25 August 2023
Energy Security and Net Zero Committee

Evidence on heating our homes by Historic England

About Historic England

1. Historic England is the Government's statutory adviser on all matters relating to the historic environment in England. We are a non-departmental public body established under the National Heritage Act 1983 and sponsored by the Department for Culture, Media and Sport (DCMS). We champion and protect England's historic places, providing expert advice to local planning authorities, developers, owners and communities to help ensure our historic environment is properly understood, enjoyed and cared for. Historic England is firmly committed to supporting national and local government, and homeowners/occupiers and their advisors, to deliver energy and carbon efficiency improvements in historic buildings.

Summary

2. Historic buildings have a significant role to play in the transition to Net Zero. Fabric improvements to listed buildings and historic dwellings in conservation areas could provide up to 4.6 - 7.7 MtCO2 of carbon savings per year, equating to 5% of 2019 UK building carbon emissions and 30% of reductions required by the Sixth Carbon Budget[1].

3. Improving the energy and carbon efficiency of historic buildings, and protecting their unique qualities are compatible goals. However, adapting historic buildings requires careful consideration of a building's context, construction, condition and use to ensure measures are effective for energy and carbon efficiency, thermal comfort, and occupant health and wellbeing[2].

4. In some cases, it is still possible to increase carbon emissions even if energy efficiency is improved[3]. It is important to consider the embodied carbon of energy efficiency measures to ensure this does not occur.

5. There is a need for greater coordination across government and partners to better integrate policies and initiatives for regulation and standards, skills and training, and supporting funding.

1.) What policy changes are needed to deliver energy efficient homes across the UK?

6. The UK has the oldest building stock in Europe with around 5.9 million (21%) of buildings built pre-1919 and a further 4.3 million (15%) built pre-1944[4]. England has around 350,000 listed homes and around 2.8 million homes within conservation areas. To better enable adaptation of historic buildings, opportunities exist across the following policy areas:

[1] Heritage and Carbon: Addressing the skills gap (grosvenor.com)
[2] Retrofit and Energy Efficiency in Historic Buildings (historicengland.org.uk)
[3] Reducing Carbon Emissions in Traditional Homes (historicengland.org.uk)
[4] Council Tax: stock of properties, 2022 (gov.uk)

- **Clear national planning policy** to help decision-makers make faster, more consistent decisions when determining proposals for climate change mitigation in the historic environment.
- **Improved methods for Energy Performance Certificates** that are appropriate for traditional buildings and avoid providing advice that can lead to maladaptation.
- **Improved standards for retrofit products** provide customer confidence and reduce the risk of maladaptation.
- **Ensure building regulations and industry standards support the retrofit of historic buildings**, such as PAS 2035, and provide appropriate training.
- **National policy on accounting for embodied carbon** in decision-making to ensure energy efficiency measures do not unintentionally increase whole life cycle carbon emissions.
- **Delivery of skills, capacity and capability for Local Authorities and the construction industry** to speed up decision-making and delivery and reduce costs.
- **Improved access to funding for historic building owners/occupiers** by designing schemes that account for the additional considerations for historic buildings, including timescales resulting from challenges across other areas of policy, e.g. skills shortages.
- **Improved coordination across national policy areas** related to retrofit, including skills, training, standards and funding.

2.) What are the key factors contributing to the under-delivery of the UK's government-backed retrofit schemes?

7. Challenges linked to the policy areas discussed in paragraph 6 contribute to the under-delivery of government-backed schemes in historic homes.

8. Cost is a key issue for homeowners and occupiers. With schemes only covering a portion of the overall costs and a lack of confidence in consumer products and approaches, owners and occupiers are either too cautious or cannot afford to invest.

9. Lack of skills and capacity in the construction industry for retrofitting historic buildings drives costs higher and can result in delays in the design and implementation of schemes. Historic building retrofit requires 205,000 workers every year from now until 2050 to meet Net Zero targets – over double the number of current workers with the necessary skills.[5]

10. Respondents to Historic England's 2022 survey[6] stated there is a lack of trusted and clear guidance on how to retrofit historic homes, including which actions require permission and consent, which can result in low uptake of schemes. Where permission or consent is needed, a lack of skills and capacity in Local Planning Authorities can cause further delays, and unclear national planning policy can result in proposals being refused.

