ration explained – how a ‘green ratio’ would make bills cheaper and greener*. <https://www.nesta.org.uk/blog/the-electricity-to-gas-price-ratio-explained-how-a-green-ratio-would-make-bills-cheaper-and-greener/>.

Question 3 – Do you have any evidence or views on the role infrared heating could play in decarbonising heat?

Historic England believes that infrared heating can have a limited, targeted role in decarbonising heat, particularly in buildings with intermittent occupancy or significant constraints on fabric alteration, such as traditionally constructed buildings (i.e., pre-1919), places of worship, galleries, and ancillary spaces. Its main advantage is the ability to provide localised, rapid thermal comfort with minimal physical intervention, as it heats occupants and surfaces directly rather than the air. In non-domestic settings, this can be beneficial where only small areas require heating or where buildings are used for short periods. In these scenarios, infrared panels can provide targeted, responsive heating without the need

to heat entire volumes, which may offer energy and cost benefits compared with whole-building systems.

However, infrared heating remains a form of direct electric heating, with limited flexibility, significant reliance on careful placement, and potential impacts on peak electricity demand if deployed more widely. While combining infrared systems as a ‘top-up’ with other separate heating systems and technologies may help reduce running costs and grid impacts, its evidence on performance, user experience and long-term affordability remains limited. Similar to electric boilers, heat pumps will offer a lower running cost for continuously heated spaces.

Finally, it is worth underlining that thermal comfort depends on both air and radiant temperatures, and significant gaps between these two temperatures can cause thermal discomfort. Since infrared heating heats surfaces and individuals rather than the air, there is a risk that such a temperature gap could be created, thus limiting the technology’s appeal.

Question 4 – Do you agree that panel heaters and electric radiators should play a smaller role in decarbonising heat, given their comparatively lower efficiency (than heat pumps) and limited ability to load shift, leading to high running costs for consumers? Please provide any evidence or views to explain your answer.

Yes – Historic England agrees for the reasons given. These technologies are often seen as an attractive heating option due to their ease of installation and low capital cost, but they risk potential impacts on peak electricity demand if deployed more widely compared to other, more energy efficient heating systems, which could lead to limited demand-side flexibility and high long-term running costs.

Question 5 – In what circumstances, if any, would panel heaters or electric radiators be more suitable than heat pumps, thermal energy storage systems, biomass heating systems or hybrid heat pumps? Please provide any evidence or views to explain your answers.

Historic England believes that panel heaters and electric radiators may be more suitable than other low-carbon heating options in limited and very specific circumstances, particularly where buildings have a very low heat demand, are used intermittently, or face significant constraints on fabric alteration or space, as seen in some traditionally constructed

(i.e., pre-1919) or listed buildings. They may also be appropriate in small ancillary spaces where installing heat pumps, thermal storage, or biomass systems would be disproportionate and impractical investments for meeting the smaller heating loads of the building.

However, as panel heaters and electric radiators provide direct electric heating with limited flexibility and typically higher running costs, they should be considered as ‘last-resort’ or ‘exceptional circumstance’ solutions, to be used only where other low-carbon technologies are not technically feasible or would result in greater overall disruption or cost.

Question 6 – Do you agree that high temperature heat pumps could play a key role in decarbonising heating of buildings?

Yes – Historic England agrees that high temperature heat pumps could play a key role in decarbonising heat, particularly in existing and traditionally constructed (i.e., pre-1919) buildings where fabric upgrades or changes to radiators might be more difficult or pose a risk to the building’s significance or character. The ability of such heat pumps to operate at higher flow temperatures can reduce the need for radiator replacement and other distribution system upgrades, making them more suitable in constrained buildings.