11. Paragraph 6 recommends policy changes to address these issues, but it would also help if timeframes for government funding could account for extended timescales to retrofit historic homes as a result of the current skills and capacity gaps in Local Planning Authorities and the construction sector.

[5] Heritage and Carbon: Addressing the skills gap (grosvenor.com)
[6] Survey of Listed Building Owners and Occupiers (historicengland.org.uk)

3.) Which standards and assessment frameworks are needed to deliver a reliable, skilled workforce capable of transitioning UK homes to modern heating solutions?

12. All training qualifications and standards should include an underpinning knowledge of traditional buildings and how they perform. Without this knowledge, work can lead to an energy efficiency performance gap, which can be a forerunner to more serious unintended consequences and maladaptation.

13. The Heritage and Carbon report[7] notes the need for new workers and upskilling of existing workers to meet retrofit challenges. Appropriate methods of training and assessment are needed for both these areas.

14. There is an existing qualification relevant to traditional and historic buildings, which should be utilised to help deliver a skilled workforce – the Level 3 Award in Energy Efficiency Measures for Older and Traditional Buildings.

15. There are also two apprenticeship standards in development which complement this. The Level 5 Heritage Construction Specialist apprenticeship (which Historic England has led the development of) includes elements around energy efficiency, specifically in the context of traditionally constructed buildings; yet it alone will not provide the level of technical specialism required to meet the skills challenges associated with Net Zero. The Level 4/5 Retrofit Coordinator apprenticeship will be invaluable in establishing career pathways. Historic England sits on the Trailblazer developing the apprenticeship to ensure appropriate weight is given to understanding the energy performance of traditional buildings and impacts on their significance.

16. Historic England believes that, as a priority, shorter term training interventions need to be considered alongside the above career pathway interventions and is currently working in partnership to develop a new handbook to support the delivery of the Level 3 Award in Energy Efficiency Measures for Older and Traditional Buildings. This will provide a high-quality learning resource for all learners and providers of the qualification across all awarding bodies to supplement delivery and that can be used as an ongoing reference guide post-course completion.

17. Greater flexibility within the apprenticeships levy would be invaluable, allowing employers to enhance an apprenticeship through funding additional elements of training, such as undertaking the Award in Energy Efficiency Measures, which may not be available through a Main Training Provider (MTP).

18. We also advocate for the development of Skills Bootcamps on retrofit and traditional buildings; however, we would want to see relevant accreditation achieved through these (such as the Level 3 award mentioned above).

4.) How might the Government support innovation in delivering local solutions?

19. A long-term National Retrofit Strategy is key to joining up policy areas, but local approaches are required for the delivery of skills, training and creating demand. The Heritage and Carbon report[8]

[7] Heritage and Carbon: Addressing the skills gap (grosvenor.com)
[8] Heritage and Carbon: Addressing the skills gap (grosvenor.com) pp.20-21

sets out recommendations for how Local Skills Improvement Plans would help and how area-based schemes like Manchester's People Powered Retrofit[9] can help to create demand.

6.) Does the current state of consumer protections for low-carbon home technologies represent a barrier to uptake of these products?

20. There needs to be better training and standards for designers and installers. Currently, if a homeowner applies through the Boiler Upgrade Scheme for a £5K grant, the installer must be a suitable MCS certified installer for the work to be eligible. The installer will undertake an assessment of the air and fabric losses of the property to size the heat pump. For traditional buildings, the values used in the assessment of existing home airtightness levels provide largely inaccurate estimates.

21. Evidence suggests there needs to be a rethink about the way domestic heat pumps are sized. Historic England's study[10] looked at ten sites across England and in eight of those the heat pumps were oversized. These case studies, a mixture of residential, retail and places of worship, evaluated the performance of existing heat pump installations in different types and uses of buildings. The study identifies examples of best practices and summarises the considerations that need to be made when designing heat pumps in traditional buildings. The successful delivery of decarbonised heating in this context, therefore, requires improving training and increasing knowledge, skills, and support. This would give owners more confidence to invest in low-carbon technologies.