However, such heat pumps typically involve higher running costs and can operate less efficiently at higher temperatures, which can affect in-situ performance. Its wider deployment may also have implications for electricity network capacity. As a result, this reinforces the need for careful system design, appropriate controls, and a whole-building assessment to ensure adequate performance and affordability in the long term, particularly when developing an options appraisal and creating a roadmap for the decarbonisation of a building. For further information on planning decarbonisation works, please refer to our guidance on Developing a Decarbonisation Plan (Historic England, 2025a).

In general, higher temperature heat pumps are only likely to be preferable where lower-temperature ones are unfeasible (e.g., prohibitive cost, inability to make necessary installations, etc). As mentioned in our answer to Question 1, heat pump technology is highly compatible with traditional construction (as was noted in the recent Warm Homes Plan). For further information on the range of heat pump technologies that can be installed in traditional buildings, please refer to Historic England guidance and research (Historic England 2023; 2025b; 2026a; 2026b).

References

Historic England (2023). *Heat Pumps in Historic Buildings – Air Source Heat Pump Case Studies – Small-scale Buildings*. <https://historicengland.org.uk/images-books/publications/air-source-heat-pumps-historic-buildings/>.

Historic England (2025a). *Developing a Decarbonisation Plan*. <https://historicengland.org.uk/advice/climate-change/your-organisation-to-net-zero/developing-a-decarbonisation-plan/>.

Historic England (2025b). *Heat Pumps in Historic Buildings – The Viability of Ground Source Heat Pumps in Historic Buildings*. <https://historicengland.org.uk/images-books/publications/viability-ground-source-heat-pumps-historic-buildings/>.

Historic England (2026a). *Heat Pumps in Historic Buildings – Air Source Heat Pump Case Studies – Large Buildings*. <https://historicengland.org.uk/images-books/publications/air-source-heat-pumps-historic-buildings-large/>.

Historic England (2026b). *Heat Pumps in Historic Buildings – The Viability of Water Source Heat Pumps in Historic Buildings*. <https://historicengland.org.uk/images-books/publications/viability-water-source-heat-pumps-historic-buildings/>.

Question 7 – What are the key barriers that are preventing the installation of high temperature heat pumps in (a) domestic properties and (b) non-domestic buildings? How could these barriers be removed?

Historic England believes that the key barriers to high temperature heat pumps for both domestic and non-domestic buildings include high running and capital costs, limited installer experience, planning uncertainty in heritage contexts and grid capacity constraints (particularly for non-domestic properties). For traditionally constructed buildings (i.e., pre-1919), perceptions around conservation requirements can particularly hinder uptake. These barriers can be addressed through grant support, expanded installer training and accreditation, and clearer planning guidance tailored to traditional and listed buildings.

Additionally, on a more practical level, early engagement with Distribution Network Operators during the earlier RIBA stages in retrofit projects can help manage grid constraints and provide a clear indication of feasibility. Furthermore, promoting case studies of successful installations in heritage settings would help build confidence in these systems.

Question 8 – Do you agree that air-to-air heat pumps could play a key role in decarbonising heating of buildings without wet central heating systems?

Yes – Historic England agrees that in appropriate circumstances, air-to-air heat pumps could play a key role in buildings without wet central heating systems.

Question 9 – What are the key barriers that are preventing the installation of air-to-air heat pumps in (a) domestic properties and (b) non-domestic buildings? How could these barriers be removed?

Historic England believes that the key barriers to the uptake of air-to-air heat pumps (AAHPs) include the capital cost, disruption caused by the installation of new refrigeration pipes and emitters, visual and noise concerns, planning constraints, perceived comfort issues, the potential health and safety risks created by the system carrying refrigerant internally, the space needs of external units, and low consumer awareness. In some cases, the type of building construction may also pose a barrier, e.g., in the most sensitive traditionally constructed buildings (i.e., pre-1919), cassette type indoor units may not be appropriate.