7.) How will the public be able to afford the switch to decarbonised heating?

22. In the Department for Business, Energy & Industrial Strategy consultation, 'Phasing out the installation of fossil fuel heating in homes off the gas grid', it advised an average upfront installation cost of around £12,000 for a 10kW air source heat pump[11]. The Energy Saving Trust advises a typical installation cost of £7,000-£13,000 for air source heat pumps. Similarly, the typical installation costs for ground source heat pumps are £14,000-£19,000[12]. The current cost of a suitable air source heat pump from a leading manufacturer is £3,864 (supply only). For those properties needing a pre-plumbed domestic hot water cylinder, the cost is £5,322.

23. Clearly, these costs will increase to include labour, power supplies, new radiators and controls where required. We note that in most cases, however, the installation cost should be less than £12,000. Currently, if a homeowner applies through the Boiler Upgrade Scheme there is a £5K grant available. The uptake of this grant has been low due to the additional funds required.

24. For the proposals to be successful, there must be an effort to avoid the inflation of installation costs. This could be achieved by ensuring there is flexibility and capping of the costs.

25. The installation cost needs to accurately reflect the scope of the installation. For example, buffer vessels and replacement heaters may not be required for all households.

[9] About — People Powered Retrofit (retrofit.coop)
[10] Heat Pumps in Historic Buildings (historicengland.org.uk)
[11] Phasing out the installation of fossil fuel heating in homes off the gas grid (gov.uk) p. 10
[12] A guide to ground source heat pumps (energysavingtrust.org.uk)

26. To improve cost accuracy and to maximise the potential for this proposal, we recommend that schedules of rates are in place for the following items:

    - Heat pumps (separate costs for ground source and air source heat pumps)
    - Heat emitters
    - Buffer vessels
    - Domestic hot water cylinders
    - Controls
    - Thermal insulation
    - Power supply
    - Testing and commissioning

27. The schedule of rates should be reviewed regularly to benefit from the anticipated reduction in heat pump costs and to reflect inflation and market conditions. We recommend that this review is carried out quarterly or at least four-monthly.

28. More broadly there is a need to keep under review a range of policy and fiscal measures to incentivise owners to invest in decarbonised heating. Past initiatives have not worked as intended, largely as a result of these schemes not addressing owners' concerns about cost and the quality of work. The government could invest in area-based retrofit schemes as an effective way to build local demand and create pipelines that both provide local retrofit businesses with the certainty they need to build capacity and reduce costs through volume, and give households the confidence to make informed investment decisions.[13]

8.) How will decarbonisation plans be drawn up in each area?

29. Decarbonisation plans should be aligned with local skills improvement plans to ensure an appropriately skilled workforce is available to carry out work in a specific area. This will require the implementation of local skills improvement plans that ensure building performance and impacts on significance on traditional and protected buildings are appropriately considered in the training and skills development initiatives undertaken.

9.) Do the current EPC frameworks help consumers make informed decisions on transition?

30. There are a wide range of issues and inaccuracies with the current system that mean that EPCs do not support the UK in meeting its Net Zero targets. Low-zero carbon heating systems are penalised, whilst EPCs give priority to the EER rating which uses the cost of energy. By using fuel prices as a means of assessment, EPCs are driving high carbon heating measures. Points are gained for using LPG oil and points are lost for using electricity, even though the decarbonisation of the grid sees a gain of 34 points for electricity in the marginalised EIR or carbon rating.

31. In addition, the current tools for assessment (EPC and SAP) are not effective at accurately measuring building performance, particularly for traditionally constructed buildings (20% of housing stock). At present, there are many assumptions made and the rating is based on out-of-date research on the performance of building fabric and technology. The existing assessment also means there is no ability to input in situ measurements to improve the accuracy of data collected.