Many of these challenges can be addressed through targeted measures and a holistic design. Clear, heritage-sensitive installation guidance can help ensure AAHPs are appropriately integrated into historic and visually sensitive buildings (e.g., concealed chassis type air-to-air indoor units are more appropriate for sensitive historic interiors). Improved consumer education can help manage expectations around comfort and system performance, and integration with passive cooling and heating strategies can optimise effectiveness and reduce reliance on additional systems.

For further information on the installation of heat pumps in traditional buildings, please refer to Historic England guidance (Historic England, 2023).

References

Historic England (2023). *Installing Heat Pumps in Historic Buildings*.
<https://historicengland.org.uk/advice/technical-advice/building-services-engineering/installing-heat-pumps-in-historic-buildings/>.

Question 10 – Do you have any evidence on the potential for air-to-air heat pumps to use alternative refrigerants?

Historic England does not have further evidence on alternative refrigerants, though we would highlight that research is needed into the risk of having propane distributed in a building when methane is already frequently distributed in domestic spaces. Alternative refrigerants must be managed responsibly to minimise environmental impact and should have as low a Global Warming Potential (GWP) as possible. Another area for investigation could be carbon dioxide air-to-air heat pumps.

Question 11 – Please provide any evidence or views on a) the promotion of passive cooling measures to increase their uptake, so that active cooling is only used when and where needed, and b) local network impacts during extreme weather events.

Concerning a), Historic England strongly supports the promotion of passive-first cooling measures, particularly in traditionally constructed buildings (i.e., pre-1919) (Historic England, 2024a). By applying a holistic, whole building approach and considering building physics early on in retrofit projects, measures such as shading, blinds, improved heating controls, pipework insulation, natural ventilation, solar control, and night purging can reduce overheating risk and ensure active cooling is only used when necessary (Historic England, 2024b). This approach lowers energy demand, running costs, and associated carbon emissions, while also mitigating local network impacts during extreme weather events. Uptake can be further encouraged through clear guidance, alignment with CIBSE TM52 and TM59, and demonstration projects showcasing effective implementation in both new and historic buildings (Carbon Trust, 2021), (CIBSE, 2013; 2017).

Concerning b), an effective approach to passive cooling would help to mitigate local network impacts during extreme weather events.

References

Carbon Trust (2021). *The Climate Action Pathway for Net Zero Cooling*.

<https://www.carbontrust.com/our-work-and-impact/guides-reports-and-tools/the-climate-action-pathway-for-net-zero-cooling>.

CIBSE (2013). *TM52 The limits of thermal comfort: avoiding overheating*.

<https://www.cibse.org/knowledge-research/knowledge-portal/tm52-the-limits-of-thermal-comfort-avoiding-overheating-in-european-buildings>.

CIBSE (2017). *TM59 Design methodology for the assessment of overheating risk in homes*.

<https://www.cibse.org/knowledge-research/knowledge-portal/technical-memorandum-59-design-methodology-for-the-assessment-of-overheating-risk-in-homes>.

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<https://historicengland.org.uk/advice/technical-advice/retrofit-and-energy-efficiency-in-historic-buildings/upgrading-thermal-elements-installing-insulation/overheating-historic-buildings/>.

Historic England (2024b). *Whole Building Approach for Historic Buildings*.

<https://historicengland.org.uk/advice/technical-advice/retrofit-and-energy-efficiency-in-historic-buildings/whole-building-approach-for-historic-buildings/>.

Question 12 – Do you agree that networked heat pumps may have a key role to play for buildings with limited outdoor space for individual heat pumps per dwelling?

Yes – Historic England agrees that this could be a useful strategy when outdoor space is limited and at sensitive historic sites. However, there are several issues that require consideration – from a technical standpoint, having a suitable distribution route for network pipes can present a barrier where traditionally constructed buildings (i.e., pre-1919) or historic landscapes are involved. From a policy perspective, various elements of a networked heat pump system will need to be considered to ensure the system remains a cost-effective and user-friendly options – these key elements include pricing mechanisms, the

management of maintenance and repair, and residents' ability to competitively seek alternatives.

Question 13 – Do you have any evidence or views on a) which business models would be most effective at bringing forward networked heat pumps, where appropriate, and b) what steps would be necessary to support the development of such business models?

Concerning both a) and b), Historic England believes that the major concern with networked heat pumps/district systems is the level of protection that consumers get regarding operational costs and service resilience, as well as the overall efficiency of such a system.

Question 15 – Do you have any evidence or views on the role exhaust air heat pumps could play in decarbonising heat?

Historic England believes that exhaust air heat pumps (EAHPs) have a role to play in the decarbonisation of heating where the physical space is available, the type of heating suits the layout of the building, and where external grilles can be installed. This technology is better suited to buildings with a low heating demand, since they typically can only generate 1-3kW of heating output. There is still a question about whether consumers would be satisfied with a fully convective heating system (this question also applies to air-to-air heat pumps) – further research is needed.

Question 16 – Do you have any views on whether exhaust air heat pumps should be targeted primarily at buildings with a) limited outdoor space b) a higher risk of air-tightness c) lower heat demand d) new-builds?

Historic England believes that exhaust air heat pumps (EAHPs) are best suited to buildings with lower heat demand, since EAHPs typically have a low heating output (1-3kW). This would make them most effective in lower heat demand new builds or small, open plan apartments. However, a more efficient option than an EAHP could be a mechanical ventilation and heat recovery system with a heating coil fed from a separate heat pump – this would remove the need for a wet system along with an EAHP.

Question 17 – Do you have any evidence or views on the role heat batteries could play in decarbonising heat?

Historic England believes that heat batteries have the potential to play a role in decarbonising heat, particularly when integrated with renewable energy sources and time-of-use tariffs. While upfront installation costs can be significant, heat batteries can provide a reduction on running costs by ‘peak shaving’. By storing energy during low-demand periods and releasing it during peak periods, heat batteries can reduce consumer costs while also reducing strain on the electricity grid and enhancing network stability. In-situ performance is improving but the real-world efficiency of this technology can vary depending on the system design, user operation, and maintenance.

Heat batteries also offer a space-efficient alternative to traditional hot water cylinders. Their higher energy density makes them ideal for properties where space constraints limit conventional thermal storage. Where a heat pump sized for peak loads is unfeasible, an alternative could be a smaller heat pump run continuously at lower power which charges a heat battery over time. For further information about the use of batteries in traditionally constructed buildings (i.e., pre-1919), please refer to recent Historic England guidance (Historic England, 2023).

Moreover, the installation of clean heating solutions and electrical energy generation and storage technologies will be greatly incentivised by further reductions in the cost of electricity, particularly with regard to reducing the spark gap – for further information, please refer to Historic England’s response to Question 2.

References

Historic England (2023). *Electrical Energy Storage Systems and Batteries in Historic Buildings*. <https://historicengland.org.uk/advice/technical-advice/building-services-engineering/electrical-energy-storage-systems/>.

Question 18 – Do you have any views on what further criteria, in addition to existing scheme criteria (e.g. MCS certification and SAP-eligibility), should be required for heat batteries that are supported through government grant schemes to prevent systems from drawing energy at peak times?

Historic England believes that in addition to existing requirements of MCS certification and SAP eligibility, heat batteries supported through government grants should also include criteria to help prevent charging during peak electricity periods unless storing excess energy from renewable sources such as solar panels. This could be achieved through smart controls, compatibility with time-of-use tariffs and demand-side response programs, verified storage efficiency, and monitoring to demonstrate performance. These measures would ensure systems are used efficiently, reduce peak-time demand, and support broader decarbonisation and grid resilience.

Question 19 – Do you have any evidence or views on how future developments in the thermal energy storage market might help reduce strain on the electricity grid and how this could work with other technologies (like heat pumps or electric boilers) to become more cost effective?