[13] Heritage and Carbon: Addressing the skills gap (grosvenor.com)

32. EPCs focus on fabric first interventions instead of a holistic approach that considers the fabric, services and the occupants of a building (the whole building approach), thus many measures are generic and presumed to be of benefit. The inbuilt assumptions on traditional building performance and occupant use are incorrect; resulting in recommendations that could lead to inappropriate measures being installed that may impact the occupant's health or encourage short-term decisions that do nothing to reduce the building's carbon emissions. This is in part due to real-life energy usage not being assessed, and inaccurate predicted costs provided for the measures to be installed.

33. EPCs should provide information for different metrics based on the consumer's priorities– cost, comfort, carbon, fabric and heating system type. They should also support owners in making appropriate decisions by providing a context of the building, including whether recommendations will be suitable for a listed building or one in a conservation area.

10.) Do standards need to differ for different types of housing?

34. Historic England is investing in research and guidance to support the built historic environment sector to reduce its carbon footprint. We believe that all buildings can accept some form of work to improve their performance and reduce heat loss, carbon and energy. However, attempting to achieve prescribed u-values for traditionally constructed buildings with solid walls can result in fabric decay and health issues for the occupant.

35. For example, Approved Document L sets the prescribed u-value of 0.3 for external walls. In a traditional building this is likely to result in maladaptation as achieving a u-value of 0.3 can only be achieved with modern materials that are not appropriate and will result in decay of the building fabric and health issues for the occupants. The standards, regulations and assessments (EPCs) need to reflect a building's performance more accurately and encourage the right choices of materials.

36. The current approach ignores the importance of good maintenance/repair and the whole life cycle of materials (circular economy, and the ability to repair rather than replace). The need for ongoing maintenance must be recognised if we are to ensure buildings continue to perform to their optimum efficiency, whilst also being resilient and adaptable to our changing climate.

37. Carbon calculations should include the carbon cost of measures as well as their impact on operational carbon. When the whole life carbon cost of materials is considered, including their manufacture, transportation, installation and ability to be repaired or recycled, the carbon costs may not outweigh the operational carbon benefits. All proposed measures should compare the operational carbon and cost savings of installing the measure versus its installation cost, life expectancy and embodied carbon.

38. Historic England could assist in the development of improved regulations and standards for buildings of traditional construction to ensure that appropriate energy efficiency improvements are made to all buildings, whilst ensuring that they are also resilient to climate change hazards such as flooding and overheating.

11.) What is the role of different levels of government in developing, funding and implementing schemes?

39. Central government has opportunities to set the governance and delivery frameworks required to better enable the retrofit of historic buildings, including:

- Providing clear national planning policy and building regulations that help decision-makers to enable appropriate retrofit in historic buildings.
- Enabling the development of industry skills required to retrofit the historic building stock.
- Ensure scheme delivery windows can account for the timescales associated with the lack of skills and capacity in Local Authorities and the construction industry to deliver retrofit solutions in historic buildings to avoid them being scoped out during delivery.
- Working with industry and the heritage sector to coordinate policy and initiatives that support the retrofit of historic buildings.

40. As the government's statutory advisor on heritage, Historic England can play a critical role in the development and delivery of energy and carbon efficiency schemes in historic buildings. We will continue to:

- Support government in its development of energy efficiency and carbon reduction plans, policies, projects and schemes to ensure they can be delivered easily within current regulatory frameworks and to support government in meeting its statutory duties towards protection of the historic environment.
- Advise government on opportunities to improve national planning policy and regulations to enable faster and more consistent decision-making.
- Provide advice and training for Local Planning Authorities and other decision-makers to help them deliver energy and carbon saving measures in the historic environment in line with current planning policy. We will publish a Historic Environment Advice Note, followed by training, soon after amendments to the National Planning Policy Framework are published to help decision-makers implement new policy.
- Improve and develop guidance and advice for owners and occupiers[14] of historic buildings to help them understand how to improve the energy and carbon efficiency of their home.
- Undertake research[15] and provide evidence and technical guidance[16] on appropriate measures to improve energy and carbon efficiency in historic buildings to inform design and decision-making.

[14] Energy Efficiency and Old Houses (historicengland.org.uk)
[15] Heat Pumps in Historic Buildings (historicengland.org.uk)
[16] Retrofit and Energy Efficiency in Historic Buildings (historicengland.org.uk)