Historic England believes that there is promise in a growing number of developments in the thermal storage market, including phase change materials and more efficient hot water systems. These changes could make peak shaving more widely achievable, delivering savings and helping to reduce strain on the electricity grid. When paired with heat pumps or electric boilers, thermal energy storage can store excess low-carbon electricity and release it when needed, improving energy efficiency and lowering running costs. As controls, efficiency, and integration improve, thermal energy storage could become more cost-effective and scalable. Continued progress in supply chain maturity, smart controls, and standardised performance monitoring will be key, but more evidence on performance, cost-effectiveness, and user experience is needed before wider rollout.

Question 20 – Do you have any evidence or views on the role storage heaters could play in decarbonising heat?

Historic England believes that storage heaters can support heat decarbonisation by shifting electricity use to periods of lower carbon intensity, such as overnight or during renewable generation peaks. Their most practical role is replacing direct electric radiators in homes where heat pumps or heat networks might not be viable, particularly smaller properties or traditionally constructed buildings (i.e., pre-1919). By enabling off-peak charging through Economy 7 or dynamic tariffs, they help reduce peak demand and integrate renewables, though tariff variability introduces some uncertainty.

Moreover, the installation of clean heating solutions and electrical energy generation and storage technologies will be greatly incentivised by further reductions in the cost of electricity, particularly with regard to reducing the spark gap – for further information, please refer to Historic England’s response to Question 2.

Question 22 – Do you have any evidence on any other types of electric heating that could play a significant role in decarbonising heat?

Historic England believes that further research is needed into solid state heat pumps, a relatively new technology.

Question 23 – Do you have any evidence or views on the role solid biomass boilers could play in decarbonising heat?

Historic England believes that this technology has a limited role in situations where there is not sufficient grid capacity for a heat pump, such as in rural areas. To ensure the effective use of this technology, consideration should be given to more consumer information about the health risks of indoor and outdoor air quality, genuinely sustainable local fuel supplies, better understanding of the fuels which have the lowest impact on poor air quality, more public awareness about the best practices to improve the air quality, better independent understanding of the effectiveness of flue filtration systems, and better understanding of ongoing maintenance requirements.

For further information about the suitability of biomass boilers in traditionally constructed buildings (i.e., pre-1919), please refer to Historic England guidance (Historic England, 2024).

References

Historic England (2024). *Low and Zero Carbon Technologies*.
<https://historicengland.org.uk/advice/technical-advice/retrofit-and-energy-efficiency-in-historic-buildings/low-and-zero-carbon-technologies/#SectionBiomassText>.

Question 24 – Do you have any evidence on the types and/or characteristics of properties which would not be suitable for a heat pump or a heat network, but would be suitable for a biomass boiler?

Heat pumps and heat networks would be unsuitable for properties in areas without sufficient grid capacity and where the necessary network upgrades would be prohibitively expensive. In such circumstances, a biomass boiler could be appropriate.

However, a different solution for such isolated buildings could be local microgeneration. There is an opportunity to revitalise existing microgeneration infrastructure to provide low-carbon power to local areas, thus removing the need for new infrastructure which carries a financial, labour, and embodied carbon cost. The benefits of local microgeneration are especially significant in isolated rural areas where grid connection could prove more challenging or costly.

Sites such as Fladbury Mill (Worcestershire) and Cragside’s Archimedes Screw (Northumberland) are examples of historic assets that serve a modern purpose – local microgeneration of renewable power. Another example cited in a Historic England case study is Linton Lock Hydro (North Yorkshire) – once an 18th century lock and weir, the site was converted into a hydroelectric plant in the early twentieth century before falling into disuse. Following its renovation, it is once again a functioning hydroelectric generating plant capable of producing up to 380 kilowatts of electricity (Historic England, 2019). Sites such as these should be publicised more widely, supported, and renovated where they are present but disused. For further information on this topic, please refer to Historic England’s guidance on micro-hydroelectric power and the historic environment (Historic England, 2014).

References

Historic England (2014). *Micro-Hydroelectric Power and the Historic Environment*. <https://historicengland.org.uk/images-books/publications/micro-hydroelectric-power-and-historic-environment/micro-hydroelectric-power/>.

Historic England (2019). *Ancient Technology Brings Linton Lock Hydro Back to Life*. <https://historicengland.org.uk/research/heritage-counts/2019-carbon-in-built-environment/case-studies/linton-lock-hydro/>.

Question 25 – Do you have any further evidence or views on the sustainable implementation potential for renewable liquid heating fuel production in the UK?

Historic England believes that the use of renewable liquid heating fuel could be a useful bridging technology in the UK's journey to Net Zero by 2050, though the use of this fuel still involves the combustion of hydrocarbons and so should not be prioritised over the installation of low-carbon electric heating.

Question 27 – Do you have any evidence or views on the potential of renewable liquid fuels to be used in certain housing types where other low carbon solutions may not be the best solution?

Historic England believes there is potential to use renewable liquid fuels where low-carbon solutions are impractical – since 'BioLPG' is chemically identical to LPG, the former can be used instead of the latter. This would mean that boiler rooms are restricted to being above ground.

Question 29 – Do you have any evidence or views – especially on cost and availability of sustainable feedstock – to demonstrate that a possible initial blend approach could be increased to a 100% renewable liquid fuel solution for consumers?

Historic England believes that availability may prove a barrier, as the supply chain for these fuels is currently underdeveloped.

Question 30 – Do you have any evidence or views on the role that hybrid heat pumps, comprising of a heat pump and an appliance using 100% renewable liquid fuels, could play in decarbonising heat?

As mentioned in our answer to Question 25, the use of renewable liquid heating fuel could be a useful bridging technology in the UK's journey to Net Zero by 2050. However, care needs to be taken in the design, installation, and maintenance of this system to ensure that the heat pump meets the majority of the heating demand over the year.

Question 32 – Do you have any evidence or views that could help inform future decisions on whether to implement a Renewable Liquid Heating Fuel Obligation, and if so, how?

Historic England believes that a Renewable Liquid Heating Fuel Obligation could be effective if introduced along with the development of a secure supply chain.

Question 33 – Do you agree that evidence of affordability to consumers, and availability at scale of sustainable feedstock are key factors in determining if the government should pursue the implementation of a Renewable Liquid Heating Fuel Obligation? If not, what other factors do you think are significant and why? Please provide your views and evidence to support this answer.

Historic England agrees that these factors are key for determining whether a Renewable Liquid Heating Fuel Obligation should be implemented – the supply chain for these fuels is currently underdeveloped, so availability is limited.

Question 35 – Do you have any views on whether the introduction of the Renewable Liquid Heating Fuel Obligation would be an effective tool in fully decarbonising oil heated homes or whether it is a transitional solution to decarbonisation (if either)?

As mentioned in our answer to Question 25, Historic England believes that the use of renewable liquid heating fuel could be a useful transitional solution to decarbonisation. However, the use of this fuel still involves the combustion of hydrocarbons and so should not be prioritised over the installation of low-carbon electric heating.

Question 36 – Do you have any evidence or views on the role other low carbon heating systems, not discussed in this consultation, could play in decarbonising heat?

As mentioned in our answer to Question 22, Historic England believes that further research is needed into solid state heat pumps, a relatively new technology.

Question 38 – Do you have any additional evidence on how people with protected characteristics under the Equality Act 2010 may be affected by the installation of any of the alternative heating technologies included in this consultation?

Historic England believes that consideration should be given to how consumers with learning difficulties, dementia, physical disabilities, or some neurodiverse conditions will be able to use, control, and maintain the heating system. Beyond protected characteristics, it is essential that simple and accessible information is publicly available for all of the alternative clean heating technologies included in this consultation.